



Hutt River Flood Modelling and Hazard Mapping

Prepared for

Greater Wellington Regional Council

Prepared by

Tonkin & Taylor Ltd

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1 Introduction

Tonkin & Taylor Ltd (T+T) was engaged by Greater Wellington Regional Council (GWRC) to develop the existing flood models of the Hutt River and to use the models to undertake sensitivity analyses and modelling of design scenarios.

The model updates were made following recommendations from GWRC's peer reviewer (Awa Environmental) in March 2020 to resolve observed model issues and improve the accuracy of the flood estimates.

Updates made to the model included amendments to the channel and stopbank geometry, the manner in which bridges were represented, simplified representation of some tributaries, updated resistance values, and an extension of model run times to ensure peak flood flows were captured in all scenarios.

1.1 Purpose

The purpose of the hydraulic modelling is to support GWRC's flood risk management activities and development planning for Hutt City and Upper Hutt City Councils through flood hazard mapping and understanding the performance of flood protection assets. The purpose of this report is to describe the model build and peer review process. It is intended for a technical audience for those wanting more understanding of the hydraulic model.

The updated models were used to assess a range of design storms and sensitivity tests. The information generated helps to better understand, among other things, stopbank performance, the impacts of bridge blockage, and the flood effects of future climate projections. Model results were also used to prepare flood hazard classifications and to define the extent of flood sensitive areas.

The GWRC flood hazard modelling process is summarised in Figure 1.1. This report covers Procedure 4 (P4) and Procedure 5 (P5).

A separate peer review report is produced as an output of Procedure 3. Documentation and communications for Procedure 3 with regard to the hydraulic model development have been provided in this report as Appendix D for completeness. Note that Procedure 6 sits outside the scope of this report.

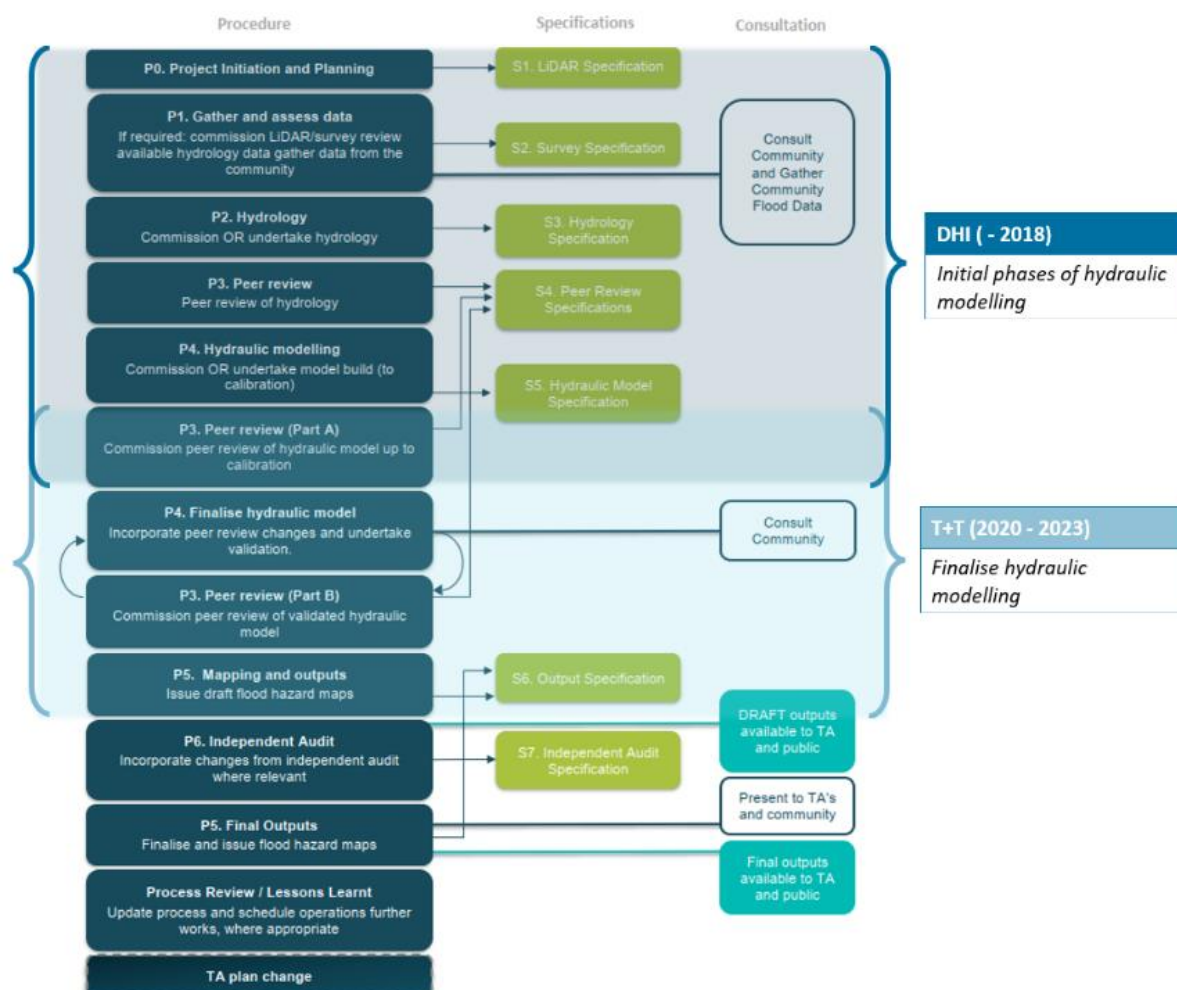


Figure 1.1: GWRC flood hazard modelling process (GWRC Flood Hazard Modelling Standard, May 2021)

1.2 Model history and scope of work

The objective of this project was to finalise the 2018 Hutt River flood modelling begun by DHI by implementing the recommendations of the peer reviewer. The scope of works for this project encompasses Procedure 4 (P4) and Procedure 5 (P5) of the GWRC flood hazard modelling process from Figure 1.1.

A timeline of the work done prior to T+T involvement is outlined below:

- November 2018: 'Lower' and 'Upper' Hutt models built by DHI¹
- March 2020: Second peer review of DHI's Upper and Lower Hutt Models²
- August 2020: The Lower and Upper Hutt models built by DHI were provided to T+T by GWRC, along with peer review documentation (and outstanding comments)

The scope of works included the incorporation of the peer review changes, running sensitivity analysis, design and scenario runs, and producing geospatial outputs of flood hazard.

GWRC's May 2021 *Flood Hazard Modelling Standard* (FHMS) was finalised part way through this project. The scope of this project was therefore amended to adhere to the FHMS where this was possible, and the project timeframes allowed.

¹ Hutt Model Upgrade Hydraulic Modelling, Final Report (DHI, November 2018)

² Hutt River Model Review Letter Report (AWA, 3 March 2020)

2 Background

The Hutt River is a steep alluvial river that originates in the Tararua Ranges and enters Wellington Harbour at Petone. It flows through the mountainous terrain of southern Tararua and western Remutaka Ranges with several streams and rivers from the Eastern and Western Hutt hills joining with it on the journey.

The catchment is spread over 655 km² (Figure 2.1). The 56 km-long Hutt River has four main tributaries: Akatarawa River, Mangaroa River, Pakuratahi River, and Whakatīkei River³.

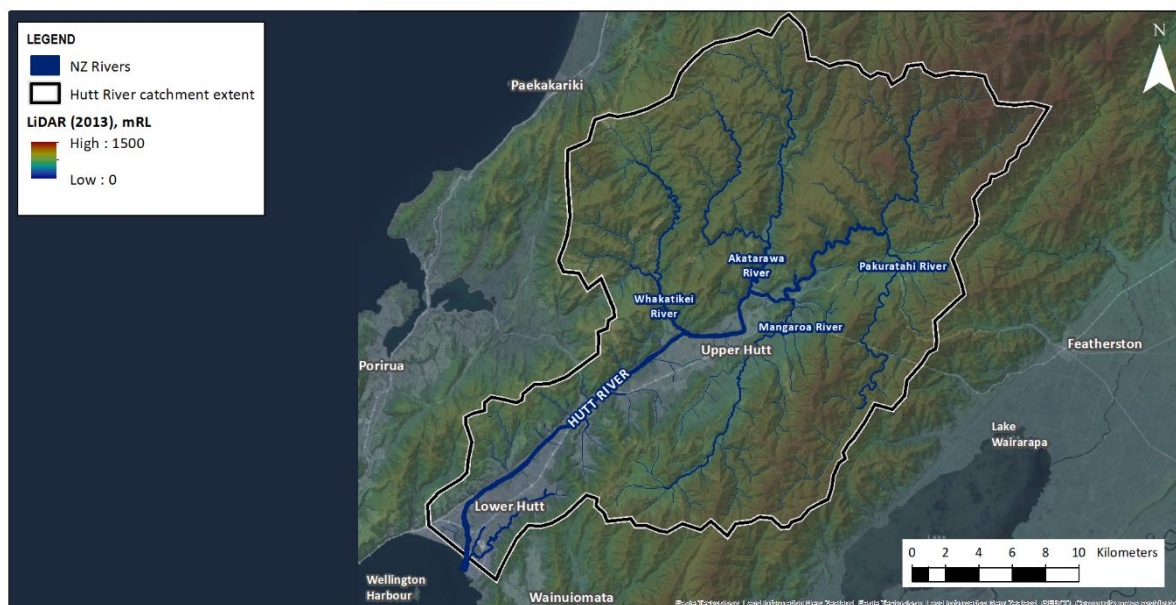


Figure 2.1: Hutt River catchment

³ Official name Whakatīkei River sourced from Land Information New Zealand (LINZ) gazetteer <https://gazetteer.linz.govt.nz/place/6988>. The hydraulic model as provided by DHI refers to this waterway as the Whakatiki River

3 Hutt River flood model

The 2018 DHI Upper and Lower Hutt models were combined into a single flood model as part of this project. Details of the flood model are described in this section of the report and are representative of the model status at the end of the FHMS hydraulic modelling process (i.e. P5).

3.1 Hutt River baseline model overview

Key parameters and inputs to the hydraulic model are summarised in Table 3.1. Additional details are provided in Section 3.2.

Table 3.1: Model build summary

Model element	Report section	Summary
Model name	n/a	Hutt River at Upper Hutt/Lower Hutt “UHLH”.
Model version	n/a	202207_V054.
Software	n/a	Mike by DHI, 2019 release.
Datums	n/a	Horizontal: New Zealand Transverse Mercator (NZTM) (NZGD2000). Vertical: Wellington Vertical Datum 1953 (WVD-53).
Rotation	n/a	2D model is rotated 52° about the bottom left corner point (X, Y) = (1755904.1274, 5434592.46891).
Extent	Section 3.2.2	- Hydraulic model extent: - Upstream: north of Upper Hutt, from approximately adjacent the Stuart Macaskill Lakes. - Downstream: to the outlet to Wellington Harbour at Petone. - Figure 3.1 shows the hydraulic model extents.
Schematisation	Section 3.2.2	An overview of the model schematisation is shown in Figure 3.1.
Topography	Section 3.2.3	1D model: Various cross-section surveys between 1987-2014, design sections. Figure 3.3 demonstrates the cross-section data sources. 2D floodplain: 2013 LiDAR. 2D stopbanks and flood walls: 2014, 2019 survey data and engineering drawings. - Figure 3.4 shows the topography of the 2D model.
Resolution	n/a	1D cross-sections: Average spacing of 110 m. 1D maximum dx (resolution of calculations): 6 m. 2D model: 6 m x 6 m (36 m²) grid.
Roughness	Section 3.2.4	1D model: Manning’s n roughness values vary from n=0.068 in the upper modelled reach to n=0.029 at the river mouth. 2D model: Floodplain manning’s n roughness values vary based on land use. These are shown in Figure 3.5.
Other energy losses	n/a	- An 90° energy loss is applied in the 1D model at the Maoribank 90° channel bend. - Figure 3.1 and Figure 3.6 show the energy loss location.

Model element	Report section	Summary
Hydraulic structures and flood defences	Section 3.2.5	1D model (refer Figure 3.6): 11 bridges are represented along the Hutt River. - One weir structure is represented along the Hutt River, at Silverstream. 2D model: Stopbanks along the Hutt River are generally captured in the 2D model topography (refer Figure 3.7). - Figure 3.1, Figure 3.6, and Figure 3.7 show the location of the hydraulic structures.
Hydrology	Section 3.2.6.1	- Lumped catchment inflow hydrographs for Hutt River, Mangaroa River, Akatarawa River, and Whakatīkei River^A. Refer Figure 3.8. - Hydrographs were provided by GWRC.
Downstream boundary	Section 3.2.6.2	- Sinusoidal downstream tidal boundary sourced from the 2018 DHI 'Lower' model, with a 25 mm vertical shift to account for relative sea level rise. - The tidal boundary corresponds to a 20% AEP^B event storm surge level (DHI, 2018). - Peak water level is 1.32 m RL. Refer to Figure 3.10.
Climate change	Section 3.2.6	- Hydrological inflows (hydrographs) are increased by 20% to account for climate change. - Sea level rise of +1 m has been applied at the tidal boundary for scenarios with climate change. - Guidance on climate change scaling and sea level rise allowance was provided by GWRC.
Initial conditions	Section 3.2.7	1D model: Variable initial conditions (discharge and water level) are applied across the 1D model domain. Initial water level approximates mean annual flow. Refer to Figure 3.11. 2D model: Initial water level of 0.6 m RL is applied.
Other model parameters	Mike11.ini changes: Appendix D2.3.5 (Silverstream Bridge memo)	- Computation scheme delta value: 0.85. - Timestep: 0.75 seconds. - Flood/Dry depths: 0.01/0.03 m. - Eddy viscosity: Velocity-based, constant 0.96 m²/s. - Changes to the Mike11.ini file: HD variable no.12 = (1,5).

Note A: Named *Whakatiki* in hydraulic model.

Note B: AEP = annual exceedance probability

3.2 Hutt River baseline model details

3.2.1 Hydraulic model overview

The Hutt River baseline model ***UHLH_202207_V054*** is a 1D-2D hydraulic model that applies design hydrographs as hydrological inputs at the upstream boundaries. The river channel and bridge structures are represented in the 1D model. The 1D river model is hydrodynamically linked to the 2D model of the floodplain. Flood defence structures are represented on the 2D floodplain or at the boundaries between the 1D and 2D models.

3.2.2 Model extent and schematisation

The hydraulic model extends from north of Upper Hutt (approximately adjacent the Stuart Macaskill Lakes) at the upstream extent, to the river's outlet at Wellington Harbour at Petone at the downstream extent. The 2D model extent covers approximately 139 km².

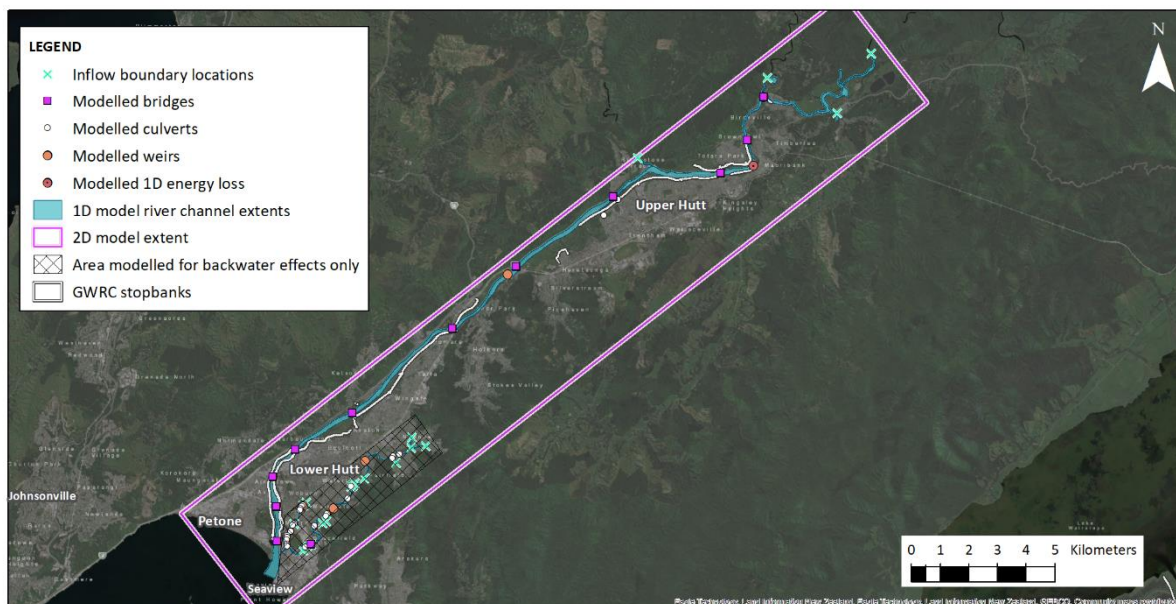


Figure 3.1: Schematic of hydraulic model (version: UHLH_202207_V054)

The Awamutu and Waiwhetū tributary branches are not modelled in detail in this study. GWRC have separate, more detailed models of these catchments. They are included in the Hutt River model for backwater effects from the Hutt River channel only.

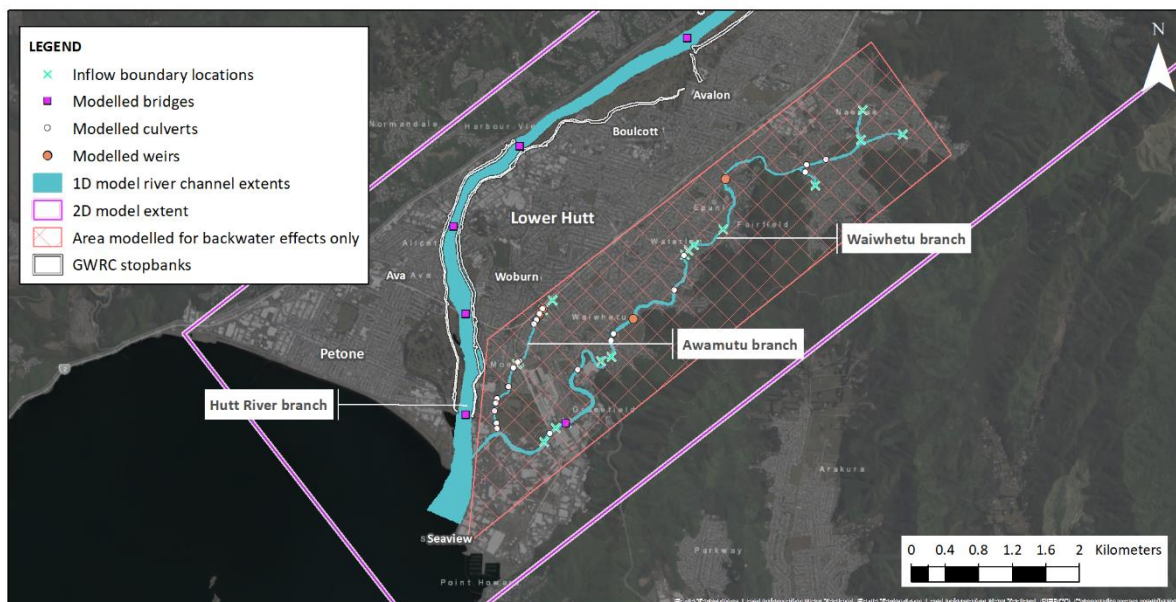


Figure 3.2: Modelled Awamutu and Waiwhetū branches (included for backwater effects only)

3.2.3 Model topography

3.2.3.1 Channel topography

Modelled 1D cross-sections were derived from:

- Cross-section survey captured in 1998 (majority of sections)
- Cross-section/stopbank survey captured in 2014
- 2013 LiDAR
- Design sections⁴:
 - planned works as of 2013 in the Melling Bridge area, and
 - major river works post-1998 between Ava and Ewen bridges (source from OPUS design)

Cross-sections in the baseline model were generally sourced from the 1998 cross-section survey. This was because “*current GWRC policy aims to maintain the riverbed at these levels, with some modification for river edge protection works where these have occurred since 1998*” (DHI, 2018).

Figure 3.3 illustrates the spatial variability of the cross-section data sources. Cross-sections and their topographical source were taken from the 2018 DHI models.

Where 1D cross-sections intersect GWRC flood defences, the top of the stopbank was added to the cross-section. This data was typically sourced from 2014 stopbank survey (refer to Section 3.2.5.4. for further details). This change was implemented as part of this project.

In discussion with GWRC, it was agreed not to represent the Riverlink Project which is in Lower Hutt. We understand that this project is due for completion in 2028.

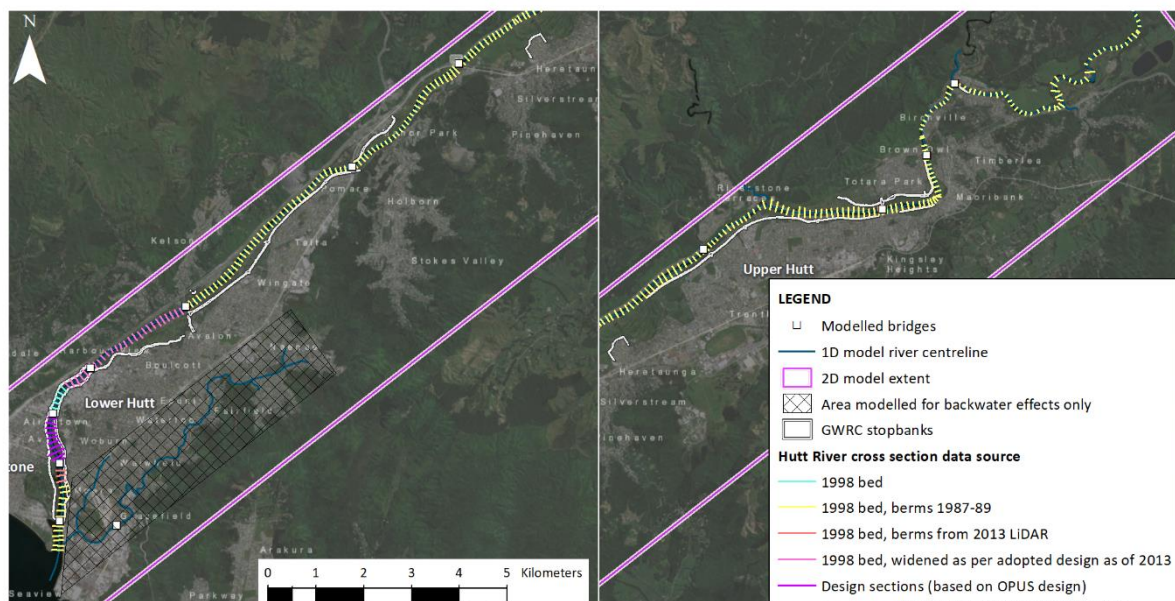


Figure 3.3: Hutt River cross-section data sources

⁴ Design cross-sections described in section 3.1.2: *Hutt Model Upgrade Hydraulic Modelling, Final Report* (DHI, November 2018)

3.2.3.2 2D floodplain topography

The 2D floodplain topography was represented using the 1 m x 1 m 2013 LiDAR DEM. This was sampled at a 6 m x 6 m resolution. Stopbanks were 'burnt' into the 2D ground model, typically using the 2014 survey data (refer to Section 3.2.5.4 for further details). Stopbank extents are shown Figure 3.3 above.

The 2D model topography is shown in Figure 3.4. 1D model channel extents and areas outside of the 2D floodplain were set to the 'land' value of 300.

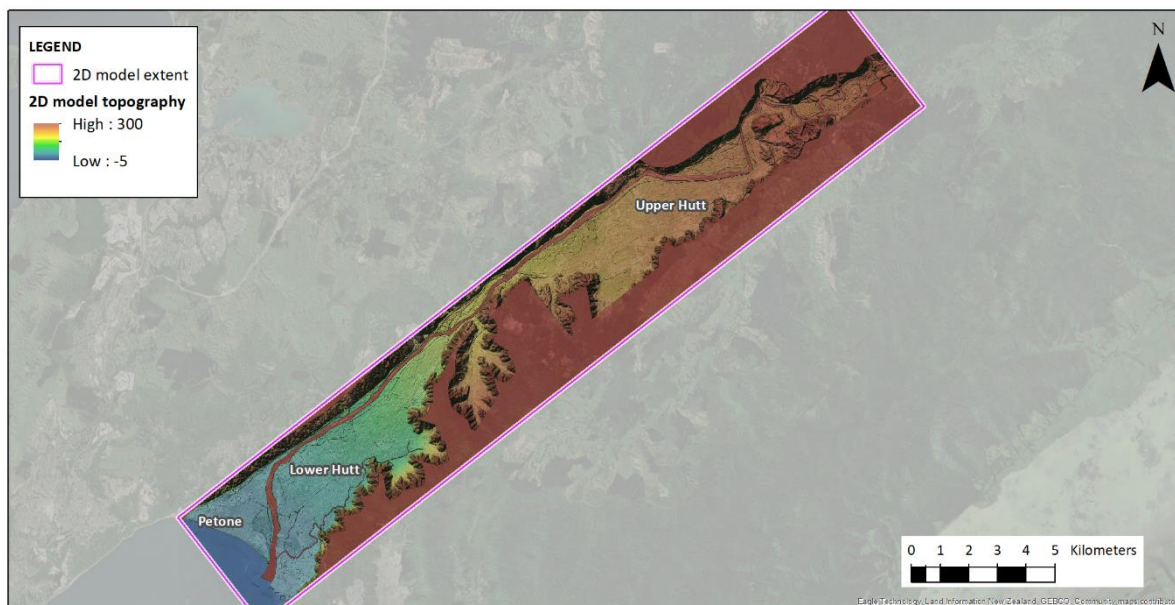


Figure 3.4: 2D model topography

3.2.4 Model roughness

3.2.4.1 Channel roughness

Manning's n roughness values in the 1D cross-sections range from $n = 0.068$ in the upper modelled reach to $n = 0.029$ at the river mouth.

Cross-section resistance values were modelled using local bed resistance values in the hd11 file and relative resistance in the cross-sections. Variable roughness from bed to bank has been applied in the raw cross-section data at river sections where vegetation was present. It has not been applied in the processed data.

3.2.4.2 Floodplain roughness

Floodplain roughness values have generally been maintained from the 2018 DHI 'Upper' and 'Lower' Hutt models. These were based on 2013 aerial photographs. The floodplain roughness values used in the hydraulic model are shown in Table 3.2 and Figure 3.5.

Table 3.2: Floodplain roughness values

Category	Manning's n	Source
Water	0.010	DHI, 2018 ^A
Concrete/paved areas	0.015-0.02	DHI, 2018 ^A
Tennis courts	0.022	DHI, 2018 ^A
Carpark	0.025	DHI, 2018 ^A
Road	0.025	DHI, 2018 ^A
Commercial/industrial parcels	0.025	T+T ^B
Clear berms	0.030	DHI, 2018 ^A
Grass	0.035	DHI, 2018 ^A
Railway tracks	0.045	DHI, 2018 ^A
Residential parcels	0.10	T+T ^B
Vegetation (trees, bushes)	0.05-0.32 ^C	DHI, 2018 ^A
Buildings	5.0	T+T ^B

Note A: Refer Table 3-3 Manning's n values used for floodplain resistances, Hutt Model Upgrade Hydraulic Modelling, Final Report (DHI, November 2018).

Note B: Updated by T+T as part of peer review process, 2020-2023.

Note C: Manning's n range differs from values noted in 2018 DHI report.

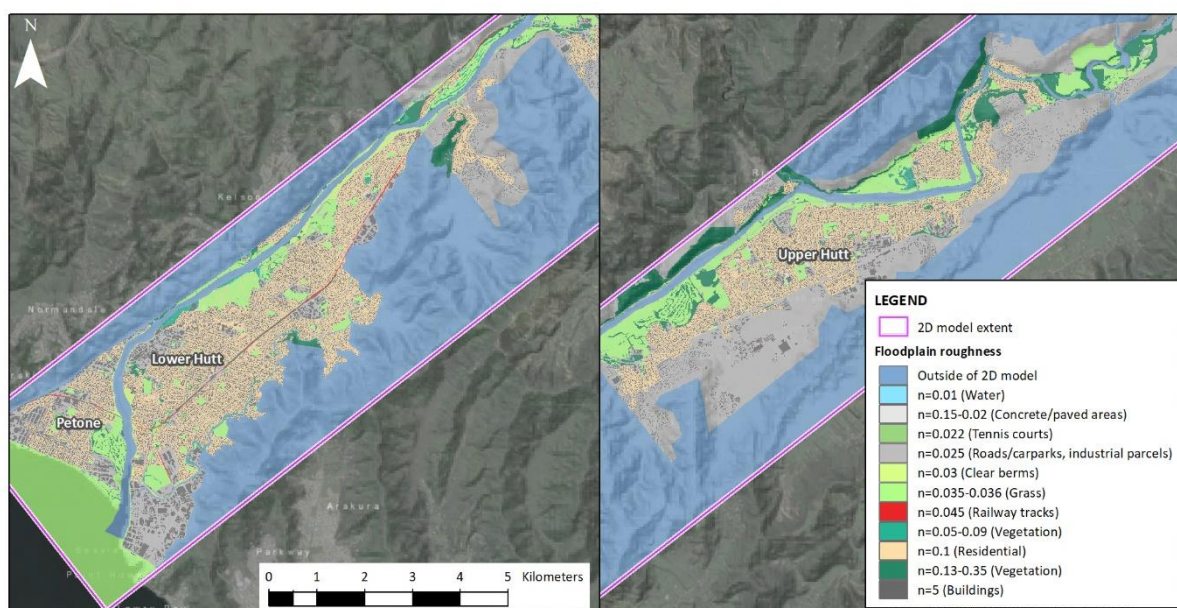


Figure 3.5: Floodplain roughness in 2D model

3.2.5 Hydraulic structures and flood defences

The key hydraulic structures in the model are stopbanks, flood walls, bridges, and the Silverstream weir. Culvert structures on the floodplain that influence flood flows from the Hutt River are also represented.

The hydraulic structures on the Awamutu and Waiwhetū tributary branches have not been updated from the 2018 DHI models. Details of the hydraulic structures on these tributary branches are therefore not included in this report.

3.2.5.1 Hydraulic structures: Bridges

Eleven bridges are modelled along the Hutt River. These are listed in Table 3.3. The locations of the modelled bridges are shown in Figure 3.6.

Table 3.3: Modelled Hutt River bridges

Bridge name	Modelled chainage
Akatarawa Bridge	23,014
Norbert Street Bridge	24,813
Totara Park Bridge	26,951
Moonshine Bridge	31,140
Silverstream Road Bridge ^A	35,400
Pomare Bridge	38,561
Kennedy Good Bridge	43,209
Melling Bridge	45,599
Ewen Bridge	46,891
Ava Bridge	47,982
Estuary Bridge	49,197

Note A: Silverstream Road and Silverstream Rail bridge are adjacent to one another. Only a single bridge structure was modelled.

The baseline model included an allowance for structure blockage. This was typically represented as:

- 10% blockage factor to represent debris build up at piers, and
- 0.5 m reduction in the soffit level to represent debris rafts.

Details of the Hutt River bridge structures represented in the model, including bridge equations, soffit/overtopping levels, and blockage/debris build-up assumptions, are provided in Appendix B.

3.2.5.2 Hydraulic structures: Weirs

The Silverstream weir was added to the model to understand the effects this structure has on flood flows and levels. This was the only weir structure modelled along the Hutt River. Two weirs are modelled on the Waiwhetū Stream. Other weirs that are included in the model represent the overtopping of other modelled hydraulic structures (e.g. culvert overtopping). Weirs located on the Hutt River are listed in Table 3.4.

Table 3.4: Modelled Hutt River weirs

Weir name	Modelled chainage	Type
Akatarawa Bridge deck	23,014	Bridge overtopping only
Silverstream Weir	35,795	Weir structure

Details of the Silverstream weir structure represented in the model are provided in Appendix B. The locations of the modelled weirs along the Hutt River are shown in Figure 3.6.

3.2.5.3 Hydraulic structures: Culverts

25 culverts are modelled on the tributaries of the Hutt River, or on the floodplain. Figure 3.6 below shows the location of the modelled culverts. Details of hydraulic structures not located along the Hutt River are not provided in this report.

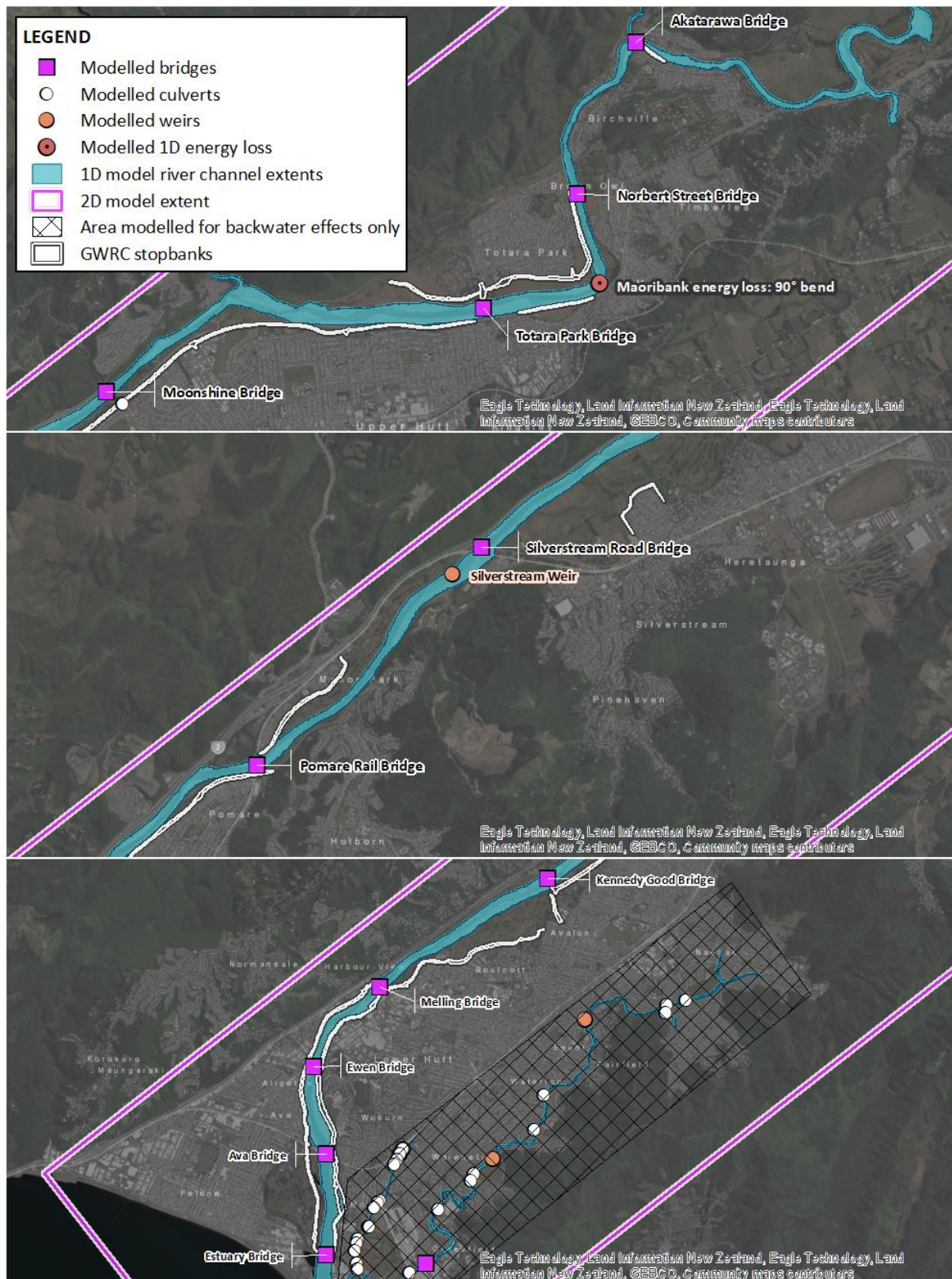


Figure 3.6: Modelled hydraulic structures along the Hutt River

3.2.5.4 Flood defences: Stopbanks and flood walls

Stopbanks along the Hutt River are generally captured in the 2D model topography. The crest levels of critical flood defence structures (stopbanks and flood walls) are enforced in the model topography by adjusting the 2D ground model. Table 3.5 details the source of the flood defence structure levels. The stopbanks and flood walls described in the table are shown in Figure 3.7.

Table 3.5: Flood defences represented in hydraulic model

No.	Name	Model location	Data source of crest level
1	Gemstone Drive	1D	2014 Survey
2	Delaware Memphis Grove	1D	2014 Survey
3	Kentucky Street	2D	2014 / 2019 Survey 2013 LiDAR
4	River Road	2D	2014 Survey
5	River Road Longfellow Street	2D	2014 / 2019 Survey
6	Brentwood Street	1D	2014 Survey
7	Whirinaki Crescent Perry Street	2D	Drawing HR-5498
8	Manor Park Road	2D	2013 LiDAR
9	Manor Park Stopbank	2D	2019 Survey
10	Mary Huse Grove	2D 1D	2014 / 2019 Survey 2019 Survey
11	High Street Harcourt Werry Drive	2D	2014 Survey 2013 LiDAR
12	Fairway Drive	2D	2013 LiDAR
13	Norfolk Flood Wall	2D	Drawing HR-5239-1
14	Norfolk Street	2D	Drawing HR-5239
15	Boulcott Stopbank 2	2D	Drawing HR-5395 (002)
16	Boulcott Stopbank 1	2D	2014 Survey
17	DS Melling Left Bank	1D	2014 Survey
18	Melling to Ava Right Bank	1D	2014 / 2019 Survey
19	Ava to Estuary Bridge Right Bank	2D	2014 / 2019 Survey

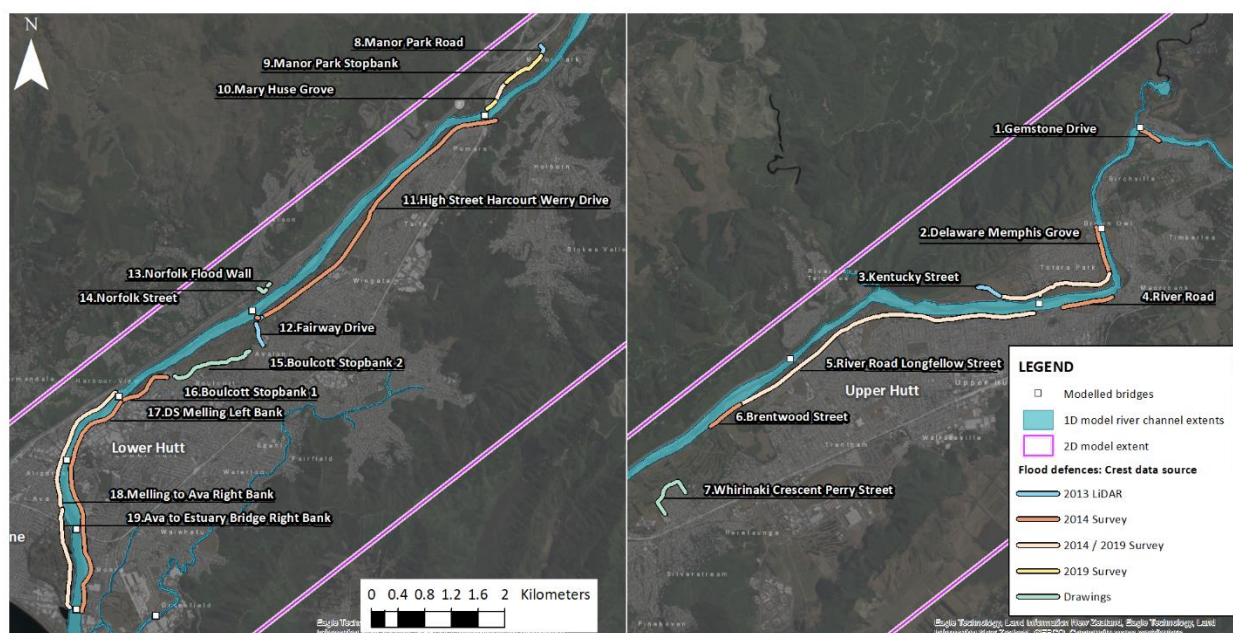


Figure 3.7: Location of flood defences and crest level survey source

3.2.6 Boundary conditions

3.2.6.1 Inflow boundaries

Lumped catchment inflow hydrographs were applied as the hydrological input to the 1D model. The location of inflow boundaries for the Hutt River are shown in Figure 3.8.

Peak flows for the three highest design flow events are provided in Table 3.6. These are shown in order to illustrate the contribution from each of the four contributing catchments. The inflow hydrographs for the 2,800 m³/s design flow event are presented in Figure 3.9 to demonstrate the temporal pattern

The full suite of design storms is detailed in the simulation matrix in Appendix A. All model scenarios representing climate scenario (refer simulation matrix in Appendix A) had inflow hydrographs increased by 20%⁵.

Table 3.6: Inflow boundaries

1D river branch ^A	1D River branch chainage	Hutt River chainage	Peak flow for selected design events		
			1,900 m ³ /s	2,300 m ³ /s	2,800 m ³ /s
Hutt	16,918	16,918	891	1,096	1,361
Mangaroa	0	20,474	303	372	462
Akatarawa	0	23,058	531	653	811
Whakatīkei ^B	0	29,639	178	219	272

Note A: Inflows to tributary branches included for backwater effects only (Awamutu, Waiwhetū) are not included in table.

Note B: Named *Whakatiki* in hydraulic model.

⁵ Guidance on climate change scaling was provided by GWRC for consistency with region-wide advice.

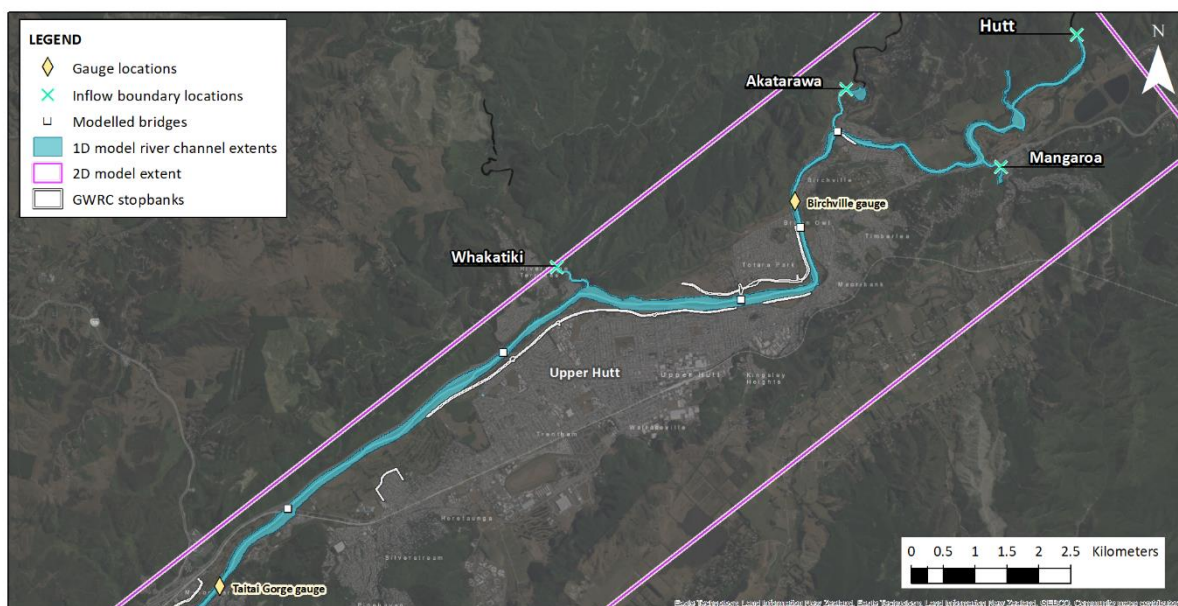


Figure 3.8: Location of Hutt River modelled inflow boundaries

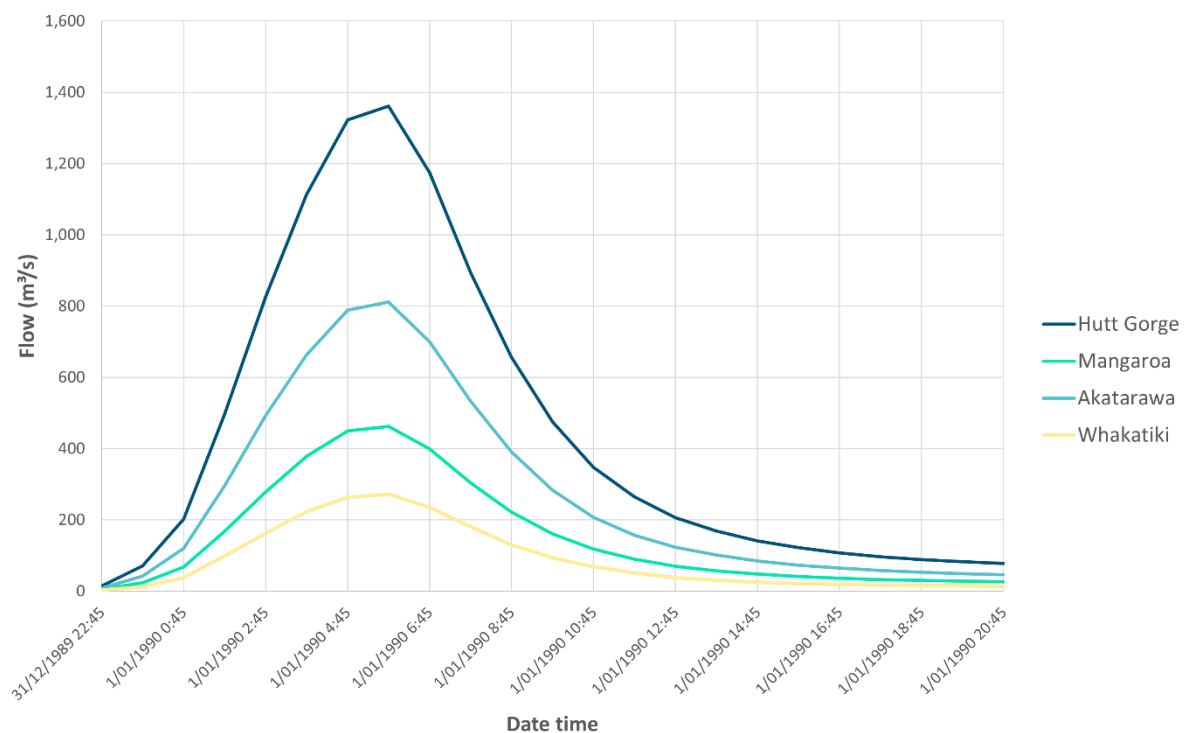


Figure 3.9: Example Hutt River inflow hydrographs – design flow event 2,800 m^3/s

3.2.6.2 Tidal boundary

The downstream boundary is a sinusoidal tidal boundary which was applied at both the downstream boundary of the 1D model (chainage 50,456) and the downstream boundary of the 2D model.

The tidal boundary was sourced from the 2018 DHI 'Lower' model. It corresponds to a 20% annual exceedance probability (AEP) event storm surge level in 2011 (DHI, 2018). This was shifted vertically by +25 mm to account for relative sea level rise to 2022⁶. The peak water level in the baseline model tidal boundary is 1.32 m RL (Figure 3.10).

Sea level rise of +1 m was applied at the tidal boundary for scenarios with climate change. Guidance on the sea level rise allowance was provided by GWRC. The timing of the peak tide level was adjusted to coincide with peak discharge in the lower reaches of the Hutt River.

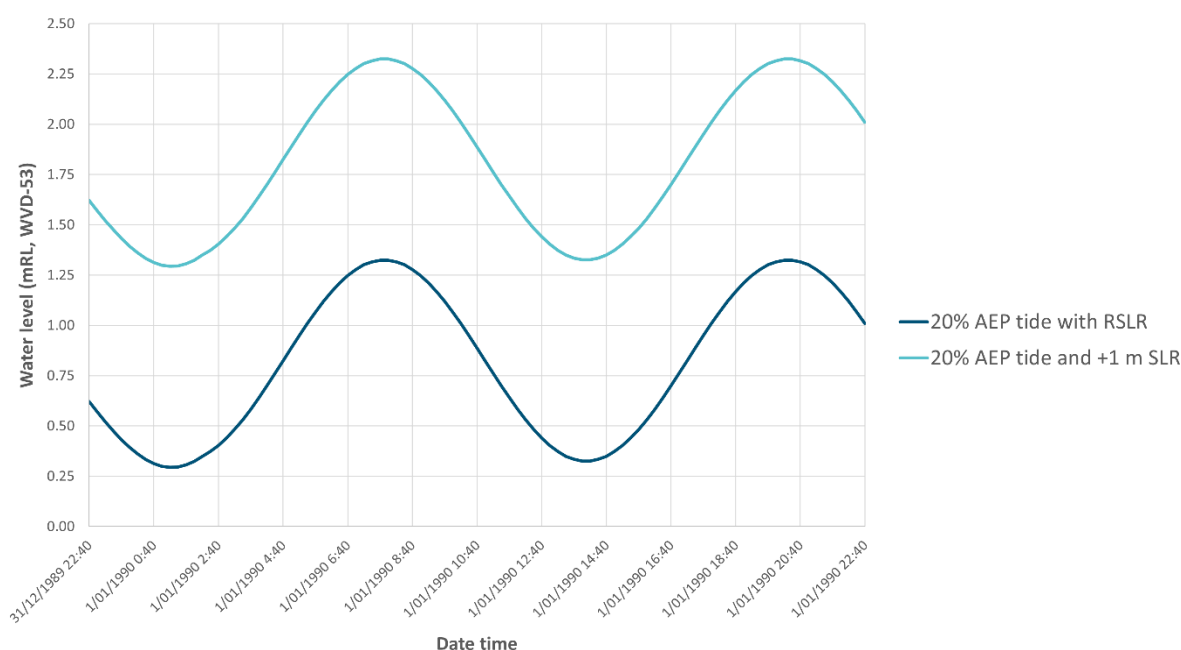


Figure 3.10: Tidal boundary for baseline hydraulic model. Note SLR = sea level rise, RSLR = relative sea level rise

3.2.7 Initial conditions

Variable initial conditions were applied across the 1D model domain. These were set in the hd11 file in the 1D model. The initial water level approximates mean annual flow. The water level profile of the Hutt River at the start of the model simulation is shown in Figure 3.11.

⁶ Relative sea level rise of 2.28 mm/yr sourced from *Update on relative sea-level rise and vertical land motion: Wellington region* (NIWA, 2018). Hutt River modelling has included vertical land movement which was applied to the boundary condition and not the ground model itself.

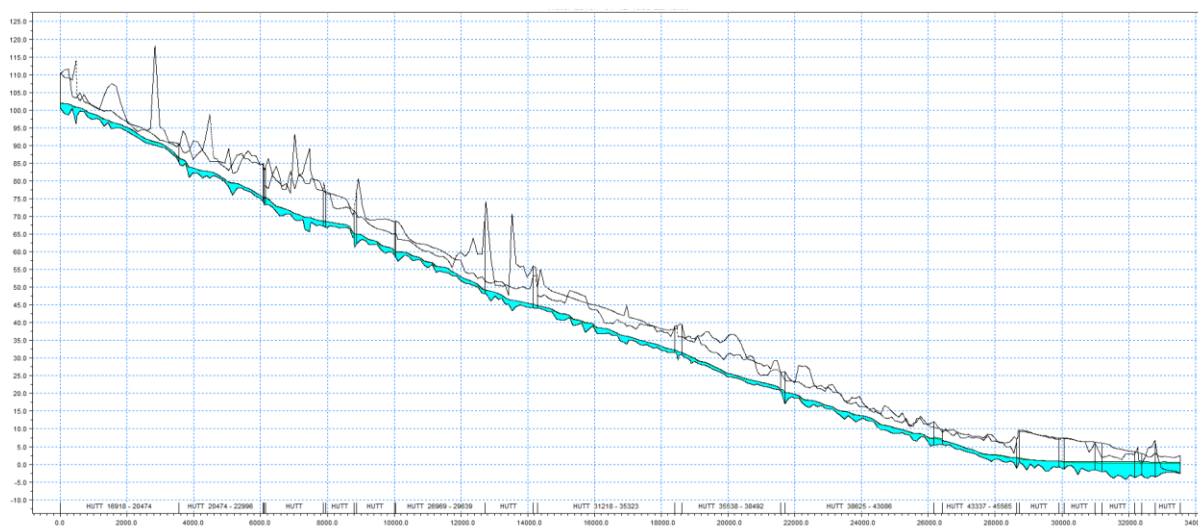


Figure 3.11: Initial conditions in the 1D model along the Hutt River branch

The 2D model has an initial water level condition of 0.6 m RL. The spatial extent of the initial condition is shown in Figure 3.12.



Figure 3.12: Spatial extent of 2D water level initial condition

3.3 Peer review updates

Updates to the model were made in accordance with recommendations of the project peer reviewer (Awa), discussions between T+T and GWRC, and the following data and documentation provided to T+T by GWRC:

- Lower Hutt and Upper Hutt MIKE FLOOD models (*LH NoBreach 2800 Rerun2018.couple*, *UH2800 Rerun2018.couple*, and associated event and scenario models and results).
- Hutt Model Upgrade Hydraulic Modelling, Final Report (DHI, November 2018).
- Hutt River Model Review Letter Report (Awa, 3 March 2020).
- Cross-section survey data (1987-1989, 1998, 2014, and 2019).
- Bridge drawings from GWRC Webapp (downloaded January 2021).

A summary of the peer review process is detailed in Appendix D. The following changes were implemented in the hydraulic model during the peer review process:

- Filing structure and naming updates
- Timestep and simulation run times.
- Amendments to channel geometry
- Amendments to stopbank geometry
- Modelled representation of bridges
- Resistance values at buildings
- Representation of small tributaries in the floodplain
- Other minor changes for ease of use/neatness

A record of the communications held between the peer reviewer and T+T is provided in Appendix D.

4 Modelled scenarios

The Hutt River baseline model was run for 74 different design and sensitivity scenarios. A summary of these scenarios is provided in Table 4.1.

Further details of each modelled scenario are described in the following sections. A comprehensive simulation matrix is provided in Appendix A.

Table 4.1: Summary of model scenarios run

No.	Run type	Scenario theme	No. runs
1	Design run	Design storm	13
2	Design run	Residual hazard	10
3	Design run	Areas benefitting from defences	12
4	Sensitivity run	Structure blockage	18
5	Sensitivity run	Roughness	8
6	Sensitivity run	Downstream boundary	5
7	Sensitivity run	Bed level changes	8

4.1 Design runs: Baseline model design storms

The baseline Hutt River flood model⁷ was run for a range of design flow events, which are detailed in the simulation matrix in Appendix A. Inputs to the baseline hydraulic model (including boundary conditions) are detailed in Section 3.

4.2 Design runs: Residual hazard

Residual hazard is the flood hazard that is present in areas that are protected by structural controls such as stopbanks. This hazard is present due to the potential for structural failure (e.g. stopbank breach) and flood levels greater than the structures were designed for (i.e. stopbank overtopping)⁸.

Residual hazard was assessed for the Hutt River with a series of stopbank breach scenarios. These are assessed using the 2,800 m³/s flow event. Breach locations were provided by GWRC.

Stopbank breach was assumed to initiate approximately 1.5 hours before the river peak at the breach location. The breach developed to a maximum size one hour later. Breach parameters are as reported in *Hutt Model Upgrade Hydraulic Modelling, Final Report* (DHI, 2018).

Stopbank breach was implemented in the hydraulic model using either:

- Time-varying ground model within the 2D model domain, or
- Time-varying lateral link file at the cross-section banks and the interface of the 1D/2D models

Additional details of the stopbank breach runs are shown in Table 4.2. The breach locations are shown in Figure 4.1.

⁷ Model version: UHLH_202207_V054

⁸ Residual hazard description taken from Section 2.2 of GWRC's *Flood Hazard Modelling Standard* (May 2021)

Table 4.2: Stopbank breach runs

ID	Breach location	Approx. Chainage	Breach start time	Model set up
BRE-01	Ava to Estuary Bridge Stopbank	48,586	6:30 AM	Breach in 2D model (dfs2 file)
BRE-02	Boulcott Stopbank	44,908	6:20 AM	Breach in 2D model (dfs2 file)
BRE-03	Delaware Memphis Grove Stopbank	24,793	4:25 AM	Breach in 2D model (dfs2 file)
BRE-04	Gemstone Drive Stopbank	22,782	4:30 AM	Breach in 2D model (dfs2 file)
BRE-05	High Street Harcourt Werry Drive Stopbank	38,625	5:40 AM	Breach in 2D model (dfs2 file)
BRE-06	Manor Park Stopbank	37,283	5:30 AM	Breach in 2D model (dfs2 file)
BRE-07	Melling Left Bank Stopbank	48,706	6:30 AM	Breach at lateral link (dfs1 file)
BRE-08	Melling to Ava Right Bank Stopbank	45,862	6:20 AM	Breach in 2D model (dfs2 file)
BRE-09	River Road Longfellow Street Stopbank	30,895	4:50 AM	Breach in 2D model (dfs2 file) River Road embankment also breaches
BRE-10	River Road Stopbank	25,967	4:30 AM	Breach in 2D model (dfs2 file) River Road embankment also breaches

Note: Model simulation starts at 31/12/1989 10:45 PM

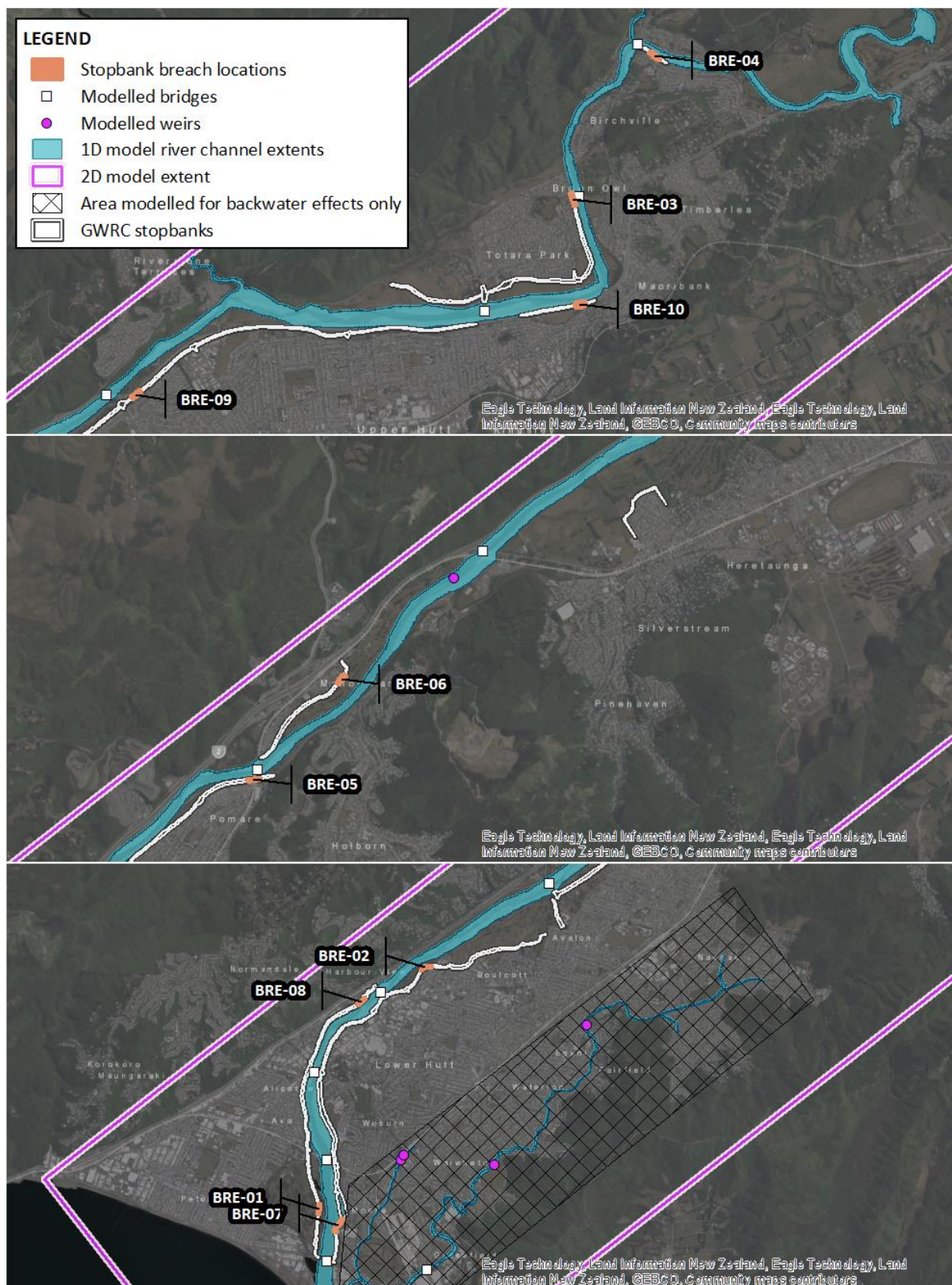


Figure 4.1: Residual hazard scenarios – location of stopbank breaches

4.3 Design runs: Areas benefitting from defences

Areas benefitting from defences are parcels of land located behind structural controls (such as stopbanks) that would become inundated during the 2,300 m³/s flow event if the structural control was not in place. The identification of these areas helps inform asset management planning and cost-benefit analyses⁹.

These areas were assessed for the Hutt River with a series of 'stopbank down' scenarios. Stopbank down locations were agreed GWRC. 11 individual sections of stopbank were simulated as being 'down', with an additional scenario representing all stopbanks being 'down' (Figure 4.2). The specific locations of each down section are described in the simulation matrix (Appendix A).

Removal of stopbanks was implemented in the 2D ground model by interpolating levels on either side of the stopbank.

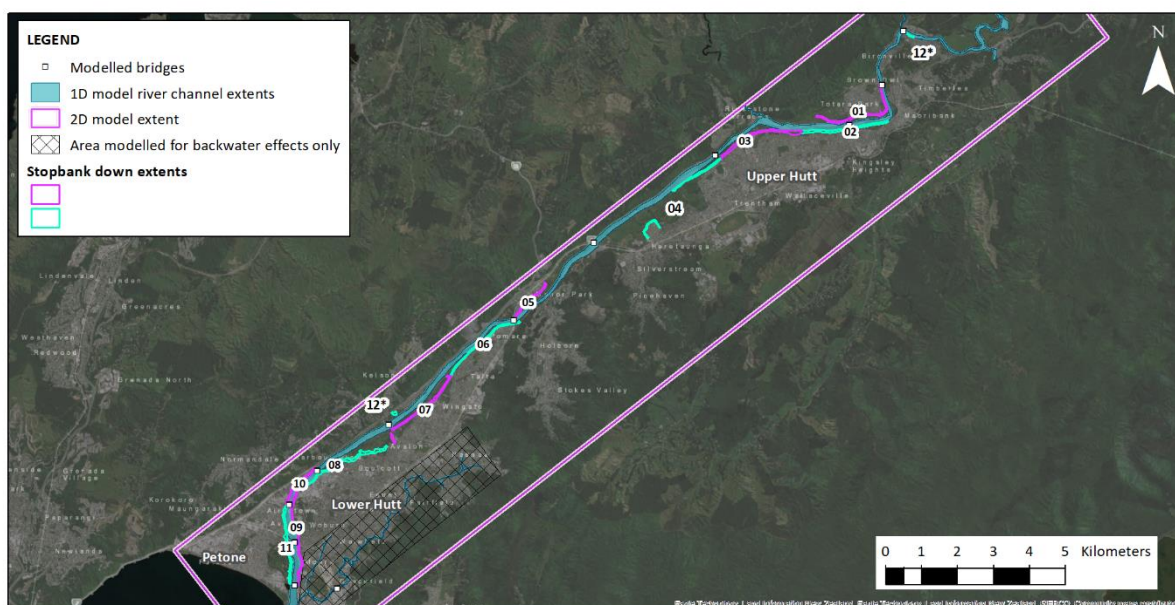


Figure 4.2: Stopbank down scenario extents. Areas noted with an asterisk are only removed in the 'all stopbanks down' scenario

4.4 Sensitivity runs: Structure blockage

The effect of bridge blockage was assessed using the method of the Australian Rainfall and Runoff (ARR) 2016 guideline. Applying the ARR methodology provided a design debris blockage percentage which was then applied to the 1D bridge structures using the 'blockage factor'.

This typically resulted in a 10 – 20% increase in debris blockage, as detailed in Table 4.3 for each of the bridges. Blockage sensitivity scenarios were not modelled for the bridges with the lowest blockage potential (Totara Park Bridge and Estuary Bridge). Storm scenarios, bridges to assess, and blockage parameters were agreed with GWRC.

⁹ Areas benefitting from defences description taken from Section 2.4 of GWRC's Flood Hazard Modelling Standard (May 2021)

Table 4.3: Design blockage for Hutt River bridges

Bridge	Debris $L_{10} = 10\text{m}$		Model scenario
	AEP 5% - AEP 0.5%	AEP < 0.5%	
Akatarawa Bridge	20%	20%	BLK-06
Norbert Street Bridge	20%	20%	BLK-07
Totara Park Bridge	10%	10%	n/a
Moonshine Bridge	20%	20%	BLK-08
Silverstream Road Bridge	20%	20%	BLK-09
Pomare Bridge	20%	20%	BLK-01
Kennedy Good Bridge	20%	20%	BLK-02
Melling Bridge	20%	20%	BLK-03
Ewen Bridge	20%	20%	BLK-04
Ava Bridge	20%	20%	BLK-05
Estuary Bridge	10%	10%	n/a

Note: L_{10} is defined as the average length of the longest 10% of the debris reaching the site

4.5 Sensitivity runs: Roughness

Model sensitivity to changes in both channel roughness and floodplain roughness was assessed. using the baseline model Manning's n roughness +/- 20%.

Roughness changes were implemented in the 1D river model in the hd11 file. Floodplain roughness changes were implemented in the 2D resistance (dfs2) file. The four roughness runs are summarised in Table 4.4 and described further in the simulation matrix (Appendix A).

Table 4.4: Roughness changes for sensitivity testing

Model location	Manning's n roughness change	Model scenario
1D river channel	Reduced by 20%	RGH-01
	Increased by 20%	RGH-02
2D floodplain	Reduced by 20%	RGH-04
	Increased by 20%	RGH-03

Note: 2D resistance file is in Manning's M units. This means that reducing the 2D resistance value by 20% in RGH-03 is increasing the Manning's n roughness value of the floodplain.

4.6 Sensitivity runs: Downstream boundary

Five scenarios were assessed for downstream boundary sensitivity. These were run using the 5% AEP storm (current climate). No changes were made to the baseline hydraulic model, with the exception of the tidal boundary condition.

The downstream boundary sensitivity runs, and the source of the tidal levels are detailed in Table 4.5.

Table 4.5: Downstream boundary sensitivity scenarios

Scenario: tidal condition	Scenario: climate change scenario ^A and time horizon	Max level ^B (m RL)	RSLR ^C (m)	Source	Model scenario
1% AEP tide	Present Day	1.415	+0.025	1% AEP tide of 1.39 mRL (NIWA, 2012 ^D) RSLR from 2011 to 2022 (NIWA, 2018 ^E).	BDY-01
1% AEP tide + RSLR	SSP4.5 to 2150 ^C	2.785	+1.37	RSLR from NZSeaRise ^F (2022 to 2150, SSP4.5 medium confidence line)	BDY-04
1% AEP tide + RSLR	SSP8.5 to 2070	1.955	+0.54	RSLR from NZSeaRise ^F (2022 to 2070, SSP8.5 medium confidence line)	BDY-03
1% AEP tide + RSLR	SSP8.5 to 2150	3.285	+1.87	RSLR from NZSeaRise ^F (2022 to 2150, SSP8.5 medium confidence line)	BDY-05
MHWS + RSLR	SSP8.5 to 2150	2.775	+1.92	MHWS from LINZ, 2018. RSLR from NZSeaRise ^F (2018 to 2150, SSP8.5 medium confidence line)	BDY-02

Note A: SSP = shared socio-economic pathway. Each SSP comprises of socio-economic assumptions and changes that influence future emission trajectories.

Note B: Tidal levels were calculated and entered in the model to 3 decimal places. Practically, this accuracy is not appropriate for parameters with such large uncertainties. Three decimal places have been reported for consistency with hydraulic model only.

Note C: RSLR = relative sea level rise. Vertical land movement was included in the boundary condition and not the ground model itself.

Note D: *Assessing the storm inundation hazard for coastal margins around the Wellington region* (NIWA, 2012).

Note E: *Update on relative sea-level rise and vertical land motion: Wellington region* (NIWA, 2018).

Note F: Sourced from <https://www.searise.nz/maps> at the Hutt River mouth location.

4.7 Sensitivity runs: Bed level change – 2019 cross-sections

Most cross-sections in the baseline model were sourced from the 1998 cross-section survey (refer Section 3.2.3.1). The most recent cross-section survey of the Hutt River was used as part of the hydraulic model sensitivity testing. The survey was undertaken in 2019.

The 2019 cross-sections were implemented in the channel bed of the 1D cross-sections. Channel bed was defined as being between the two ‘bottom of bank’ markers (right bank and left bank) as flagged in the survey data.

Where 2019 survey was not available in the downstream area of the Hutt River (from chainage 49,898), 2014 survey data was utilised as the next most recent dataset.

Details of the sensitivity runs using the 2019 cross-sections are shown in the simulation matrix (Appendix A). An example cross-section from the bed level change model is shown in Figure 4.3.

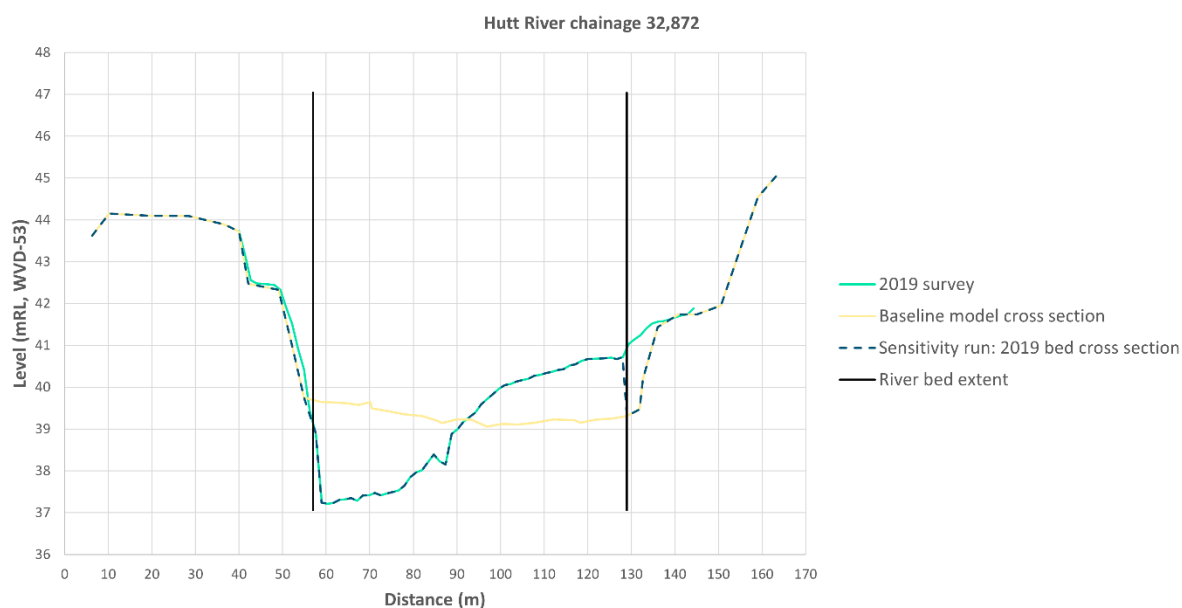


Figure 4.3: Example cross-section from 2019 cross-sections bed level change model

4.8 Sensitivity runs: Bed level change – Silverstream Weir removal

Partial and full removal of the Silverstream weir was simulated as a sensitivity test to understand the effects this structure has on flood flows and levels. The two sensitivity runs are summarised in Table 4.6. Further details of the scenarios run are provided in the simulation matrix in Appendix A.

Table 4.6: Bed level change Silverstream Weir sensitivity scenarios

Bed level change	Model scenario
50% Silverstream Weir removal	SHP-03
100% Silverstream Weir removal	SHP-04

The 50% removal was implemented at the 1D weir structure in the hydraulic model. The weir crest level was lowered by 50% of the height above the downstream cross-section. Additionally, the level of the upstream cross-section was lowered to account for sediment movement caused by changes to the weir. The change in weir geometry under 50% removal is shown in Figure 4.4.

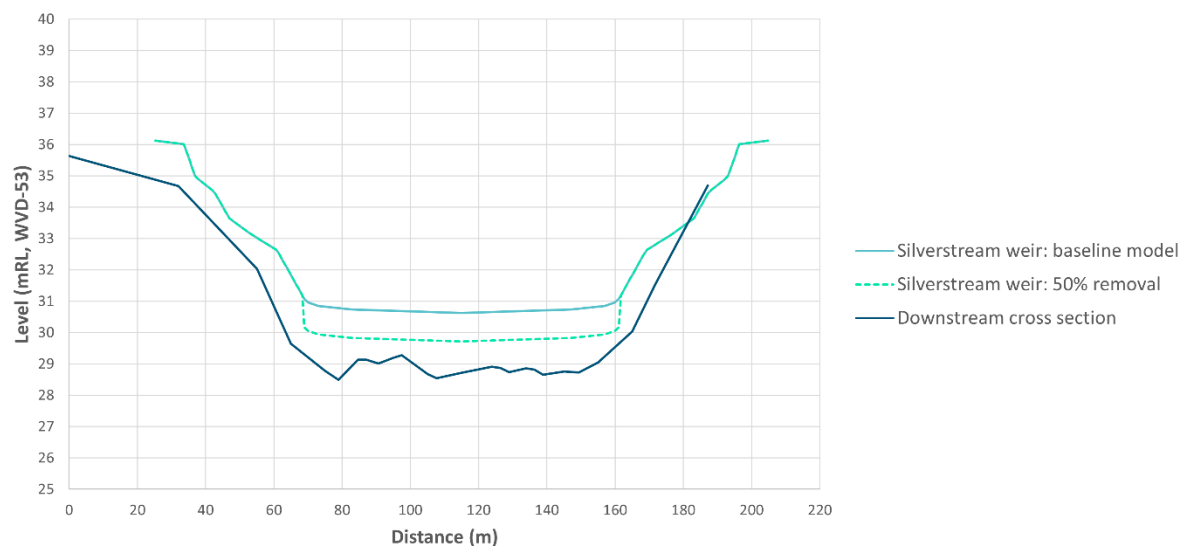


Figure 4.4: 50% removal of Silverstream Weir structure

The 100% removal scenario is implemented in the hydraulic model by removing the 1D weir structure entirely.

5 Hydraulic model results and outputs

5.1 Design run results: Design storms

For each of the design storm scenarios detailed in the simulation matrix in Appendix A, the results listed in Table 5.1 were generated and provided to GWRC digitally alongside this report and as geospatial (vector or raster) files:

Table 5.1: Model result outputs

Result	Name	Type	S.I. units	Note
Maximum 2D flood extent	FLOODEXTENT	Shapefile (.shp)	n/a	
Maximum 2D flood depth	MAXIND	Raster file (.asc)	Metres (m)	
Maximum 2D flood level	MAXWSL	Raster file (.asc)	m RL, WVD-53	
Maximum 2D flood velocity	MAXVEL	Raster file (.asc)	m/s	
Maximum 2D flood hazard	MAXHAZ	Raster file (.asc)	Integer, 1-6	Corresponding to H1-H6. Refer section 5.1.1.
Maximum 2D flood duration	MAXDURATION	Raster file (.asc)	Seconds (s)	Refer section 5.1.2.1 (WREMO mapping).
2D time to inundation ^A	TIMETOIND	Raster file (.asc)	Seconds (s)	Refer section 5.1.2.2 (WREMO mapping).

Note A: time to inundation produced for design storms only.

The maximum 2D flood extents for the 1,900 m³/s, 2,300 m³/s and 2,800 m³/s design flow events are shown in Figure 5.1.

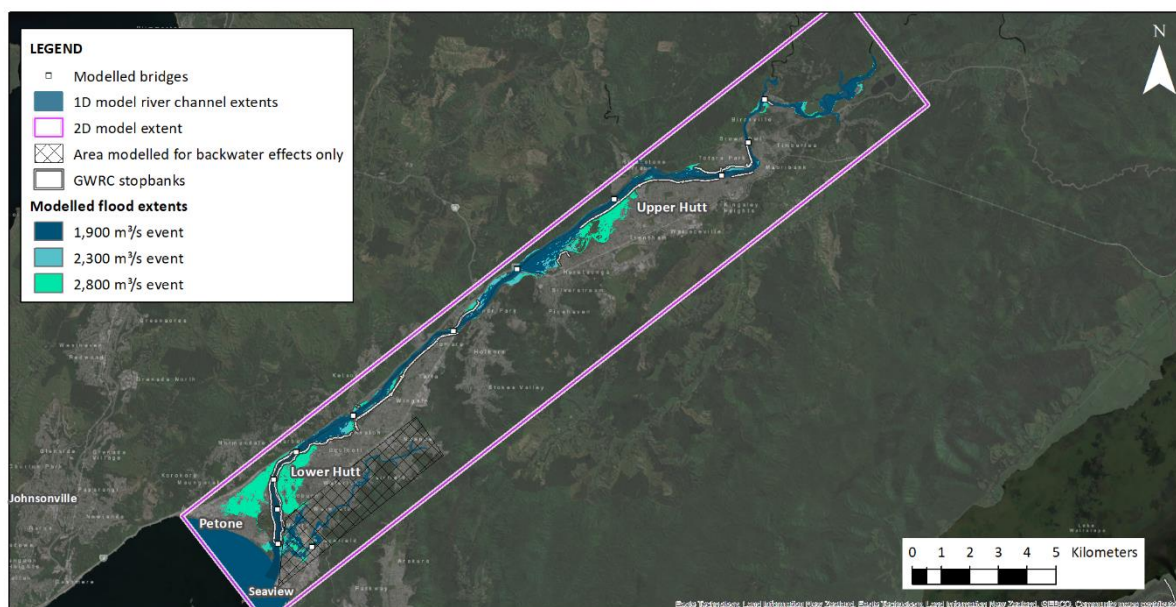


Figure 5.1: Baseline model flood extents for the three peak flow events

A long-section of the maximum 1D modelled water level for the 1,900 m³/s, 2,300 m³/s and 2,800 m³/s flow events are provided in Appendix C.

Tabulated 1D results of water level and velocity for each design storm are provided in Appendix C.

5.1.1 Flood hazard classification

Flood hazard for the Hutt River project is defined using the ARR (2016) flood hazard classification. This identifies six different hazard classes using a combination of flood depth and velocity. The classes are described in Table 5.2 and shown graphically in Figure 5.2. Where the depth and velocity product are required, the time-varying values are used (i.e. $Max(D \times V)$ is used, not $MaxD \times MaxV$).

Table 5.2: ARR (2016) hazard classes

Hazard class	Description
H1	Generally safe for people, vehicles, and buildings
H2	Unsafe for small vehicles
H3	Unsafe for vehicles, children, and the elderly
H4	Unsafe for people and vehicles
H5	Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust building types vulnerable to failure
H6	Unsafe for vehicles and people. All building types considered vulnerable to failure

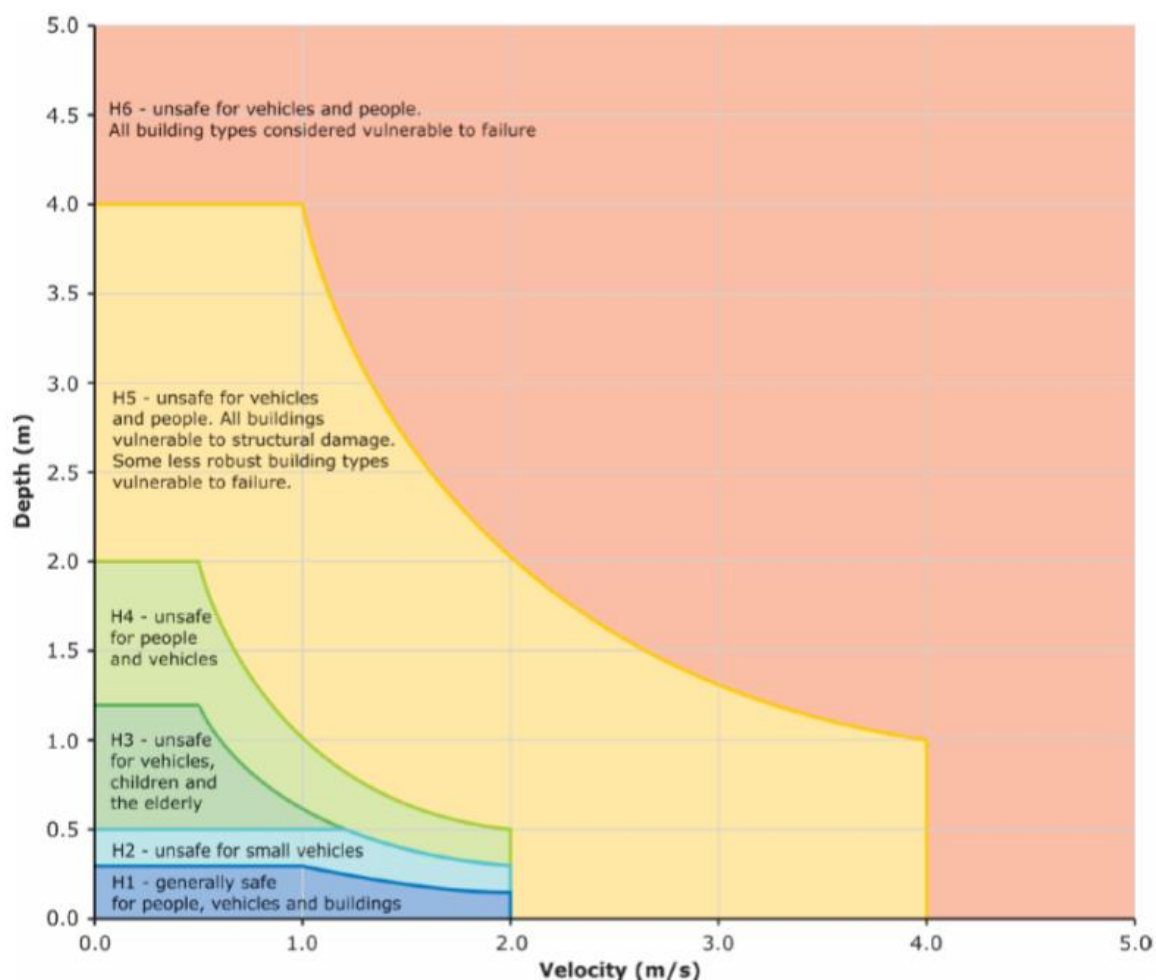


Figure 5.2: Australian Rainfall and Runoff (2016) hazard classification

5.1.2 WREMO mapping

GWRC provides relevant outputs to other parties such as Wellington Region Emergency Management Office (WREMO). The following sections detail the emergency management outputs (requested by GWRC) from the Hutt River model results. These were provided to GWRC as digital geospatial files alongside this report.

5.1.2.1 WREMO mapping: Duration of flooding

Duration of flooding (“MAXDURATION”) was generated for each design scenario. This is the time for which each 2D cell is ‘wet’ in the model simulation. For areas that do not drain completely, this will show the time from flooding until the end of the simulation. This is provided in seconds for each 2D cell.

5.1.2.2 WREMO mapping: Time to inundation

Time to inundation (“TIMETOIND”) was generated for each design scenario. This is defined as the first timestep from the start of the simulation at which the 2D cell is ‘wet’ in model simulation. This is provided in seconds for each flooded 2D cell.

5.1.2.3 WREMO mapping: Birchville Gauge

Mapped flood extents and hazard grids were produced for four different levels at the Birchville Gauge (refer Figure 3.8 for location of gauge). These gauge levels are shown in Table 5.3.

Table 5.3: Birchville Gauge scenarios

Gauge height at Birchville (m)	Description
3.5	First alarm level
4.0	Block Road floods
4.3	HCC carpark floods
5.0	Second alarm level

Note: Table from *Hutt River Hydraulic Modelling Scope* (GWRC, 2020)

For each of the gauge heights listed in Table 5.3, the corresponding flow at the gauge was determined using the rating curve for the gauge. The baseline model was run as a steady state simulation for each of these flows. This was to ensure the maximum water level for this flow is achieved across the entire model domain (i.e. so that the hydrograph propagates downstream).

As there is limited flooding in the 2D model domain at each of the gauge levels, the flood extents in the 1D model domain are approximated for each Birchville gauge scenario. These are generated using the 1D water level results at the cross-sections and a ground model of the river approximated using the 1998 surveyed sections.

5.2 Design run results: Residual hazard

The maximum 2D flood extent for all the 10 stopbank breach scenarios are shown in Figure 5.3. This extent is compared against the extents of the baseline model for the 2,800 m³/s peak flow event.

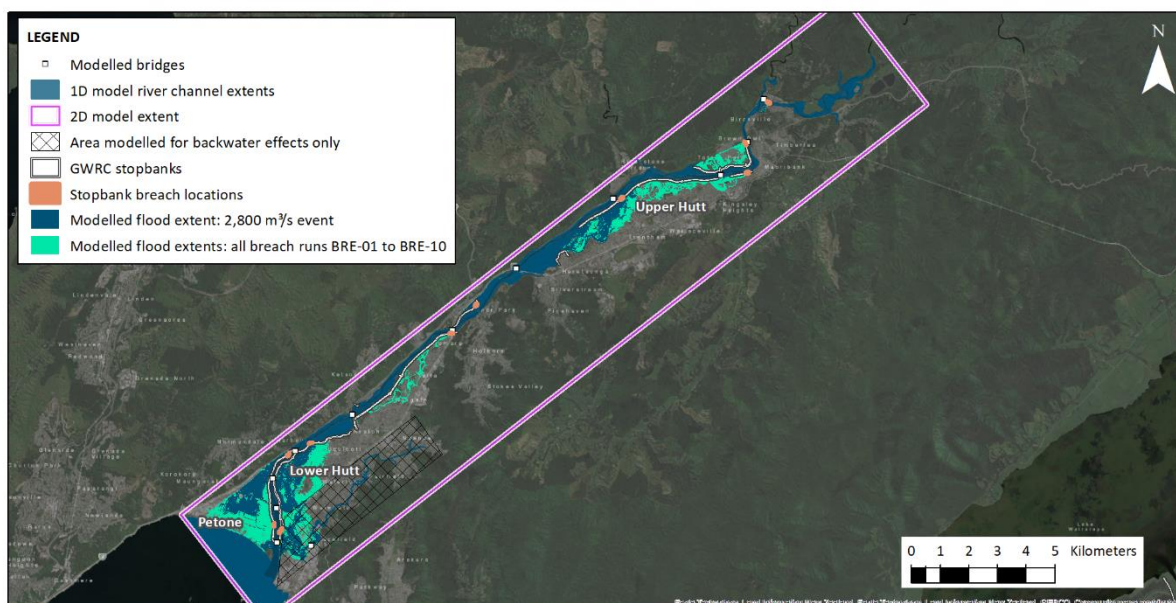


Figure 5.3: Breach scenario flood extents (all breach results combined)

For each of the breach scenarios detailed in the simulation matrix Appendix A, geospatial files (as described in Table 5.1) were generated and provided digitally to GWRC alongside this report.

5.3 Design run results: Areas benefitting from defences

The geospatial extent defining the ‘areas benefitting from defences’ for the 2,300 m³/s flow event is created by combining the maximum flood extents of all the stopbank down scenarios (Section 4.3). Areas benefitting from defences are shown in Figure 5.4 with the modelled flood extents of the baseline model 2,300 m³/s flow event for comparison. This extent was provided to GWRC alongside this report.

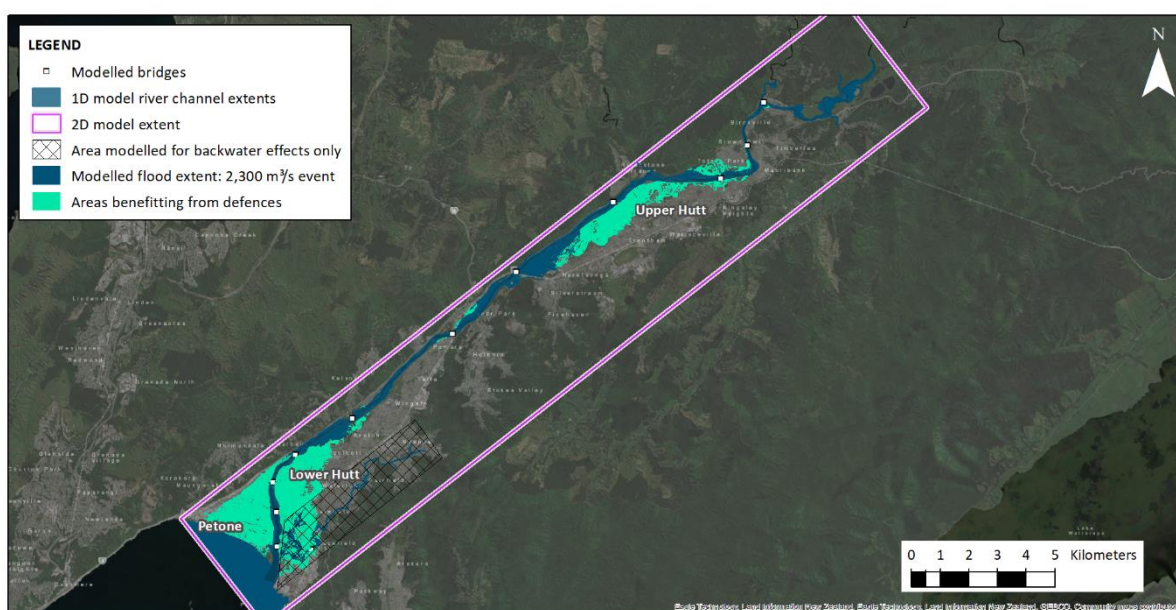


Figure 5.4: Areas benefitting from defences

5.4 Sensitivity run results: Freeboard and flood sensitive area

A freeboard workshop was held with GWRC on 1 September 2023 during which the results of the sensitivity runs were analysed. It was agreed that freeboard would be determined using the maximum of the results from all the sensitivity testing undertaken for relevant storm scenarios. This was mapped as a flood sensitive area (FSA) and provided to GWRC.

A short description of each of the sensitivity results is provided in Table 5.4. Figure 5.5 shows the difference in model results between the maximum of all sensitivity runs and the baseline model for the 2,800 m³/s event.

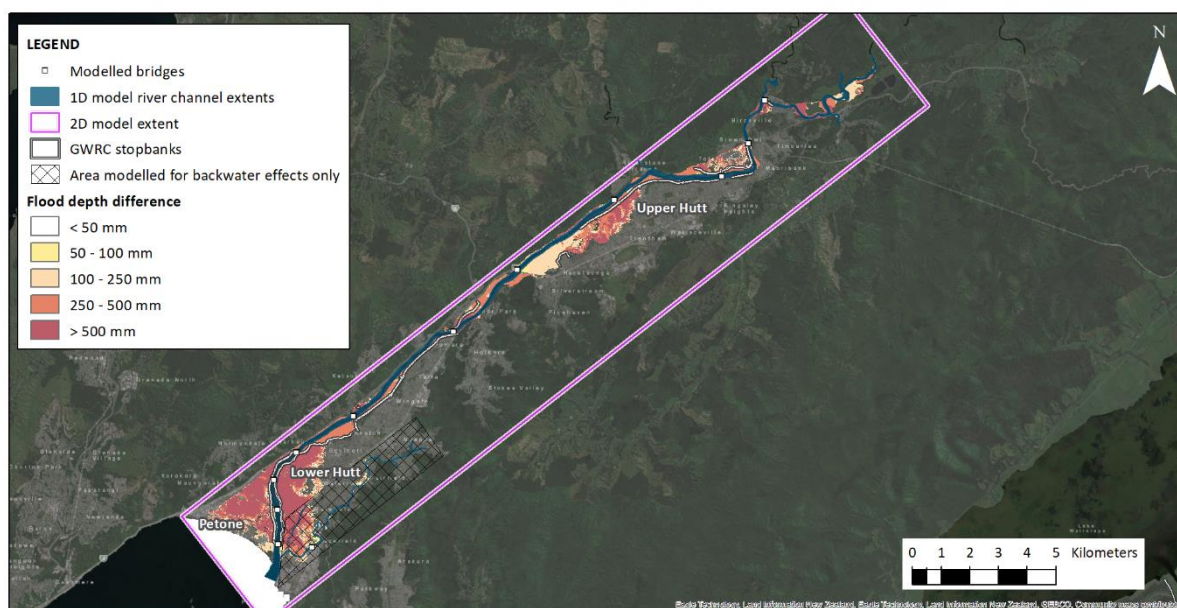


Figure 5.5: Freeboard displayed as flood depth difference between sensitivity results and baseline model results (2,800 m³/s flow event)

Table 5.4: Sensitivity analysis summary of results (2,800 m³/s event)

Sensitivity run	Results summary
Structure blockage (BLK)	• 2D water levels were elevated in local areas upstream of the bridges with debris blockage applied. Localised increases in depth were typically 100-500 mm. • Flooding extents were increased in Totara Park area. • Elevated water levels upstream of Moonshine bridge cause increased overtopping of the stopbank and larger flood extents in the Trentham area. Flood extent increases elevated depths by more than 500 mm in some areas. • Flood levels were elevated from downstream of Kennedy Good bridge, with increased overtopping of stopbanks causing larger flood extents in the downstream Lower Hutt/Petone areas. Flood extent increases elevated depths by more than 500 mm in some areas.
Increased roughness (RGH)	• 2D water levels were elevated upstream of Akatarawa bridge by up to 750 mm. • Water levels between Totara Park and Moonshine bridges were increased between 250-500 mm. Flooding extents were increased in Totara Park area. • Water levels between Moonshine bridge and Silverstream bridge were typically increased 100-250 mm. • Downstream of Silverstream bridge, water levels were elevated above 250 mm. There were large increases in flood extents in the downstream Lower Hutt/Petone areas.
Downstream boundary (DWN)	• The downstream boundary sensitivity runs were evaluated for the 5% AEP storm. They were not included in the freeboard/FSA analysis, which was undertaken for the 2,300 and 2,800 m³/s events.
Bed level changes (SHP)	• Elevated water levels upstream of Moonshine bridge caused increased overtopping of the stopbank and larger flood extents in the Trentham area. Flood extent increases elevated depths by more than 500 mm in some areas. • Flood levels were elevated locally upstream of Kennedy Good bridge. • Flood levels were elevated downstream of Melling bridge, with increased overtopping of stopbanks causing larger flood extents in the downstream Lower Hutt/Petone areas. Flood extent increases elevated depths by more than 500 mm in some areas.

For each of the sensitivity scenarios detailed in the simulation matrix in Appendix A, geospatial files of model results were generated and provided to GWRC digitally alongside this report with all model files.

5.5 Calibration and verification

Results of DHI's calibration and verification exercise are described in *Hutt Model Upgrade Hydraulic Modelling, Final Report* (DHI, November 2018). In summary:

- Calibration was carried out by DHI for the 2018 'Lower' and 'Upper' models using the 27 October 1998 event (peak flow of 1,540 m³/s at Taita gorge; estimated to be between a 2% - 5% AEP event¹⁰).
- The 'Lower' model was verified using the following storm events:
 - 5 January 2005
 - o peak flow of 1,562 m³/s at Taita gorge
 - o estimated to be between a 2% - 5% AEP event¹⁰
 - 17 June 2002
 - o peak flow approximately 1,000 m³/s at Taita gorge
 - o estimated to be greater than a 20% AEP event¹⁰
- The 'Upper' model was verified using:
 - 5 January 2005
 - o peak flow of 1,562 m³/s at Taita gorge
 - o estimated to be between a 2% - 5% AEP event¹⁰

There were only six debris marks available for the 2005 event in the 'Upper' model domain.

The final combined Hutt River model *UHLH_202207_V054* has not been re-calibrated or verified as part of this project.

5.6 Model performance

The hydraulic model developed for this project has ongoing stability issues. These have been minimised and their impacts considered alongside GWRC and their peer reviewers during the modelling process. The following text provides further information about the instabilities and their resolutions for transparency reasons (and to assist others working with the model):

- Small changes to some inputs, for example during sensitivity testing, may cause the model simulation to fail. To overcome this, changes that were only sufficient to allow the simulations to progress to completion were made. Changes were only made where these were deemed to have minimal impact on overall results. These changes were recorded and can be identified by the versioning suffix (e.g. 'v5') included in the model name in the simulation matrix.
- For each completed model run, results were checked to ensure overall mass balance remained below 5%. Instabilities and mass balance errors were present along the 1D/2D model interface.
- Model outputs were processed using the time-varying results rather than the absolute maximum over the duration of the simulation. This allowed the results to be more readily used for comparative purposes by ignoring large depth or velocity spikes caused by localised instabilities. These instabilities do not affect the final output (i.e. maxima results envelope the peak instability).

¹⁰ There is no reference to return periods or annual exceedance probability in the DHI reporting. The approximate AEP of the calibration and validation events provided here were estimated from GWRC's environmental monitoring site statistics *Flood Return Periods* <https://graphs.gw.govt.nz/?siteName=Hutt%20River%20at%20Taita%20Gorge&dataSource=Flow> (accessed December 2023).

5.7 Confidence in results

An estimate of confidence in the model results is provided for different aspects of the model build and performance in Table 5.5.

Table 5.5: Confidence estimate

Model aspect	Qualitative assessment	Confidence score
Availability and quality of input data	<u>Floodplain</u> : Input DEM is of good resolution. DEM was sampled at a lower resolution.	Medium
	<u>Stopbanks/flood walls</u> : Top of stopbanks and flood walls are enforced in the ground model, typically from survey.	High
	<u>Channel</u> : Cross-sections are over 20 years old and rely on regular and accurate external maintenance.	Medium/Low
Availability and quality of calibration data	Flow and debris survey data available for one event which is estimated to be between a 2% and 5% AEP event.	Medium
Availability and quality of validation data	Flow and debris survey data available for two events, estimated to be: - Between a 2% and 5% AEP event (January 2005) - greater than a 20% AEP event (June 2002) Flow information and debris survey marks are limited for the upstream portion of the model (only six debris marks for 2005, no data for 2002).	Medium
Calibration fit	Calibration was not undertaken for the updated model UHLH_202207_V054.	N/A
Validation fit	Validation was not undertaken for the updated model UHLH_202207_V054.	N/A
Model sensitivity	The model is sensitive to changes in manning's n roughness, bridge blockage and changes to the channel cross-sections (as would be expected). Relatively small increases in water level can impact the volume of water overtopping the stopbank structures. This can increase the flood extent in the floodplain. Uncertainties are mitigated through flood sensitive area.	Medium
Model performance and mass balance	Overall model mass balance was within acceptable ranges. Model has ongoing stability issues.	Medium
Overall qualitative confidence level		Medium

6 Applicability

This report has been prepared for the exclusive use of our client Greater Wellington Regional Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

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Appendix A Hutt River simulation matrix

- **Appendix A Table 1:** Hutt River simulation matrix (model version *UHLH_202207_V054*)

Appendix A Table 1: Hutt River simulation matrix (model version *UHLH_202207_V054*)

#	Type	Scenario name	Scenario description: changes to hydraulic model	Boundary conditions: inflows	Boundary conditions: tide
1	Design run: Design storm	UHLH_202207_V054 D 2800CUMEC F	Baseline model	2,800 m³/s	20% AEP tide
2	Design run: Design storm	UHLH_202207_V054 D 2300CUMEC F	Baseline model	2,300 m³/s	20% AEP tide
3	Design run: Design storm	UHLH_202207_V054 D 1900CUMEC F	Baseline model	1,900 m³/s (1% AEP)	20% AEP tide
4	Design run: Design storm	UHLH_202207_V054 D 2PC-AEP-CC F	Baseline model	2% AEP with CC ^A	20% AEP tide +1m SLR ^B
5	Design run: Design storm	UHLH_202207_V054 D 2PC-AEP F	Baseline model	2% AEP	20% AEP tide
6	Design run: Design storm	UHLH_202207_V054 D 5PC-AEP-CC F	Baseline model	5% AEP with CC	20% AEP tide +1m SLR
7	Design run: Design storm	UHLH_202207_V054 D 5PC-AEP F	Baseline model	5% AEP	20% AEP tide
8	Design run: Design storm	UHLH_202207_V054 D 10PC-AEP-CC F	Baseline model	10% AEP with CC	20% AEP tide +1m SLR
9	Design run: Design storm	UHLH_202207_V054 D 10PC-AEP F	Baseline model	10% AEP	20% AEP tide
10	Design run: Design storm	UHLH_202207_V054 D 20PC-AEP-CC F	Baseline model	20% AEP with CC	20% AEP tide +1m SLR
11	Design run: Design storm	UHLH_202207_V054 D 20PC-AEP F	Baseline model	20% AEP	20% AEP tide
12	Design run: Design storm	UHLH_202207_V054 D 39PC-AEP-CC F	Baseline model	39% AEP with CC	20% AEP tide +1m SLR
13	Design run: Design storm	UHLH_202207_V054 D 39PC-AEP F	Baseline model	39% AEP	20% AEP tide
14	Design run: Residual hazard	UHLH_202207_V054 R-BRE-01 2800CUMEC F	Stopbank breach at Ava to Estuary Bridge Stopbank	2,800 m³/s	20% AEP tide
15	Design run: Residual hazard	UHLH_202207_V054 R-BRE-02 2800CUMEC F	Stopbank breach at Boulcott Stopbank	2,800 m³/s	20% AEP tide
16	Design run: Residual hazard	UHLH_202207_V054 R-BRE-03 2800CUMEC F (v5) ^C	Stopbank breach at Delaware Memphis Grove Stopbank	2,800 m³/s	20% AEP tide
17	Design run: Residual hazard	UHLH_202207_V054 R-BRE-04 2800CUMEC F (v3)	Stopbank breach at Gemstone Drive Stopbank	2,800 m³/s	20% AEP tide
18	Design run: Residual hazard	UHLH_202207_V054 R-BRE-05 2800CUMEC F	Stopbank breach at High Street Harcourt Werry Drive Stopbank	2,800 m³/s	20% AEP tide
19	Design run: Residual hazard	UHLH_202207_V054 R-BRE-06 2800CUMEC F	Stopbank breach at Manor Park Stopbank	2,800 m³/s	20% AEP tide
20	Design run: Residual hazard	UHLH_202207_V054 R-BRE-07 2800CUMEC F (v6)	Stopbank breach at Melling Left Bank Stopbank	2,800 m³/s	20% AEP tide
21	Design run: Residual hazard	UHLH_202207_V054 R-BRE-08 2800CUMEC F (v3)	Stopbank breach at Melling to Ava Right Bank Stopbank	2,800 m³/s	20% AEP tide
22	Design run: Residual hazard	UHLH_202207_V054 R-BRE-09 2800CUMEC F (v2)	Stopbank breach at River Road Longfellow Street Stopbank	2,800 m³/s	20% AEP tide
23	Design run: Residual hazard	UHLH_202207_V054 R-BRE-10 2800CUMEC F (v3)	Stopbank breach at River Road Stopbank	2,800 m³/s	20% AEP tide
24	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-01 2300CUMEC F	Stopbank ‘down’ run - Kentucky Street stopbank removed	2,300 m³/s	20% AEP tide
25	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-02 2300CUMEC F (v2)	Stopbank ‘down’ run – River Road stopbank removed	2,300 m³/s	20% AEP tide
26	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-03 2300CUMEC F (v2)	Stopbank ‘down’ run – River Road Longfellow Street stopbank removed	2,300 m³/s	20% AEP tide
27	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-04 2300CUMEC F	Stopbank ‘down’ run – River Road Longfellow Street, Brentwood Street, Whirinaki Crescent Perry Street stopbanks removed	2,300 m³/s	20% AEP tide
28	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-05 2300CUMEC F (v3)	Stopbank ‘down’ run – Manor Park, Mary Huse Grove stopbanks stopbank removed	2,300 m³/s	20% AEP tide
29	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-06 2300CUMEC F	Stopbank ‘down’ run – High Street Harcourt Werry Drive stopbank removed	2,300 m³/s	20% AEP tide
30	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-07 2300CUMEC F	Stopbank ‘down’ run – High Street Harcourt Werry Drive, Fairway Drive stopbanks removed	2,300 m³/s	20% AEP tide
31	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-08 2300CUMEC F	Stopbank ‘down’ run – Boulcott stopbank removed	2,300 m³/s	20% AEP tide
32	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-09 2300CUMEC F	Stopbank ‘down’ run – DS Melling Left Bank stopbank removed	2,300 m³/s	20% AEP tide

#	Type	Scenario name	Scenario description: changes to hydraulic model	Boundary conditions: inflows	Boundary conditions: tide
33	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-10 2300CUMEC F (v2)	Stopbank 'down' run – Melling to Ava Right Bank stopbank removed	2,300 m³/s	20% AEP tide
34	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-11 2300CUMEC F	Stopbank 'down' run – Melling to Ava Right Bank, Ava to Estuary Bridge Right Bank stopbanks removed	2,300 m³/s	20% AEP tide
35	Design run: Areas benefitting from defences	UHLH_202207_V054 R-DWN-12 2300CUMEC F (v2)	Stopbank 'down' run – All stopbanks and floodwalls removed	2,300 m³/s	20% AEP tide
36	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-01 2800CUMEC F	20% total design debris blockage at Pomare Rail Bridge	2,800 m³/s	20% AEP tide
37	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-01 2300CUMEC F	20% total design debris blockage at Pomare Rail Bridge	2,300 m³/s	20% AEP tide
38	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-02 2800CUMEC F	20% total design debris blockage at Kennedy Good Bridge	2,800 m³/s	20% AEP tide
39	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-02 2300CUMEC F	20% total design debris blockage at Kennedy Good Bridge	2,300 m³/s	20% AEP tide
40	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-03 2800CUMEC F	20% total design debris blockage at Melling Bridge	2,800 m³/s	20% AEP tide
41	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-03 2300CUMEC F	20% total design debris blockage at Melling Bridge	2,300 m³/s	20% AEP tide
42	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-04 2800CUMEC F	20% total design debris blockage at Ewen Bridge	2,800 m³/s	20% AEP tide
43	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-04 2300CUMEC F	20% total design debris blockage at Ewen Bridge	2,300 m³/s	20% AEP tide
44	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-05 2800CUMEC F	20% total design debris blockage at Ava Bridge	2,800 m³/s	20% AEP tide
45	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-05 2300CUMEC F	20% total design debris blockage at Ava Bridge	2,300 m³/s	20% AEP tide
46	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-06 2800CUMEC F	20% total design debris blockage at Akatarawa Bridge	2,800 m³/s	20% AEP tide
47	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-06 2300CUMEC F	20% total design debris blockage at Akatarawa Bridge	2,300 m³/s	20% AEP tide
48	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-07 2800CUMEC F	20% total design debris blockage at Norbert Street Bridge	2,800 m³/s	20% AEP tide
49	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-07 2300CUMEC F	20% total design debris blockage at Norbert Street Bridge	2,300 m³/s	20% AEP tide
50	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-08 2800CUMEC F (v3)	20% total design debris blockage at Moonshine Bridge	2,800 m³/s	20% AEP tide
51	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-08 2300CUMEC F	20% total design debris blockage at Moonshine Bridge	2,300 m³/s	20% AEP tide
52	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-09 2800CUMEC F	20% total design debris blockage at Silverstream Bridge	2,800 m³/s	20% AEP tide
53	Sensitivity run: Structure blockage	UHLH_202207_V054 S-BLK-09 2300CUMEC F	20% total design debris blockage at Silverstream Bridge	2,300 m³/s	20% AEP tide
54	Sensitivity run: Roughness	UHLH_202207_V054 S-RGH-01 2800CUMEC F	Channel roughness (manning's n) reduced by 20%	2,800 m³/s	20% AEP tide
55	Sensitivity run: Roughness	UHLH_202207_V054 S-RGH-01 2300CUMEC F	Channel roughness (manning's n) reduced by 20%	2,300 m³/s	20% AEP tide
56	Sensitivity run: Roughness	UHLH_202207_V054 S-RGH-02 2800CUMEC F	Channel roughness (manning's n) increased by 20%	2,800 m³/s	20% AEP tide
57	Sensitivity run: Roughness	UHLH_202207_V054 S-RGH-02 2300CUMEC F	Channel roughness (manning's n) increased by 20%	2,300 m³/s	20% AEP tide
58	Sensitivity run: Roughness	UHLH_202207_V054 S-RGH-03 2800CUMEC F	Floodplain roughness (manning's n) increased by 20%	2,800 m³/s	20% AEP tide
59	Sensitivity run: Roughness	UHLH_202207_V054 S-RGH-03 2300CUMEC F	Floodplain roughness (manning's n) increased by 20%	2,300 m³/s	20% AEP tide
60	Sensitivity run: Roughness	UHLH_202207_V054 S-RGH-04 2800CUMEC F	Floodplain roughness (manning's n) reduced by 20%	2,800 m³/s	20% AEP tide
61	Sensitivity run: Roughness	UHLH_202207_V054 S-RGH-04 2300CUMEC F	Floodplain roughness (manning's n) reduced by 20%	2,300 m³/s	20% AEP tide
62	Sensitivity run: Downstream boundary	UHLH_202207_V054 S-BDY-01 5PC-AEP F	Baseline model	5% AEP	1% AEP tide
63	Sensitivity run: Downstream boundary	UHLH_202207_V054 S-BDY-02 5PC-AEP F	Baseline model	5% AEP	MHWS ^D + RSLR ^E to 2150, SSP8.5 ^F
64	Sensitivity run: Downstream boundary	UHLH_202207_V054 S-BDY-03 5PC-AEP F	Baseline model	5% AEP	1% AEP tide + RSLR to 2070, SSP8.5
65	Sensitivity run: Downstream boundary	UHLH_202207_V054 S-BDY-04 5PC-AEP F	Baseline model	5% AEP	1% AEP tide + RSLR to 2150, SSP4.5
66	Sensitivity run: Downstream boundary	UHLH_202207_V054 S-BDY-05 5PC-AEP F	Baseline model	5% AEP	1% AEP tide + RSLR to 2150, SSP8.5
67	Sensitivity run: Bed level change 1	UHLH_202207_V054 S-SHP-01 2800CUMEC F (v4)	Channel bed updated with 2019 surveyed cross-sections	2,800 m³/s	20% AEP tide
68	Sensitivity run: Bed level change 1	UHLH_202207_V054 S-SHP-01 2300CUMEC F (v4)	Channel bed updated with 2019 surveyed cross-sections	2,300 m³/s	20% AEP tide
69	Sensitivity run: Bed level change 3	UHLH_202207_V054 S-SHP-03 2800CUMEC F	50% removal of Silverstream weir	2,800 m³/s	20% AEP tide
70	Sensitivity run: Bed level change 3	UHLH_202207_V054 S-SHP-03 2300CUMEC F	50% removal of Silverstream weir	2,300 m³/s	20% AEP tide
71	Sensitivity run: Bed level change 3	UHLH_202207_V054 S-SHP-03 1900CUMEC F	50% removal of Silverstream weir	1,900 m³/s (1% AEP)	20% AEP tide

#	Type	Scenario name	Scenario description: changes to hydraulic model	Boundary conditions: inflows	Boundary conditions: tide
72	Sensitivity run: Bed level change 4	UHLH_202207_V054 S-SHP-03 2800CUMEC F	100% removal of Silverstream weir	2,800 m³/s	20% AEP tide
73	Sensitivity run: Bed level change 4	UHLH_202207_V054 S-SHP-03 2300CUMEC F	100% removal of Silverstream weir	2,300 m³/s	20% AEP tide
74	Sensitivity run: Bed level change 4	UHLH_202207_V054 S-SHP-03 1900CUMEC F	100% removal of Silverstream weir	1,900 m³/s (1% AEP)	20% AEP tide

Note A: ‘CC’ = climate change

Note B: ‘SLR’ = sea level rise

Note C: additional versioning suffix (e.g. ‘v5’) denotes where minor changes have been made to the model to ensure it runs to completion and the results can be used. This is due to ongoing stability issues with the model

Note D: MHWS = mean high-water springs

Note E: RSLR = relative sea level rise. Vertical land movement is included in the boundary condition and not the ground model itself

Note F: SSP = shared socio-economic pathway. Each SSP comprises of socio-economic assumptions and changes that influence future emission trajectories

Appendix B Hutt River hydraulic structures

- **Appendix B Table 1: Modelled Hutt River bridges**
- **Appendix B Table 2: Modelled Hutt River weirs**

Appendix B Table 1: Modelled Hutt River bridges

Bridge name	Modelled chainage	Bridge equations			Bridge details			Overtopping details		Blockage details		Resistance value, Manning's n	Debris build up allowance in baseline model	Data source details
		Type	Submergence	Overflow	Waterway length (m)	Bridge slope	Soffit level (mRL)	Overtop level (mRL)	Overtopping length (m)	Piers (Y/N)	Blockage Factor			
Akatarawa Bridge	23,014	Energy Equation	FHWA WSPRO	Mike11 Weir	11.3	0.3%	83.88	84.23	62.5	Y	15.9%	0.043	- 10% waterway blocked - soffit reduced 0.5m	Bridge details have been taken from survey drawing HR-4055-44
Norbert Street Bridge	24,813	Energy Equation	Energy Equation	FHWA WSPRO	4.0	0.3%	77.10	78.60	100.0	N		0.046	- soffit reduced 0.5m - overflow increased 0.5m	Bridge details are from drawings shown in 2018 DHI report. Single 0.6 m pier outside of main conveyance channel is not considered for debris blockage. Debris blockage at railings included following peer review comments (March 2022).
Totara Park Bridge	26,951	Energy Equation	Energy Equation	FHWA WSPRO	10.0	0.3%	66.67	69.02	175.0	Y	14.0%	0.033	- 10% waterway blocked - soffit reduced 0.5m	Bridge details have been taken from survey drawing HR-3243-62 and interpolated 1998 sections.
Moonshine Bridge	31,140	Energy Equation	Energy Equation	FHWA WSPRO	12.0	0.0%	52.15	54.20	90.0	Y	18.9%	0.033	- 10% waterway blocked - soffit reduced 0.5m	Bridge details have been taken from survey drawing HR-3243-61. Cross section is orthogonal to flow, no additional skew applied.
Silverstream Road Bridge*	35,400	Energy Equation	FHWA WSPRO	FHWA WSPRO	15.0	0.3%	37.00	39.56	175.00	Y	14.0%	0.034	- 10% waterway blocked - soffit reduced 0.5m	Bridge details have been taken from survey drawing HR-2255-103,104 (1987). Blockage factor also accounts for skew.
Pomare Bridge	38,561	Energy Equation	Energy Equation	n/a	15.0	0.3%	29.50	n/a	n/a	Y	24.0%	0.036	- 10% waterway blocked - soffit reduced 0.5m	Bridge details have been taken from survey drawing HR-2255-102. Blockage factor also accounts for skew.
Kennedy Good Bridge	43,209	Energy Equation	Energy Equation	n/a	11.0	0.3%	15.05	n/a	n/a	Y	16.9%	0.036	- 10% waterway blocked - soffit reduced 0.5m	Bridge details have been taken from survey drawing HR-2255-101, 1998 surveyed cross sections, and aerial photography.
Melling Bridge	45,599	Energy Equation	Energy Equation	Energy Equation	15.0	0.3%	9.35	11.72	n/a	Y	12.3%	0.040	- 10% waterway blocked - soffit reduced 0.5m	Bridge details have been taken from survey drawing HR-2255-100 and 1998 surveyed cross sections.
Ewen Bridge	46,891	Energy Equation	Energy Equation	n/a	24.0	0.3%	8.00	n/a	n/a	Y	16.5%	0.037	- 10% waterway blocked - soffit reduced 0.5m	Bridge details have been taken from survey drawing HR-5353/19, 1998 surveyed cross sections and aerial photography. Cross section is orthogonal to flow, no additional skew applied.
Ava Bridge**	47,982	FHWA WSPRO	Energy Equation	Energy Equation	15.0	0.3%	4.10	6.10	n/a	Y	28.0%	0.034	- 10% waterway blocked - soffit reduced 0.5m	2018 DHI report notes that the model includes works to widen river and remove outlet channel. These are not available in bridge drawings. Skew has not been represented following calibration; assumes flow is already skewed when it hits the structure.
Estuary Bridge	49,197	Bridge Piers (Nagler)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	n/a	n/a	- 10% waterway blocked	Bridge details have been taken from survey drawing HR-2255-97. Limited details due to calculation type chosen. Opening width is 154.1m, with lens-shape piers.

Notes

*Note 1. The adjacent railway bridge is not modelled as the road bridge is the main constriction.

**Note 2. Bridge opening type = I

Appendix B Table 2: Modelled Hutt River weirs

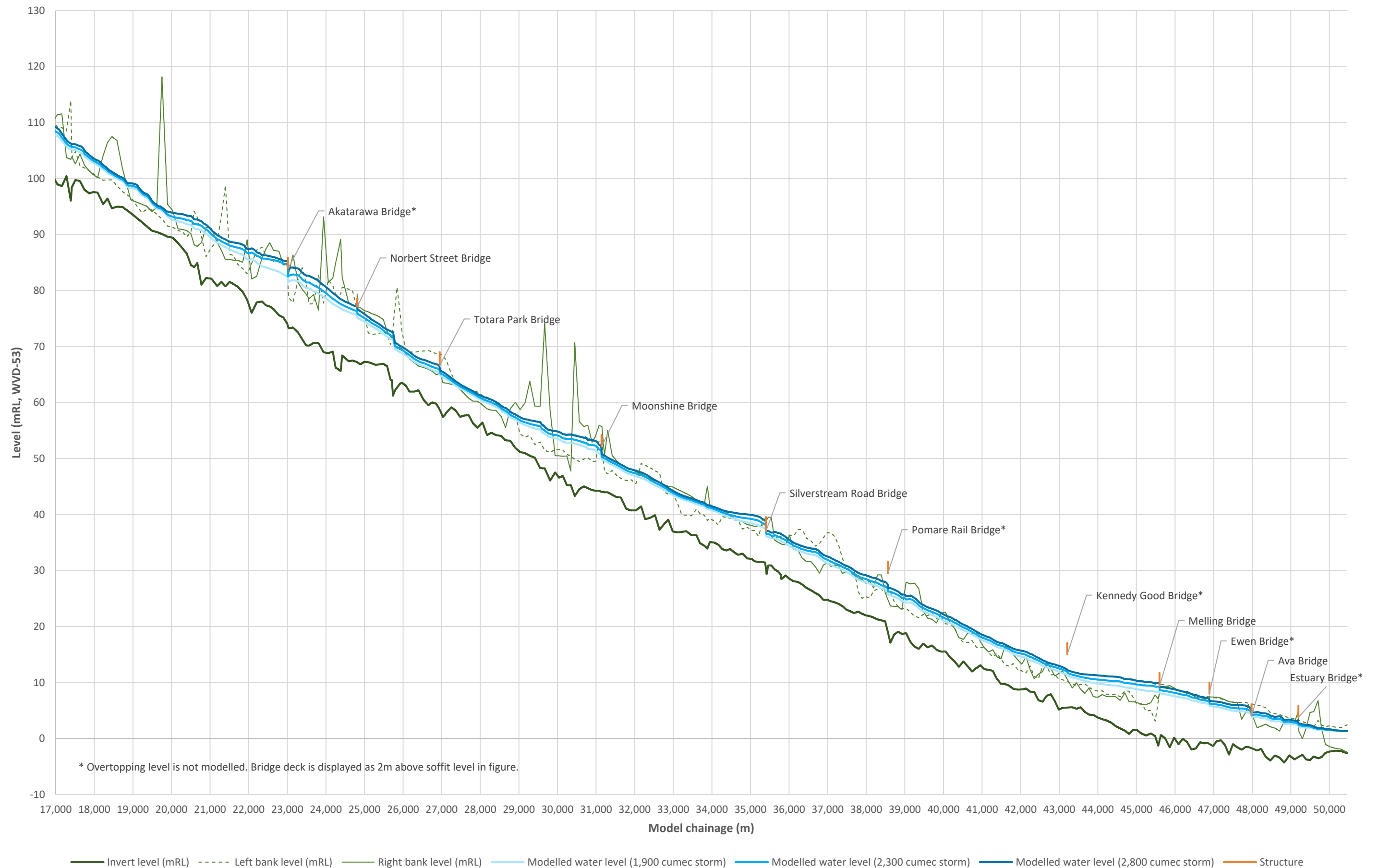
Bridge name	Modelled chainage	Weir equations		Weir geometry	Data source details
		Type 1	Type 2		
Silverstream Weir	35,795	Regular	Broad crested weir	Structure: Hutt - 35795.0000 - Silverstream Weir Cross Section: Hutt - HUTT2013DESIGN - 35793.0000 Structure: Hutt - 35795.0000 - Silverstream Weir Cross Section: Hutt - HUTT2013DESIGN - 35797.0000	Weir details have been taken from survey drawing HR-5594 (2022)
AkatarawaBr Deck	23,014	Regular	Broad crested weir	Refer to Akatarawa bridge structure for additional details	

Appendix C Model results

- **Appendix C Figure 1: Hydraulic model 1D long-section results (water level)**
- **Appendix C Figure 2: Hydraulic model 1D long-section results (water level) – chainage 17,000 – 28,000**
- **Appendix C Figure 3: Hydraulic model 1D long-section results (water level) – chainage 28,000 – 39,000**
- **Appendix C Figure 4: Hydraulic model 1D long-section results (water level) – chainage 39,000 – 50,000**
- **Appendix C Table 1: 1D model results (water level)**
- **Appendix C Table 2: 1D model results (velocity)**

Hutt River

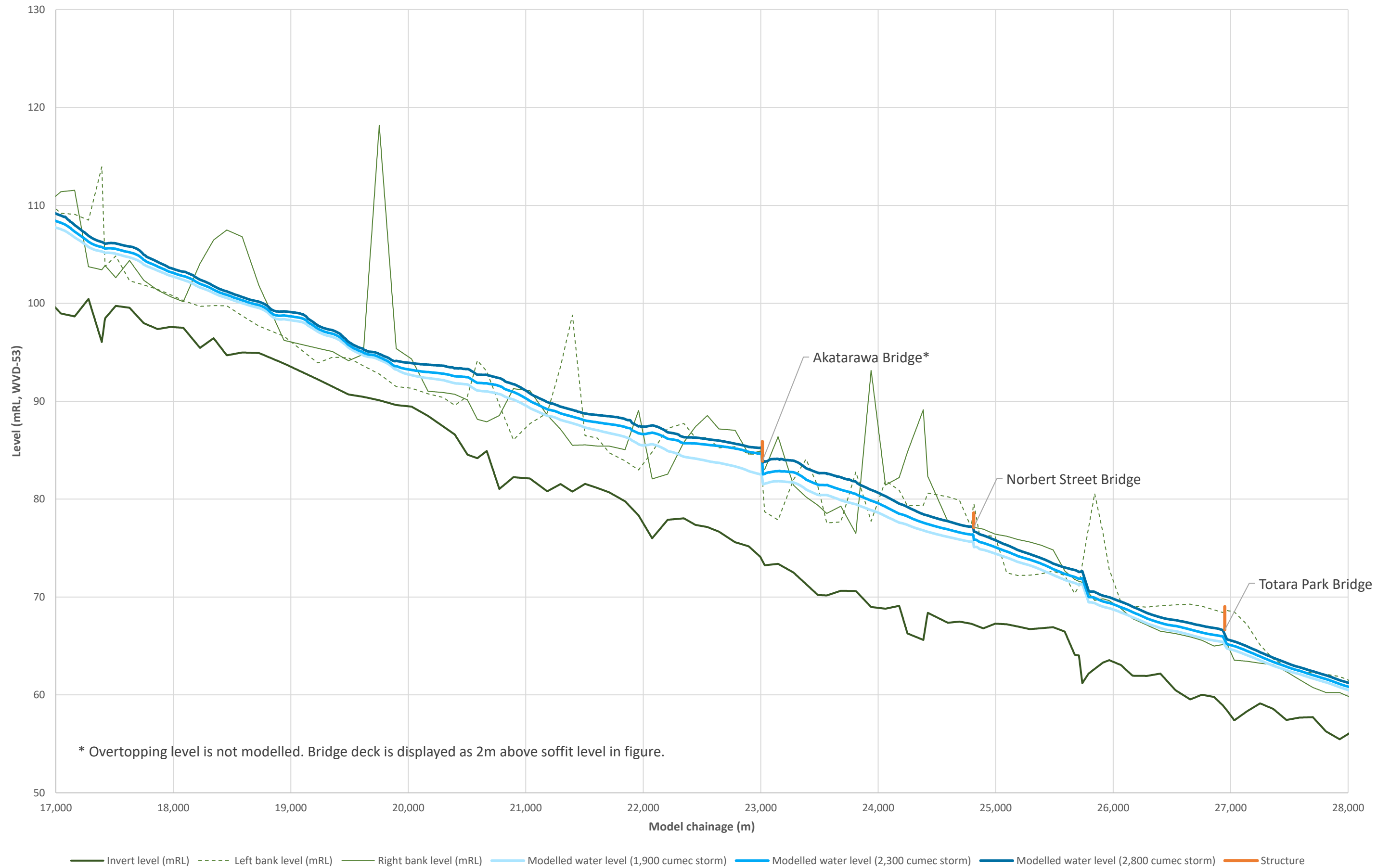
Model version: UHLH_202207_V054_D



Appendix C Figure 1: Hydraulic model 1D long-section results (water level)

Hutt River - Chainage 17,000 - 28,000

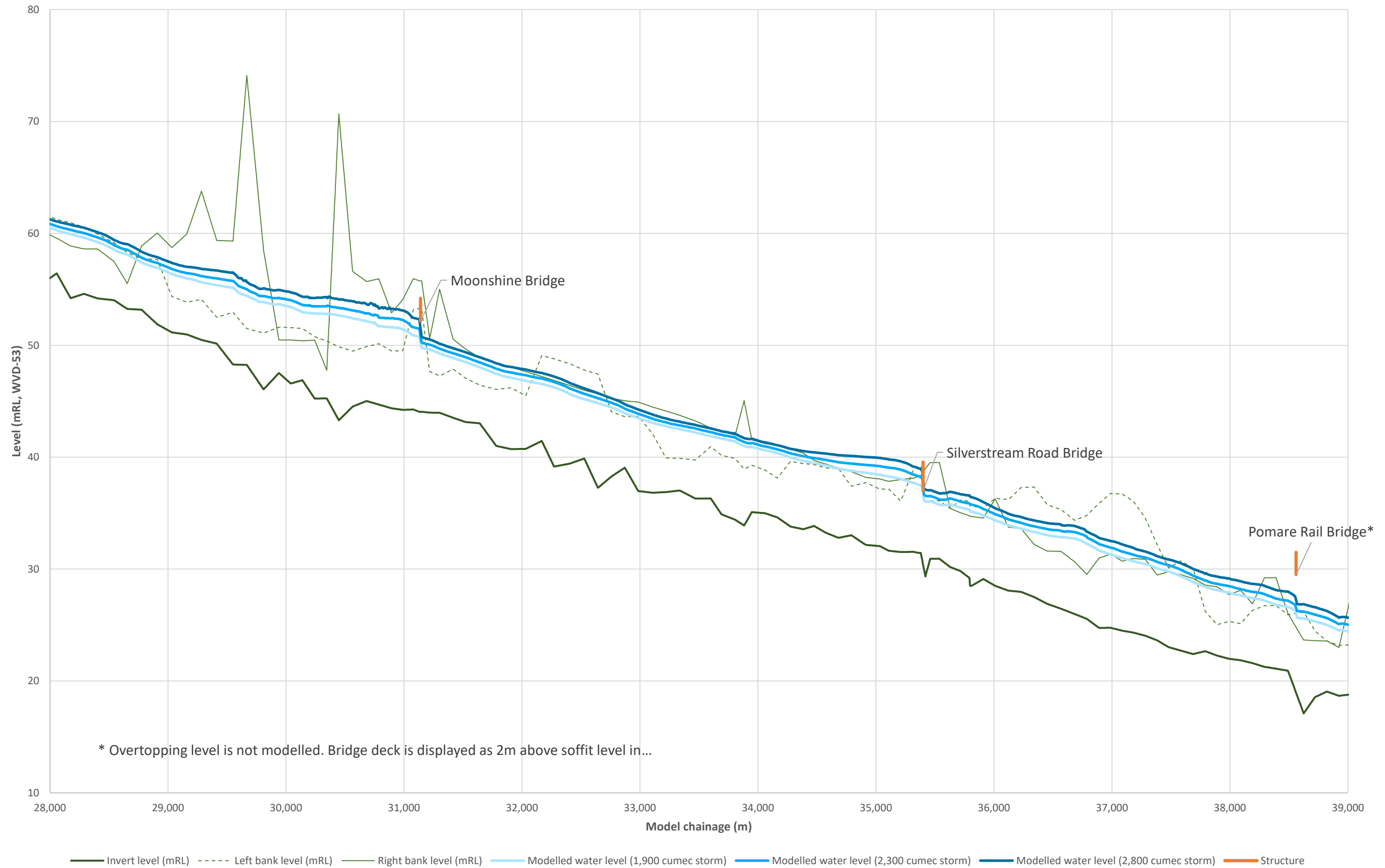
Model version: UHLH_202207_V054_D



Appendix C Figure 2: Hydraulic model 1D long-section results (water level) - chainage 17,000 - 28,000

Hutt River - Chainage 28,000 - 39,000

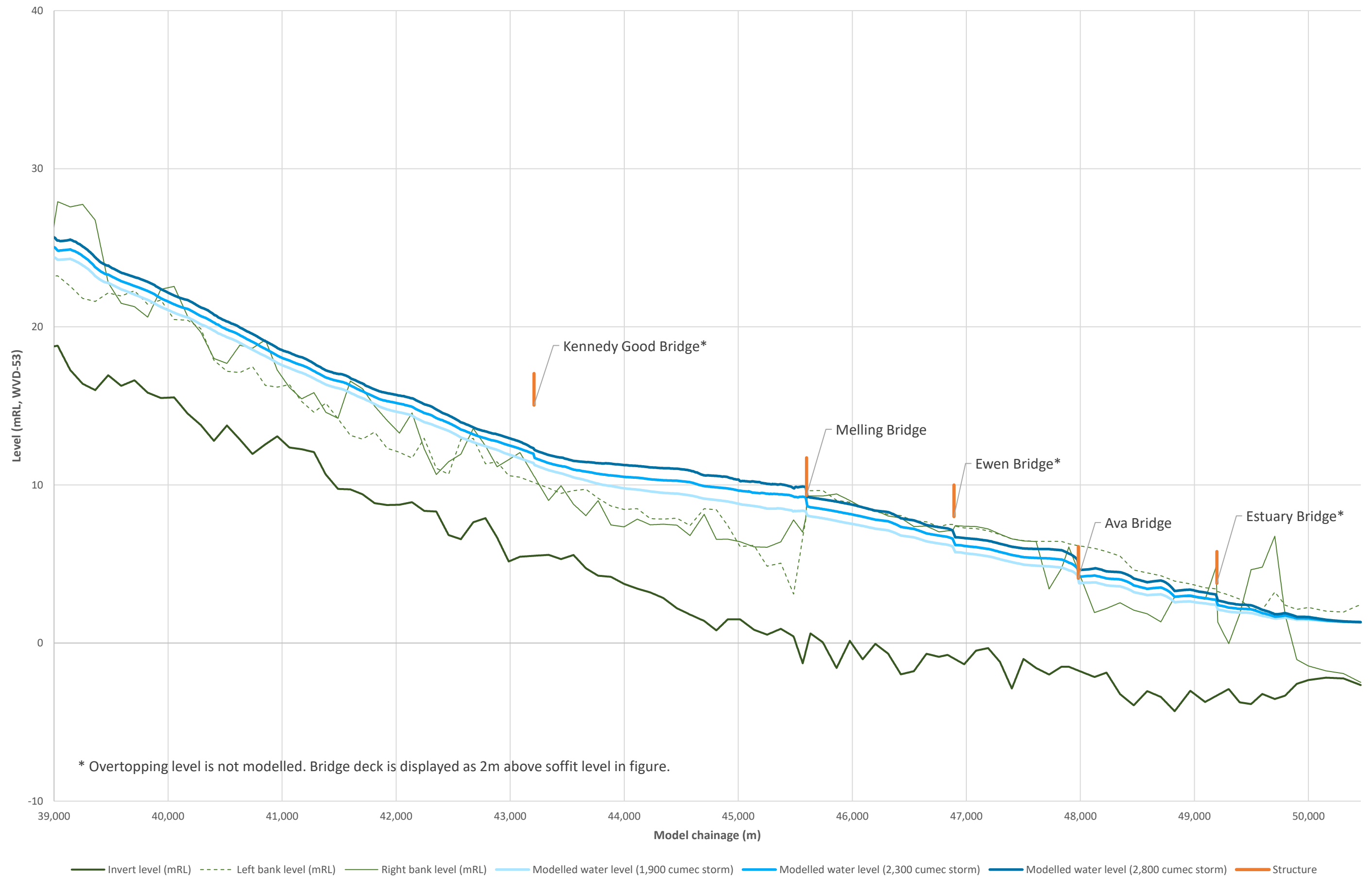
Model version: UHLH_202207_V054_D



Appendix C Figure 3: Hydraulic model 1D long-section results (water level) - chainage 28,000 - 39,000

Hutt River - Chainage 39,000 - 50,000

Model version: UHLH_202207_V054_D



Appendix C Figure 4: Hydraulic model 1D long-section results (water level) - chainage 39,000 - 50,000

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
16918.0	105.75	106.17	106.56	107.05	107.02	107.54	107.41	107.96	107.89	108.48	108.12	108.81	109.60
16923.9	105.71	106.13	106.53	107.02	106.99	107.51	107.38	107.93	107.86	108.45	108.09	108.78	109.57
16929.8	105.68	106.10	106.50	106.99	106.96	107.48	107.35	107.90	107.83	108.42	108.06	108.75	109.54
16935.7	105.65	106.07	106.47	106.96	106.93	107.45	107.32	107.88	107.80	108.39	108.03	108.72	109.51
16941.6	105.62	106.04	106.44	106.93	106.90	107.42	107.29	107.85	107.77	108.36	108.00	108.70	109.48
16947.5	105.59	106.02	106.41	106.90	106.87	107.39	107.27	107.82	107.74	108.33	107.98	108.67	109.45
16953.4	105.57	105.99	106.39	106.87	106.84	107.37	107.24	107.79	107.72	108.30	107.95	108.64	109.42
16959.3	105.54	105.96	106.36	106.85	106.82	107.34	107.21	107.76	107.69	108.27	107.92	108.61	109.38
16965.2	105.52	105.94	106.34	106.82	106.79	107.31	107.19	107.74	107.66	108.25	107.89	108.58	109.35
16971.1	105.50	105.92	106.31	106.80	106.77	107.29	107.16	107.71	107.63	108.22	107.87	108.55	109.32
16977.0	105.48	105.90	106.29	106.77	106.74	107.26	107.14	107.68	107.61	108.19	107.84	108.52	109.29
16983.0	105.46	105.87	106.27	106.75	106.72	107.24	107.11	107.66	107.58	108.16	107.81	108.49	109.26
16988.9	105.44	105.86	106.25	106.73	106.70	107.22	107.09	107.63	107.56	108.14	107.79	108.47	109.23
16994.8	105.43	105.84	106.23	106.71	106.68	107.19	107.07	107.61	107.54	108.11	107.76	108.44	109.20
17000.7	105.41	105.82	106.21	106.69	106.66	107.17	107.05	107.59	107.51	108.08	107.74	108.41	109.17
17006.6	105.40	105.80	106.19	106.67	106.64	107.15	107.03	107.56	107.49	108.06	107.72	108.38	109.14
17012.5	105.38	105.79	106.18	106.65	106.62	107.13	107.00	107.54	107.47	108.03	107.69	108.36	109.11
17018.4	105.37	105.77	106.16	106.63	106.60	107.11	106.98	107.52	107.45	108.01	107.67	108.33	109.08
17024.3	105.36	105.76	106.14	106.61	106.58	107.09	106.97	107.50	107.42	107.99	107.65	108.31	109.05
17030.2	105.35	105.75	106.13	106.60	106.57	107.07	106.95	107.48	107.40	107.96	107.63	108.28	109.02
17036.1	105.34	105.73	106.11	106.58	106.55	107.05	106.93	107.46	107.38	107.94	107.60	108.26	109.00
17042.0	105.33	105.72	106.10	106.57	106.54	107.03	106.91	107.44	107.36	107.92	107.58	108.24	108.98
17047.9	105.31	105.70	106.08	106.54	106.51	107.00	106.88	107.40	107.33	107.89	107.55	108.20	108.94
17053.8	105.29	105.68	106.05	106.51	106.48	106.97	106.85	107.37	107.30	107.85	107.52	108.17	108.91
17059.7	105.27	105.65	106.02	106.48	106.45	106.94	106.82	107.34	107.27	107.83	107.49	108.14	108.88
17065.6	105.25	105.63	106.00	106.45	106.42	106.92	106.79	107.31	107.25	107.80	107.47	108.12	108.85
17071.5	105.22	105.61	105.97	106.42	106.40	106.89	106.77	107.29	107.22	107.77	107.44	108.09	108.83
17077.4	105.20	105.58	105.94	106.39	106.37	106.86	106.73	107.25	107.18	107.74	107.40	108.06	108.85
17083.3	105.18	105.55	105.91	106.36	106.33	106.82	106.70	107.22	107.15	107.70	107.37	108.02	108.80
17089.2	105.15	105.53	105.88	106.33	106.30	106.79	106.67	107.18	107.11	107.66	107.33	107.98	108.73
17095.1	105.13	105.50	105.85	106.29	106.27	106.75	106.63	107.14	107.07	107.62	107.29	107.93	108.65
17101.0	105.10	105.47	105.82	106.26	106.23	106.70	106.59	107.09	107.02	107.57	107.23	107.88	108.58
17106.9	105.08	105.44	105.79	106.22	106.19	106.66	106.55	107.04	106.98	107.51	107.19	107.83	108.54
17112.8	105.05	105.41	105.76	106.18	106.16	106.62	106.51	107.00	106.93	107.46	107.14	107.80	108.46
17118.7	105.02	105.38	105.72	106.15	106.12	106.58	106.47	106.96	106.89	107.41	107.10	107.72	108.44
17124.6	104.99	105.35	105.69	106.11	106.08	106.54	106.43	106.91	106.84	107.36	107.05	107.71	108.31
17130.5	104.96	105.31	105.65	106.07	106.04	106.50	106.38	106.86	106.80	107.31	107.00	107.61	108.30
17136.4	104.93	105.28	105.61	106.02	106.00	106.45	106.34	106.82	106.75	107.26	106.95	107.56	108.24
17142.3	104.89	105.24	105.57	105.98	105.95	106.40	106.29	106.77	106.70	107.21	106.90	107.50	108.19
17148.2	104.86	105.20	105.53	105.93	105.91	106.35	106.24	106.71	106.65	107.15	106.85	107.44	108.13
17154.1	104.82	105.16	105.48	105.89	105.86	106.30	106.19	106.66	106.59	107.09	106.79	107.38	108.06
17160.0	104.78	105.12	105.44	105.84	105.81	106.25	106.14	106.60	106.54	107.03	106.73	107.32	108.00
17165.9	104.75	105.09	105.40	105.80	105.77	106.21	106.10	106.56	106.50	106.99	106.69	107.28	107.95
17171.8	104.72	105.05	105.37	105.76	105.74	106.17	106.06	106.52	106.46	106.94	106.65	107.23	107.90
17177.7	104.69	105.02	105.33	105.72	105.70	106.13	106.02	106.48	106.41	106.90	106.61	107.18	107.84
17183.6	104.66	104.99	105.30	105.69	105.66	106.09	105.98	106.43	106.37	106.85	106.56	107.13	107.79

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17189.5	104.63	104.95	105.26	105.65	105.62	106.05	105.94	106.39	106.33	106.81	106.52	107.08	107.74
17195.4	104.60	104.92	105.23	105.61	105.58	106.01	105.90	106.34	106.28	106.76	106.47	107.03	107.68
17201.3	104.56	104.88	105.19	105.57	105.54	105.96	105.86	106.30	106.24	106.71	106.43	106.98	107.63
17207.2	104.53	104.85	105.15	105.53	105.50	105.92	105.82	106.25	106.19	106.66	106.38	106.93	107.57
17213.1	104.49	104.81	105.11	105.49	105.46	105.88	105.77	106.21	106.15	106.61	106.33	106.88	107.52
17219.0	104.46	104.77	105.07	105.44	105.42	105.83	105.73	106.16	106.10	106.56	106.28	106.83	107.46
17224.9	104.42	104.73	105.03	105.40	105.38	105.79	105.68	106.11	106.05	106.51	106.24	106.78	107.40
17230.8	104.38	104.69	104.99	105.36	105.33	105.74	105.64	106.06	106.01	106.46	106.19	106.72	107.34
17236.7	104.34	104.65	104.94	105.31	105.29	105.69	105.59	106.02	105.96	106.41	106.14	106.68	107.30
17242.6	104.30	104.60	104.90	105.27	105.24	105.65	105.54	105.97	105.91	106.36	106.09	106.63	107.26
17248.5	104.25	104.56	104.85	105.22	105.20	105.60	105.50	105.92	105.86	106.31	106.04	106.58	107.20
17254.4	104.21	104.51	104.81	105.17	105.15	105.55	105.45	105.87	105.81	106.26	105.99	106.52	107.15
17260.3	104.16	104.46	104.76	105.12	105.10	105.50	105.39	105.81	105.76	106.20	105.93	106.47	107.09
17266.2	104.10	104.41	104.71	105.07	105.05	105.44	105.34	105.76	105.70	106.15	105.88	106.41	107.03
17272.1	104.05	104.36	104.65	105.02	104.99	105.39	105.29	105.70	105.65	106.09	105.82	106.35	106.97
17278.0	103.99	104.30	104.60	104.96	104.94	105.34	105.23	105.65	105.59	106.03	105.76	106.29	106.91
17283.9	103.95	104.26	104.56	104.92	104.90	105.30	105.19	105.60	105.55	105.99	105.72	106.25	106.86
17289.9	103.91	104.23	104.52	104.89	104.86	105.26	105.16	105.57	105.51	105.95	105.68	106.21	106.81
17295.8	103.88	104.20	104.49	104.85	104.83	105.23	105.12	105.53	105.48	105.91	105.65	106.16	106.76
17301.8	103.85	104.17	104.46	104.82	104.80	105.20	105.09	105.50	105.44	105.87	105.61	106.12	106.71
17307.7	103.83	104.14	104.44	104.79	104.77	105.17	105.06	105.47	105.41	105.84	105.58	106.08	106.67
17313.7	103.81	104.12	104.41	104.77	104.75	105.14	105.04	105.44	105.38	105.80	105.55	106.05	106.63
17319.6	103.79	104.10	104.39	104.75	104.72	105.12	105.01	105.41	105.36	105.77	105.52	106.02	106.59
17325.6	103.77	104.08	104.37	104.72	104.70	105.09	104.99	105.38	105.33	105.74	105.49	105.99	106.55
17331.5	103.76	104.06	104.35	104.71	104.68	105.07	104.97	105.36	105.31	105.72	105.47	105.96	106.52
17337.5	103.75	104.05	104.34	104.69	104.67	105.05	104.95	105.34	105.29	105.69	105.45	105.93	106.49
17343.4	103.73	104.04	104.32	104.67	104.65	105.04	104.93	105.32	105.27	105.67	105.43	105.91	106.46
17349.4	103.72	104.03	104.31	104.66	104.64	105.02	104.92	105.30	105.25	105.65	105.41	105.88	106.43
17355.3	103.72	104.02	104.30	104.64	104.62	105.00	104.90	105.28	105.23	105.63	105.39	105.86	106.40
17361.3	103.71	104.01	104.29	104.63	104.61	104.99	104.89	105.27	105.22	105.61	105.37	105.84	106.38
17367.2	103.70	104.00	104.28	104.62	104.60	104.98	104.88	105.25	105.20	105.59	105.36	105.82	106.35
17373.2	103.70	103.99	104.27	104.61	104.59	104.97	104.86	105.24	105.19	105.58	105.34	105.80	106.33
17379.1	103.69	103.99	104.27	104.60	104.58	104.96	104.85	105.23	105.18	105.56	105.33	105.79	106.31
17385.1	103.69	103.98	104.26	104.60	104.57	104.95	104.84	105.21	105.17	105.55	105.32	105.77	106.29
17391.0	103.68	103.98	104.25	104.59	104.57	104.94	104.84	105.20	105.16	105.53	105.31	105.76	106.27
17396.6	103.67	103.96	104.24	104.57	104.55	104.92	104.82	105.18	105.13	105.51	105.28	105.73	106.24
17402.2	103.65	103.94	104.22	104.54	104.52	104.89	104.79	105.15	105.10	105.48	105.25	105.70	106.21
17407.8	103.63	103.92	104.19	104.52	104.50	104.86	104.76	105.12	105.07	105.44	105.22	105.66	106.17
17413.4	103.61	103.89	104.16	104.49	104.47	104.83	104.73	105.09	105.04	105.41	105.18	105.63	106.13
17419.0	103.58	103.86	104.13	104.46	104.44	104.80	104.70	105.05	105.01	105.37	105.15	105.58	106.08
17424.7	103.57	103.86	104.13	104.46	104.44	104.80	104.70	105.06	105.01	105.38	105.16	105.60	106.10
17430.4	103.57	103.85	104.13	104.46	104.43	104.81	104.70	105.06	105.02	105.39	105.16	105.61	106.11
17436.1	103.56	103.85	104.12	104.45	104.43	104.81	104.70	105.07	105.02	105.39	105.17	105.62	106.12
17441.8	103.55	103.84	104.11	104.45	104.43	104.80	104.70	105.07	105.02	105.40	105.17	105.62	106.13
17447.4	103.54	103.83	104.10	104.44	104.42	104.80	104.69	105.07	105.02	105.40	105.17	105.62	106.14
17453.1	103.53	103.82	104.09	104.43	104.41	104.80	104.69	105.06	105.01	105.40	105.17	105.63	106.15

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17458.8	103.51	103.80	104.08	104.42	104.40	104.79	104.68	105.06	105.01	105.40	105.16	105.63	106.15
17464.5	103.50	103.79	104.07	104.41	104.39	104.78	104.67	105.05	105.00	105.39	105.16	105.62	106.16
17470.2	103.48	103.78	104.06	104.40	104.38	104.77	104.66	105.05	105.00	105.39	105.15	105.62	106.16
17475.9	103.47	103.76	104.04	104.39	104.37	104.76	104.65	105.04	104.99	105.38	105.14	105.62	106.16
17481.6	103.45	103.75	104.03	104.38	104.35	104.75	104.64	105.03	104.98	105.37	105.13	105.61	106.15
17487.3	103.43	103.73	104.01	104.36	104.34	104.74	104.63	105.02	104.97	105.37	105.12	105.60	106.15
17492.9	103.41	103.71	104.00	104.35	104.32	104.72	104.61	105.00	104.95	105.36	105.11	105.60	106.15
17498.6	103.39	103.69	103.98	104.33	104.31	104.71	104.59	104.99	104.94	105.34	105.10	105.59	106.14
17504.3	103.37	103.67	103.96	104.31	104.29	104.69	104.58	104.98	104.92	105.33	105.09	105.58	106.13
17510.0	103.34	103.65	103.94	104.29	104.27	104.67	104.56	104.96	104.91	105.32	105.07	105.56	106.13
17515.8	103.32	103.63	103.92	104.27	104.25	104.65	104.54	104.94	104.89	105.30	105.05	105.54	106.11
17521.7	103.30	103.61	103.90	104.25	104.23	104.63	104.52	104.92	104.87	105.28	105.03	105.52	106.09
17527.6	103.28	103.58	103.88	104.23	104.21	104.61	104.50	104.90	104.85	105.26	105.01	105.50	106.07
17533.4	103.26	103.56	103.86	104.21	104.19	104.59	104.48	104.88	104.83	105.24	104.99	105.48	106.05
17539.3	103.24	103.54	103.84	104.19	104.17	104.57	104.46	104.86	104.81	105.22	104.97	105.47	106.03
17545.1	103.22	103.52	103.82	104.17	104.15	104.55	104.44	104.84	104.79	105.20	104.95	105.45	106.02
17550.9	103.20	103.50	103.80	104.15	104.13	104.53	104.42	104.82	104.77	105.18	104.93	105.43	106.00
17556.8	103.18	103.48	103.78	104.13	104.11	104.51	104.40	104.80	104.75	105.16	104.91	105.41	105.98
17562.7	103.16	103.46	103.76	104.11	104.09	104.49	104.38	104.78	104.73	105.14	104.89	105.39	105.96
17568.5	103.14	103.44	103.74	104.09	104.07	104.47	104.36	104.76	104.71	105.12	104.87	105.37	105.94
17574.3	103.12	103.42	103.72	104.07	104.05	104.45	104.34	104.74	104.69	105.11	104.85	105.35	105.93
17580.2	103.10	103.40	103.70	104.05	104.03	104.43	104.32	104.72	104.67	105.09	104.83	105.34	105.91
17586.1	103.07	103.38	103.68	104.03	104.01	104.41	104.30	104.70	104.65	105.07	104.81	105.32	105.89
17591.9	103.05	103.36	103.66	104.01	103.99	104.39	104.28	104.68	104.63	105.05	104.79	105.30	105.87
17597.8	103.03	103.34	103.64	103.99	103.97	104.37	104.26	104.66	104.61	105.03	104.77	105.28	105.86
17603.6	103.01	103.32	103.62	103.97	103.95	104.35	104.24	104.64	104.59	105.01	104.76	105.27	105.85
17609.4	102.99	103.30	103.60	103.95	103.93	104.33	104.22	104.63	104.57	105.00	104.74	105.26	105.84
17615.3	102.97	103.28	103.58	103.93	103.91	104.31	104.20	104.61	104.55	104.98	104.72	105.24	105.83
17621.2	102.95	103.27	103.56	103.92	103.89	104.29	104.19	104.59	104.54	104.97	104.71	105.23	105.81
17627.0	102.93	103.25	103.54	103.90	103.88	104.28	104.17	104.57	104.52	104.95	104.69	105.23	105.79
17632.8	102.92	103.23	103.52	103.88	103.86	104.25	104.15	104.55	104.50	104.94	104.67	105.20	105.80
17638.5	102.90	103.21	103.50	103.86	103.83	104.23	104.12	104.53	104.48	104.92	104.65	105.18	105.78
17644.3	102.88	103.19	103.48	103.83	103.81	104.21	104.10	104.51	104.46	104.90	104.63	105.16	105.77
17650.0	102.86	103.17	103.46	103.81	103.79	104.19	104.08	104.49	104.43	104.88	104.61	105.15	105.76
17655.8	102.84	103.15	103.44	103.79	103.77	104.16	104.06	104.47	104.41	104.86	104.59	105.12	105.75
17661.6	102.82	103.13	103.42	103.77	103.75	104.14	104.03	104.44	104.39	104.83	104.56	105.10	105.71
17667.3	102.80	103.11	103.39	103.74	103.72	104.12	104.01	104.42	104.36	104.81	104.54	105.07	105.68
17673.1	102.79	103.09	103.37	103.72	103.70	104.09	103.98	104.39	104.34	104.78	104.51	105.05	105.66
17678.9	102.77	103.07	103.35	103.69	103.67	104.06	103.96	104.37	104.31	104.75	104.48	105.02	105.63
17684.6	102.75	103.05	103.33	103.67	103.65	104.04	103.93	104.34	104.28	104.72	104.46	104.99	105.59
17690.4	102.73	103.02	103.30	103.64	103.62	104.01	103.90	104.31	104.25	104.69	104.43	104.96	105.56
17696.1	102.71	103.00	103.28	103.62	103.59	103.98	103.87	104.28	104.22	104.66	104.39	104.92	105.52
17701.9	102.69	102.98	103.25	103.59	103.57	103.95	103.84	104.24	104.19	104.62	104.36	104.88	105.48
17707.7	102.66	102.95	103.22	103.56	103.54	103.92	103.81	104.21	104.15	104.58	104.32	104.84	105.44
17713.4	102.64	102.92	103.19	103.52	103.50	103.88	103.78	104.17	104.11	104.54	104.28	104.80	105.39
17719.2	102.62	102.90	103.16	103.49	103.47	103.84	103.74	104.13	104.07	104.49	104.24	104.74	105.33

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17725.0	102.59	102.87	103.13	103.45	103.43	103.80	103.70	104.08	104.03	104.45	104.19	104.69	105.27
17730.7	102.56	102.83	103.09	103.41	103.39	103.75	103.66	104.03	103.98	104.39	104.14	104.64	105.20
17736.5	102.53	102.80	103.05	103.37	103.35	103.70	103.61	103.98	103.93	104.33	104.09	104.57	105.13
17742.2	102.50	102.76	103.01	103.32	103.30	103.65	103.55	103.92	103.87	104.27	104.03	104.50	105.05
17748.0	102.46	102.72	102.96	103.26	103.24	103.59	103.49	103.85	103.80	104.19	103.96	104.43	104.96
17753.9	102.44	102.69	102.94	103.24	103.22	103.56	103.47	103.82	103.77	104.16	103.93	104.40	104.93
17759.8	102.41	102.67	102.91	103.21	103.19	103.53	103.44	103.79	103.74	104.13	103.90	104.36	104.90
17765.7	102.39	102.65	102.89	103.18	103.16	103.50	103.41	103.76	103.71	104.09	103.86	104.31	104.84
17771.6	102.37	102.62	102.86	103.15	103.14	103.47	103.38	103.72	103.67	104.04	103.82	104.26	104.77
17777.5	102.35	102.60	102.84	103.13	103.11	103.44	103.35	103.69	103.64	104.01	103.79	104.23	104.74
17783.4	102.32	102.57	102.81	103.10	103.08	103.41	103.32	103.66	103.61	103.98	103.75	104.20	104.70
17789.3	102.30	102.55	102.78	103.07	103.05	103.38	103.29	103.62	103.58	103.95	103.72	104.16	104.67
17795.2	102.27	102.52	102.75	103.04	103.02	103.35	103.26	103.60	103.55	103.92	103.69	104.13	104.63
17801.1	102.25	102.49	102.73	103.01	103.00	103.32	103.23	103.57	103.53	103.89	103.67	104.10	104.60
17807.0	102.22	102.47	102.70	102.99	102.97	103.30	103.21	103.55	103.50	103.86	103.64	104.08	104.57
17812.9	102.20	102.44	102.68	102.96	102.95	103.27	103.18	103.52	103.47	103.83	103.61	104.05	104.54
17818.8	102.17	102.42	102.65	102.94	102.92	103.24	103.15	103.49	103.44	103.81	103.59	104.02	104.51
17824.7	102.15	102.39	102.62	102.91	102.89	103.22	103.13	103.46	103.42	103.78	103.56	103.99	104.47
17830.6	102.12	102.37	102.60	102.89	102.87	103.19	103.10	103.44	103.39	103.75	103.53	103.96	104.44
17836.5	102.09	102.34	102.57	102.86	102.84	103.16	103.07	103.41	103.36	103.72	103.50	103.93	104.41
17842.4	102.07	102.31	102.54	102.83	102.81	103.13	103.04	103.37	103.33	103.68	103.47	103.89	104.38
17848.3	102.04	102.28	102.51	102.80	102.78	103.10	103.01	103.34	103.30	103.65	103.44	103.86	104.34
17854.2	102.01	102.25	102.49	102.77	102.75	103.07	102.98	103.31	103.27	103.62	103.41	103.83	104.31
17860.1	101.98	102.23	102.46	102.74	102.72	103.04	102.95	103.28	103.24	103.59	103.38	103.80	104.28
17866.0	101.96	102.20	102.43	102.71	102.70	103.01	102.92	103.25	103.21	103.56	103.35	103.76	104.24
17871.7	101.93	102.18	102.41	102.69	102.67	102.98	102.89	103.22	103.18	103.53	103.31	103.73	104.20
17877.5	101.91	102.15	102.39	102.67	102.65	102.96	102.87	103.20	103.16	103.50	103.29	103.70	104.17
17883.2	101.89	102.13	102.36	102.64	102.62	102.93	102.85	103.17	103.13	103.47	103.26	103.67	104.14
17888.9	101.86	102.11	102.34	102.61	102.60	102.91	102.82	103.14	103.10	103.44	103.23	103.64	104.10
17894.7	101.84	102.08	102.31	102.59	102.57	102.88	102.80	103.12	103.07	103.41	103.21	103.61	104.07
17900.4	101.82	102.06	102.29	102.56	102.55	102.86	102.77	103.09	103.05	103.39	103.18	103.58	104.04
17906.2	101.79	102.04	102.26	102.54	102.52	102.83	102.74	103.06	103.02	103.35	103.15	103.55	104.00
17911.9	101.77	102.01	102.24	102.51	102.50	102.81	102.72	103.03	103.00	103.32	103.12	103.52	103.97
17917.6	101.75	101.99	102.21	102.49	102.47	102.78	102.69	103.01	102.97	103.30	103.10	103.50	103.95
17923.4	101.72	101.96	102.19	102.46	102.44	102.75	102.66	102.98	102.94	103.26	103.07	103.46	103.91
17929.1	101.70	101.94	102.16	102.43	102.42	102.72	102.64	102.95	102.91	103.23	103.04	103.44	103.88
17934.8	101.67	101.91	102.14	102.41	102.39	102.69	102.61	102.92	102.88	103.21	103.01	103.40	103.85
17940.6	101.65	101.89	102.11	102.38	102.36	102.66	102.58	102.89	102.85	103.18	102.98	103.36	103.80
17946.3	101.62	101.86	102.08	102.35	102.33	102.63	102.55	102.86	102.82	103.15	102.95	103.33	103.77
17952.1	101.60	101.84	102.06	102.32	102.31	102.61	102.52	102.83	102.79	103.12	102.92	103.30	103.74
17957.8	101.57	101.81	102.03	102.29	102.28	102.57	102.49	102.80	102.76	103.08	102.89	103.27	103.70
17963.5	101.55	101.79	102.00	102.27	102.25	102.55	102.46	102.77	102.73	103.05	102.87	103.24	103.65
17969.3	101.52	101.76	101.98	102.25	102.23	102.53	102.44	102.76	102.71	103.03	102.84	103.23	103.64
17975.0	101.50	101.74	101.95	102.22	102.20	102.50	102.42	102.73	102.69	103.01	102.82	103.19	103.62
17980.8	101.47	101.71	101.93	102.20	102.18	102.48	102.40	102.71	102.67	102.99	102.80	103.17	103.59
17986.6	101.45	101.69	101.91	102.18	102.17	102.47	102.38	102.70	102.66	102.98	102.78	103.15	103.57

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17992.4	101.43	101.67	101.90	102.17	102.15	102.45	102.37	102.68	102.64	102.96	102.77	103.14	103.55
17998.2	101.41	101.65	101.87	102.14	102.12	102.43	102.34	102.66	102.62	102.94	102.75	103.12	103.53
18003.9	101.39	101.63	101.85	102.12	102.10	102.40	102.32	102.63	102.59	102.91	102.72	103.09	103.50
18009.7	101.36	101.60	101.82	102.09	102.08	102.38	102.29	102.61	102.57	102.89	102.70	103.07	103.48
18015.5	101.34	101.58	101.80	102.07	102.05	102.35	102.27	102.58	102.54	102.86	102.67	103.04	103.45
18021.3	101.32	101.56	101.78	102.04	102.03	102.33	102.24	102.56	102.52	102.83	102.64	103.01	103.42
18027.1	101.30	101.54	101.76	102.02	102.00	102.31	102.22	102.54	102.49	102.81	102.62	102.99	103.41
18032.9	101.28	101.52	101.73	102.00	101.98	102.29	102.20	102.51	102.47	102.79	102.60	102.97	103.39
18038.7	101.25	101.49	101.71	101.97	101.96	102.26	102.17	102.49	102.45	102.77	102.58	102.95	103.36
18044.5	101.23	101.47	101.69	101.95	101.94	102.24	102.15	102.47	102.43	102.74	102.55	102.92	103.34
18050.3	101.21	101.45	101.67	101.93	101.91	102.22	102.13	102.44	102.40	102.72	102.53	102.90	103.32
18056.1	101.19	101.43	101.65	101.91	101.89	102.19	102.10	102.42	102.38	102.70	102.51	102.88	103.30
18061.8	101.17	101.41	101.62	101.88	101.87	102.17	102.08	102.40	102.36	102.68	102.48	102.86	103.29
18067.6	101.15	101.39	101.60	101.86	101.85	102.15	102.06	102.38	102.34	102.65	102.46	102.84	103.28
18073.4	101.13	101.37	101.58	101.84	101.83	102.13	102.04	102.35	102.31	102.63	102.44	102.82	103.26
18079.2	101.11	101.35	101.56	101.82	101.80	102.10	102.02	102.33	102.29	102.61	102.42	102.80	103.25
18085.0	101.09	101.33	101.54	101.80	101.79	102.09	102.00	102.32	102.27	102.60	102.40	102.79	103.24
18090.9	101.06	101.29	101.51	101.77	101.75	102.05	101.96	102.28	102.24	102.57	102.37	102.77	103.22
18096.8	101.02	101.26	101.47	101.73	101.71	102.02	101.93	102.25	102.21	102.55	102.34	102.75	103.22
18102.8	100.98	101.22	101.44	101.70	101.68	101.99	101.90	102.23	102.19	102.53	102.32	102.73	103.20
18108.7	100.94	101.19	101.40	101.67	101.65	101.96	101.87	102.20	102.16	102.50	102.30	102.70	103.17
18114.6	100.91	101.15	101.37	101.63	101.61	101.93	101.83	102.17	102.12	102.47	102.26	102.67	103.12
18120.5	100.88	101.12	101.34	101.61	101.59	101.91	101.82	102.15	102.11	102.45	102.24	102.65	103.09
18126.4	100.86	101.10	101.32	101.59	101.57	101.89	101.79	102.12	102.09	102.43	102.23	102.62	103.08
18132.3	100.83	101.07	101.29	101.55	101.54	101.86	101.76	102.09	102.06	102.40	102.19	102.59	103.05
18138.3	100.80	101.04	101.25	101.52	101.50	101.82	101.72	102.06	102.02	102.37	102.16	102.57	103.02
18144.2	100.77	101.00	101.22	101.48	101.47	101.79	101.69	102.03	101.99	102.34	102.12	102.54	102.98
18150.1	100.74	100.97	101.18	101.45	101.43	101.75	101.65	101.99	101.95	102.30	102.08	102.50	102.94
18156.0	100.71	100.94	101.15	101.41	101.40	101.72	101.62	101.96	101.92	102.26	102.05	102.46	102.92
18161.9	100.68	100.91	101.12	101.38	101.37	101.69	101.59	101.93	101.89	102.23	102.02	102.44	102.90
18167.8	100.66	100.88	101.09	101.35	101.34	101.66	101.55	101.90	101.86	102.20	101.99	102.40	102.86
18173.8	100.63	100.86	101.06	101.32	101.31	101.63	101.52	101.87	101.82	102.16	101.95	102.36	102.82
18179.7	100.60	100.83	101.03	101.29	101.28	101.59	101.49	101.82	101.78	102.12	101.91	102.31	102.75
18185.6	100.57	100.80	101.00	101.26	101.24	101.55	101.46	101.77	101.73	102.06	101.86	102.25	102.70
18191.5	100.55	100.77	100.97	101.23	101.21	101.51	101.42	101.74	101.70	102.02	101.82	102.22	102.66
18197.4	100.52	100.74	100.94	101.20	101.18	101.48	101.39	101.70	101.66	101.99	101.79	102.18	102.62
18203.3	100.49	100.71	100.91	101.16	101.15	101.44	101.36	101.67	101.63	101.95	101.75	102.14	102.57
18209.3	100.46	100.68	100.88	101.13	101.11	101.41	101.32	101.63	101.59	101.91	101.72	102.10	102.53
18215.2	100.43	100.65	100.85	101.10	101.08	101.38	101.29	101.60	101.56	101.88	101.68	102.07	102.50
18221.1	100.41	100.62	100.82	101.07	101.05	101.35	101.26	101.57	101.53	101.85	101.65	102.03	102.46
18227.0	100.38	100.59	100.78	101.04	101.02	101.31	101.23	101.53	101.49	101.81	101.62	101.99	102.41
18232.8	100.36	100.57	100.76	101.02	101.00	101.29	101.21	101.51	101.47	101.78	101.59	101.97	102.39
18238.6	100.34	100.55	100.74	100.99	100.98	101.27	101.18	101.49	101.45	101.76	101.57	101.94	102.36
18244.4	100.32	100.53	100.72	100.97	100.96	101.25	101.16	101.46	101.42	101.74	101.55	101.92	102.33
18250.2	100.30	100.51	100.70	100.95	100.93	101.22	101.14	101.44	101.40	101.71	101.52	101.89	102.31
18256.0	100.28	100.49	100.68	100.93	100.91	101.20	101.11	101.42	101.38	101.69	101.50	101.87	102.28

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
18261.8	100.26	100.47	100.66	100.90	100.89	101.18	101.09	101.39	101.35	101.66	101.47	101.84	102.25
18267.6	100.24	100.44	100.63	100.88	100.87	101.15	101.07	101.37	101.33	101.63	101.45	101.82	102.23
18273.4	100.22	100.42	100.61	100.86	100.84	101.13	101.04	101.34	101.30	101.61	101.42	101.79	102.20
18279.2	100.20	100.40	100.59	100.83	100.82	101.10	101.02	101.31	101.28	101.58	101.40	101.76	102.17
18285.0	100.18	100.38	100.56	100.81	100.79	101.08	100.99	101.29	101.25	101.55	101.37	101.73	102.14
18290.8	100.16	100.35	100.54	100.78	100.77	101.05	100.97	101.26	101.22	101.53	101.34	101.70	102.11
18296.6	100.14	100.33	100.52	100.76	100.74	101.02	100.94	101.23	101.20	101.50	101.31	101.67	102.08
18302.4	100.12	100.31	100.49	100.73	100.72	101.00	100.91	101.20	101.17	101.47	101.28	101.64	102.05
18308.2	100.09	100.28	100.46	100.70	100.69	100.97	100.88	101.18	101.14	101.44	101.25	101.61	102.01
18314.0	100.07	100.25	100.44	100.68	100.66	100.94	100.86	101.14	101.11	101.40	101.22	101.58	101.97
18319.8	100.04	100.23	100.41	100.65	100.63	100.91	100.83	101.11	101.08	101.37	101.19	101.54	101.93
18325.6	100.02	100.20	100.38	100.62	100.60	100.87	100.79	101.08	101.04	101.33	101.16	101.50	101.89
18331.4	99.99	100.17	100.35	100.58	100.57	100.84	100.76	101.04	101.01	101.30	101.12	101.47	101.85
18337.2	99.96	100.14	100.32	100.55	100.54	100.81	100.73	101.01	100.97	101.26	101.09	101.43	101.81
18343.0	99.92	100.10	100.28	100.52	100.50	100.77	100.69	100.97	100.94	101.22	101.05	101.39	101.77
18348.9	99.90	100.07	100.25	100.49	100.47	100.74	100.66	100.94	100.90	101.19	101.02	101.36	101.73
18354.8	99.87	100.05	100.22	100.46	100.44	100.71	100.63	100.91	100.87	101.16	100.98	101.32	101.70
18360.7	99.85	100.02	100.19	100.43	100.41	100.68	100.60	100.88	100.84	101.12	100.95	101.29	101.66
18366.6	99.82	100.00	100.17	100.40	100.38	100.65	100.57	100.85	100.81	101.09	100.92	101.25	101.62
18372.5	99.80	99.98	100.14	100.37	100.36	100.62	100.54	100.82	100.78	101.06	100.89	101.22	101.59
18378.4	99.77	99.95	100.12	100.35	100.33	100.59	100.51	100.78	100.75	101.03	100.86	101.19	101.55
18384.3	99.75	99.93	100.10	100.32	100.31	100.56	100.49	100.75	100.72	100.99	100.83	101.15	101.52
18390.2	99.73	99.91	100.08	100.29	100.28	100.54	100.46	100.73	100.69	100.96	100.80	101.12	101.48
18396.1	99.70	99.88	100.05	100.27	100.26	100.51	100.44	100.70	100.67	100.94	100.77	101.10	101.45
18401.9	99.68	99.86	100.03	100.25	100.24	100.49	100.41	100.68	100.64	100.91	100.75	101.07	101.43
18407.8	99.66	99.84	100.01	100.23	100.21	100.47	100.39	100.66	100.62	100.89	100.73	101.05	101.41
18413.7	99.64	99.82	99.99	100.21	100.19	100.45	100.37	100.63	100.60	100.87	100.70	101.03	101.38
18419.6	99.62	99.79	99.97	100.19	100.17	100.42	100.35	100.61	100.58	100.84	100.68	101.00	101.35
18425.5	99.59	99.77	99.94	100.16	100.15	100.40	100.33	100.59	100.55	100.82	100.66	100.98	101.32
18431.4	99.57	99.75	99.92	100.14	100.13	100.38	100.31	100.56	100.53	100.80	100.63	100.95	101.31
18437.3	99.55	99.73	99.90	100.12	100.11	100.36	100.28	100.54	100.51	100.77	100.61	100.93	101.28
18443.2	99.53	99.71	99.88	100.10	100.08	100.34	100.26	100.52	100.49	100.75	100.59	100.91	101.26
18449.1	99.51	99.69	99.86	100.08	100.06	100.32	100.24	100.50	100.47	100.73	100.57	100.89	101.24
18455.0	99.50	99.67	99.84	100.06	100.05	100.30	100.23	100.49	100.45	100.72	100.56	100.88	101.23
18461.0	99.47	99.64	99.81	100.03	100.02	100.27	100.20	100.46	100.43	100.69	100.53	100.85	101.20
18466.9	99.45	99.62	99.78	100.01	99.99	100.24	100.17	100.43	100.40	100.66	100.50	100.82	101.17
18472.9	99.42	99.59	99.76	99.98	99.97	100.22	100.15	100.41	100.37	100.64	100.48	100.79	101.14
18478.8	99.40	99.57	99.73	99.96	99.94	100.20	100.12	100.38	100.35	100.61	100.45	100.77	101.11
18484.8	99.38	99.54	99.71	99.93	99.92	100.17	100.10	100.36	100.32	100.59	100.43	100.74	101.08
18490.7	99.35	99.52	99.68	99.91	99.89	100.15	100.07	100.33	100.30	100.56	100.40	100.71	101.06
18496.7	99.33	99.50	99.66	99.89	99.87	100.12	100.05	100.31	100.28	100.53	100.37	100.68	101.04
18502.6	99.31	99.47	99.64	99.86	99.85	100.10	100.03	100.28	100.25	100.51	100.35	100.66	101.01
18508.6	99.29	99.45	99.62	99.84	99.82	100.07	100.00	100.26	100.22	100.48	100.32	100.63	100.98
18514.5	99.26	99.42	99.59	99.81	99.80	100.05	99.97	100.23	100.20	100.45	100.30	100.60	100.94
18520.5	99.24	99.40	99.56	99.79	99.77	100.02	99.95	100.20	100.17	100.43	100.27	100.58	100.92
18526.5	99.22	99.37	99.54	99.76	99.75	100.00	99.92	100.18	100.14	100.40	100.24	100.55	100.89

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
18532.4	99.19	99.35	99.52	99.74	99.73	99.98	99.90	100.16	100.12	100.38	100.22	100.53	100.87
18538.4	99.17	99.34	99.50	99.72	99.71	99.96	99.89	100.14	100.10	100.36	100.20	100.51	100.85
18544.3	99.15	99.31	99.48	99.70	99.69	99.94	99.86	100.11	100.08	100.34	100.18	100.49	100.83
18550.3	99.13	99.29	99.46	99.68	99.66	99.91	99.84	100.09	100.06	100.31	100.16	100.46	100.80
18556.2	99.11	99.27	99.44	99.66	99.64	99.89	99.82	100.06	100.03	100.29	100.13	100.44	100.78
18562.2	99.09	99.25	99.42	99.64	99.62	99.87	99.80	100.04	100.01	100.27	100.11	100.41	100.75
18568.1	99.06	99.23	99.40	99.62	99.60	99.84	99.77	100.02	99.99	100.24	100.08	100.39	100.73
18574.1	99.04	99.21	99.38	99.59	99.58	99.82	99.75	100.00	99.96	100.22	100.06	100.36	100.70
18580.0	99.02	99.18	99.35	99.57	99.56	99.80	99.73	99.97	99.94	100.20	100.04	100.34	100.67
18586.0	99.00	99.16	99.33	99.55	99.54	99.78	99.71	99.95	99.92	100.17	100.01	100.31	100.65
18591.9	98.98	99.15	99.32	99.53	99.52	99.76	99.69	99.93	99.90	100.15	100.00	100.29	100.62
18597.8	98.96	99.13	99.30	99.52	99.50	99.74	99.67	99.91	99.88	100.13	99.98	100.27	100.59
18603.8	98.94	99.11	99.28	99.50	99.48	99.72	99.65	99.89	99.86	100.11	99.96	100.25	100.57
18609.7	98.92	99.09	99.26	99.48	99.46	99.70	99.63	99.87	99.84	100.08	99.93	100.23	100.55
18615.6	98.90	99.07	99.24	99.45	99.44	99.67	99.61	99.84	99.81	100.06	99.91	100.20	100.53
18621.5	98.88	99.05	99.22	99.43	99.42	99.65	99.58	99.82	99.79	100.03	99.88	100.17	100.50
18627.4	98.86	99.03	99.20	99.41	99.40	99.63	99.56	99.80	99.77	100.00	99.86	100.15	100.47
18633.3	98.84	99.01	99.18	99.39	99.37	99.60	99.54	99.77	99.74	99.98	99.84	100.12	100.44
18639.3	98.82	98.99	99.15	99.37	99.35	99.58	99.52	99.75	99.72	99.96	99.82	100.10	100.42
18645.2	98.79	98.96	99.13	99.34	99.33	99.56	99.50	99.73	99.70	99.94	99.79	100.08	100.40
18651.1	98.77	98.94	99.11	99.32	99.31	99.54	99.47	99.71	99.68	99.92	99.77	100.06	100.38
18657.0	98.75	98.92	99.09	99.30	99.29	99.52	99.45	99.69	99.66	99.90	99.75	100.04	100.36
18662.9	98.72	98.90	99.07	99.28	99.26	99.50	99.43	99.67	99.64	99.88	99.73	100.02	100.34
18668.8	98.70	98.87	99.04	99.25	99.24	99.47	99.41	99.64	99.62	99.86	99.71	100.00	100.32
18674.8	98.68	98.85	99.02	99.24	99.22	99.46	99.39	99.63	99.60	99.84	99.69	99.98	100.31
18680.7	98.66	98.83	99.00	99.22	99.20	99.44	99.37	99.61	99.58	99.83	99.68	99.97	100.29
18686.6	98.63	98.81	98.98	99.19	99.18	99.42	99.35	99.59	99.56	99.81	99.66	99.95	100.28
18692.5	98.61	98.78	98.96	99.17	99.16	99.40	99.33	99.57	99.54	99.78	99.64	99.93	100.26
18698.4	98.59	98.76	98.93	99.15	99.14	99.38	99.31	99.55	99.52	99.76	99.61	99.91	100.24
18704.3	98.56	98.74	98.91	99.13	99.12	99.36	99.29	99.53	99.50	99.75	99.60	99.89	100.23
18710.3	98.54	98.72	98.89	99.11	99.10	99.34	99.27	99.52	99.48	99.73	99.58	99.88	100.22
18716.2	98.52	98.69	98.87	99.09	99.08	99.32	99.25	99.50	99.46	99.72	99.56	99.86	100.20
18722.1	98.50	98.67	98.85	99.07	99.06	99.30	99.23	99.48	99.45	99.70	99.55	99.85	100.18
18728.0	98.47	98.65	98.83	99.05	99.04	99.28	99.21	99.46	99.43	99.68	99.53	99.83	100.17
18733.9	98.45	98.63	98.81	99.02	99.01	99.25	99.18	99.43	99.40	99.66	99.50	99.80	100.14
18739.9	98.42	98.60	98.78	99.00	98.99	99.23	99.16	99.41	99.37	99.63	99.47	99.78	100.12
18745.8	98.39	98.57	98.75	98.97	98.96	99.20	99.13	99.38	99.35	99.60	99.45	99.75	100.09
18751.8	98.36	98.54	98.72	98.94	98.93	99.17	99.10	99.35	99.32	99.57	99.42	99.72	100.06
18757.7	98.33	98.51	98.69	98.91	98.90	99.14	99.07	99.32	99.28	99.54	99.38	99.69	100.03
18763.7	98.29	98.48	98.66	98.87	98.86	99.10	99.03	99.28	99.25	99.51	99.35	99.66	100.00
18769.6	98.26	98.44	98.62	98.84	98.83	99.07	99.00	99.25	99.21	99.47	99.31	99.62	99.96
18775.6	98.22	98.40	98.58	98.80	98.79	99.03	98.96	99.21	99.18	99.43	99.28	99.58	99.93
18781.5	98.17	98.36	98.54	98.76	98.75	98.99	98.92	99.17	99.13	99.39	99.24	99.54	99.89
18787.4	98.13	98.32	98.50	98.72	98.70	98.94	98.87	99.12	99.09	99.35	99.19	99.50	99.85
18793.4	98.08	98.27	98.45	98.67	98.66	98.90	98.83	99.08	99.04	99.30	99.14	99.45	99.80
18799.3	98.03	98.22	98.40	98.62	98.61	98.85	98.78	99.03	99.00	99.25	99.10	99.40	99.76

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
18805.3	97.98	98.16	98.35	98.56	98.55	98.79	98.72	98.97	98.93	99.19	99.03	99.34	99.70
18811.2	97.93	98.11	98.29	98.50	98.49	98.73	98.66	98.90	98.87	99.13	98.97	99.27	99.64
18817.2	97.87	98.05	98.23	98.44	98.42	98.66	98.59	98.84	98.80	99.06	98.90	99.21	99.56
18823.1	97.81	97.99	98.16	98.37	98.36	98.59	98.52	98.77	98.73	98.99	98.83	99.14	99.49
18829.1	97.76	97.93	98.10	98.31	98.29	98.53	98.46	98.70	98.67	98.92	98.77	99.07	99.42
18835.0	97.70	97.87	98.04	98.24	98.23	98.46	98.39	98.64	98.61	98.86	98.71	99.01	99.37
18840.9	97.65	97.81	97.98	98.18	98.17	98.40	98.33	98.58	98.55	98.81	98.65	98.97	99.33
18846.9	97.60	97.76	97.92	98.13	98.11	98.35	98.28	98.53	98.49	98.76	98.60	98.91	99.30
18852.8	97.55	97.71	97.87	98.07	98.06	98.29	98.22	98.47	98.44	98.71	98.54	98.86	99.25
18858.8	97.51	97.66	97.82	98.02	98.01	98.24	98.17	98.43	98.40	98.67	98.50	98.83	99.23
18864.7	97.47	97.62	97.78	97.98	97.97	98.21	98.14	98.40	98.36	98.64	98.47	98.81	99.22
18870.7	97.43	97.58	97.74	97.94	97.93	98.18	98.10	98.36	98.33	98.62	98.44	98.79	99.20
18876.6	97.39	97.54	97.70	97.91	97.89	98.14	98.07	98.34	98.30	98.60	98.41	98.77	99.18
18882.6	97.35	97.50	97.67	97.87	97.86	98.11	98.04	98.32	98.28	98.59	98.40	98.77	99.17
18888.5	97.31	97.46	97.63	97.84	97.83	98.09	98.01	98.30	98.27	98.58	98.38	98.76	99.17
18894.4	97.27	97.43	97.59	97.81	97.79	98.07	97.98	98.29	98.25	98.56	98.37	98.74	99.16
18900.4	97.24	97.39	97.56	97.78	97.76	98.05	97.97	98.27	98.23	98.55	98.36	98.73	99.15
18906.3	97.20	97.36	97.53	97.76	97.75	98.05	97.96	98.27	98.23	98.55	98.36	98.73	99.15
18912.3	97.17	97.33	97.51	97.75	97.74	98.04	97.95	98.27	98.23	98.55	98.36	98.74	99.16
18918.2	97.14	97.31	97.50	97.75	97.74	98.04	97.95	98.28	98.23	98.56	98.36	98.74	99.16
18924.2	97.12	97.30	97.49	97.75	97.74	98.05	97.96	98.28	98.24	98.56	98.36	98.75	99.17
18930.1	97.11	97.29	97.49	97.76	97.74	98.05	97.96	98.28	98.24	98.57	98.37	98.75	99.17
18936.1	97.10	97.29	97.49	97.76	97.74	98.06	97.96	98.29	98.25	98.57	98.38	98.75	99.17
18942.0	97.10	97.29	97.50	97.76	97.75	98.06	97.97	98.29	98.25	98.58	98.38	98.76	99.18
18948.0	97.08	97.27	97.48	97.75	97.73	98.05	97.96	98.28	98.24	98.57	98.37	98.75	99.17
18954.0	97.06	97.25	97.46	97.74	97.72	98.04	97.95	98.27	98.23	98.56	98.36	98.74	99.17
18960.0	97.04	97.24	97.45	97.72	97.71	98.03	97.93	98.26	98.22	98.55	98.35	98.73	99.16
18966.0	97.02	97.22	97.44	97.71	97.69	98.02	97.92	98.25	98.21	98.54	98.34	98.72	99.15
18972.0	96.99	97.21	97.42	97.70	97.68	98.01	97.91	98.24	98.20	98.53	98.33	98.71	99.14
18978.0	96.98	97.19	97.41	97.69	97.67	98.00	97.90	98.23	98.19	98.52	98.32	98.70	99.13
18984.0	96.96	97.18	97.40	97.68	97.66	97.98	97.89	98.22	98.18	98.51	98.31	98.69	99.12
18990.0	96.94	97.16	97.39	97.67	97.65	97.97	97.88	98.21	98.17	98.50	98.30	98.69	99.11
18996.0	96.93	97.15	97.37	97.65	97.64	97.96	97.87	98.20	98.16	98.49	98.29	98.68	99.11
19002.0	96.91	97.14	97.36	97.64	97.62	97.95	97.86	98.19	98.15	98.48	98.28	98.67	99.10
19008.0	96.90	97.12	97.35	97.63	97.61	97.94	97.84	98.18	98.14	98.47	98.27	98.66	99.09
19014.0	96.88	97.11	97.33	97.62	97.60	97.93	97.83	98.17	98.12	98.46	98.26	98.65	99.08
19020.0	96.86	97.09	97.32	97.60	97.58	97.91	97.82	98.15	98.11	98.45	98.24	98.64	99.07
19026.0	96.85	97.08	97.30	97.59	97.57	97.90	97.81	98.14	98.10	98.44	98.23	98.63	99.06
19032.0	96.83	97.06	97.29	97.58	97.56	97.89	97.79	98.13	98.09	98.42	98.22	98.61	99.05
19038.0	96.81	97.04	97.27	97.56	97.54	97.87	97.78	98.12	98.07	98.41	98.21	98.60	99.05
19044.0	96.79	97.03	97.26	97.55	97.53	97.86	97.77	98.10	98.06	98.40	98.19	98.59	99.03
19050.0	96.78	97.01	97.24	97.53	97.52	97.85	97.75	98.09	98.05	98.39	98.18	98.58	99.01
19056.0	96.76	97.00	97.23	97.52	97.50	97.84	97.74	98.08	98.04	98.38	98.17	98.57	99.01
19062.0	96.74	96.98	97.22	97.51	97.49	97.83	97.73	98.07	98.03	98.37	98.16	98.55	99.00
19068.0	96.73	96.97	97.20	97.50	97.48	97.82	97.72	98.06	98.02	98.36	98.15	98.54	98.99
19074.0	96.71	96.95	97.19	97.49	97.47	97.81	97.71	98.05	98.01	98.34	98.14	98.54	98.97

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
19080.0	96.69	96.94	97.18	97.47	97.46	97.80	97.70	98.04	98.00	98.34	98.13	98.52	98.95
19086.0	96.68	96.93	97.16	97.46	97.45	97.79	97.68	98.03	97.99	98.33	98.11	98.49	98.92
19092.0	96.66	96.91	97.15	97.45	97.43	97.77	97.67	98.01	97.97	98.31	98.10	98.48	98.91
19098.0	96.64	96.89	97.13	97.43	97.41	97.74	97.65	97.99	97.94	98.29	98.08	98.45	98.87
19104.0	96.61	96.86	97.11	97.41	97.39	97.73	97.63	97.95	97.92	98.24	98.04	98.44	98.87
19110.0	96.58	96.83	97.07	97.37	97.35	97.69	97.59	97.94	97.88	98.23	98.03	98.39	98.82
19116.0	96.54	96.79	97.03	97.33	97.31	97.66	97.56	97.90	97.86	98.18	97.99	98.38	98.76
19122.0	96.49	96.75	96.99	97.30	97.28	97.63	97.52	97.87	97.83	98.14	97.95	98.33	98.73
19128.0	96.45	96.70	96.95	97.25	97.23	97.58	97.48	97.82	97.78	98.10	97.91	98.27	98.69
19134.0	96.41	96.66	96.91	97.21	97.19	97.53	97.44	97.77	97.73	98.05	97.85	98.22	98.62
19140.0	96.38	96.62	96.87	97.16	97.15	97.48	97.38	97.71	97.67	97.98	97.79	98.14	98.53
19146.0	96.33	96.58	96.82	97.12	97.10	97.43	97.33	97.65	97.61	97.91	97.73	98.07	98.44
19152.0	96.29	96.54	96.78	97.08	97.06	97.38	97.29	97.61	97.57	97.87	97.69	98.03	98.39
19158.0	96.25	96.50	96.74	97.03	97.02	97.34	97.25	97.57	97.53	97.83	97.65	97.98	98.35
19164.0	96.21	96.46	96.70	96.99	96.98	97.30	97.21	97.52	97.48	97.78	97.60	97.94	98.30
19170.0	96.17	96.42	96.66	96.95	96.94	97.26	97.17	97.48	97.44	97.74	97.56	97.89	98.25
19176.0	96.13	96.38	96.62	96.91	96.89	97.22	97.13	97.44	97.40	97.69	97.51	97.85	98.21
19182.0	96.08	96.34	96.58	96.87	96.85	97.17	97.08	97.39	97.35	97.65	97.47	97.80	98.16
19188.0	96.04	96.30	96.54	96.83	96.81	97.13	97.04	97.35	97.31	97.60	97.42	97.76	98.11
19194.0	96.00	96.26	96.50	96.79	96.77	97.09	97.00	97.30	97.26	97.55	97.38	97.71	98.06
19200.0	95.96	96.22	96.46	96.75	96.73	97.04	96.96	97.26	97.22	97.50	97.33	97.66	98.00
19206.0	95.93	96.18	96.42	96.71	96.69	97.00	96.91	97.21	97.17	97.46	97.29	97.61	97.95
19212.0	95.89	96.14	96.38	96.66	96.65	96.96	96.87	97.16	97.13	97.41	97.24	97.56	97.89
19218.0	95.85	96.10	96.34	96.62	96.60	96.91	96.83	97.12	97.08	97.36	97.19	97.51	97.84
19224.0	95.81	96.06	96.30	96.58	96.56	96.87	96.78	97.07	97.04	97.31	97.14	97.46	97.79
19230.0	95.77	96.02	96.26	96.54	96.52	96.82	96.74	97.02	96.99	97.26	97.09	97.41	97.74
19236.0	95.74	95.99	96.23	96.51	96.49	96.79	96.70	96.99	96.95	97.22	97.06	97.38	97.71
19242.0	95.71	95.96	96.20	96.48	96.46	96.76	96.67	96.96	96.92	97.19	97.03	97.34	97.67
19248.0	95.68	95.93	96.17	96.45	96.43	96.73	96.64	96.92	96.89	97.16	96.99	97.31	97.64
19254.0	95.65	95.90	96.14	96.42	96.40	96.70	96.61	96.89	96.86	97.12	96.96	97.27	97.61
19260.0	95.62	95.88	96.11	96.39	96.37	96.66	96.58	96.86	96.82	97.09	96.93	97.24	97.58
19266.0	95.60	95.85	96.08	96.36	96.34	96.63	96.55	96.83	96.79	97.06	96.90	97.21	97.55
19272.0	95.57	95.82	96.05	96.33	96.31	96.60	96.52	96.79	96.76	97.02	96.86	97.17	97.51
19278.0	95.54	95.79	96.03	96.30	96.28	96.57	96.49	96.76	96.73	96.99	96.83	97.14	97.48
19284.0	95.51	95.76	96.00	96.27	96.25	96.55	96.47	96.74	96.70	96.97	96.81	97.12	97.46
19290.0	95.48	95.74	95.97	96.24	96.23	96.52	96.44	96.71	96.68	96.94	96.79	97.10	97.44
19296.0	95.45	95.71	95.95	96.22	96.20	96.50	96.41	96.69	96.66	96.92	96.76	97.08	97.42
19302.0	95.43	95.68	95.92	96.19	96.17	96.47	96.39	96.67	96.63	96.90	96.74	97.06	97.40
19308.0	95.40	95.66	95.89	96.16	96.15	96.44	96.36	96.64	96.61	96.88	96.71	97.03	97.38
19314.0	95.38	95.63	95.87	96.14	96.12	96.42	96.34	96.62	96.59	96.85	96.69	97.01	97.36
19320.0	95.35	95.61	95.84	96.12	96.10	96.41	96.32	96.61	96.57	96.84	96.68	96.99	97.34
19326.0	95.32	95.58	95.82	96.10	96.08	96.39	96.30	96.59	96.55	96.82	96.66	96.98	97.33
19332.0	95.30	95.56	95.80	96.07	96.05	96.36	96.28	96.57	96.53	96.80	96.64	96.96	97.31
19338.0	95.27	95.54	95.77	96.05	96.03	96.34	96.25	96.55	96.51	96.79	96.63	96.95	97.30
19344.0	95.24	95.51	95.75	96.03	96.01	96.32	96.23	96.53	96.50	96.77	96.61	96.93	97.29
19350.0	95.21	95.48	95.73	96.00	95.99	96.30	96.21	96.51	96.48	96.75	96.59	96.92	97.27

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
19356.0	95.19	95.46	95.71	95.98	95.96	96.28	96.19	96.49	96.45	96.73	96.57	96.89	97.24
19361.9	95.16	95.43	95.68	95.95	95.94	96.25	96.16	96.46	96.43	96.71	96.54	96.87	97.23
19367.7	95.13	95.40	95.65	95.93	95.91	96.22	96.14	96.43	96.40	96.68	96.51	96.84	97.20
19373.6	95.11	95.38	95.62	95.90	95.88	96.20	96.11	96.41	96.37	96.65	96.48	96.81	97.17
19379.5	95.08	95.35	95.59	95.87	95.85	96.17	96.08	96.38	96.34	96.62	96.45	96.78	97.14
19385.3	95.05	95.32	95.56	95.84	95.82	96.14	96.05	96.35	96.31	96.59	96.42	96.75	97.10
19391.2	95.02	95.28	95.52	95.80	95.78	96.10	96.01	96.31	96.28	96.56	96.39	96.72	97.06
19397.1	94.99	95.25	95.48	95.75	95.73	96.06	95.97	96.28	96.24	96.52	96.35	96.68	97.03
19403.0	94.96	95.21	95.45	95.72	95.70	96.02	95.93	96.24	96.20	96.48	96.31	96.65	96.99
19408.8	94.93	95.19	95.42	95.69	95.67	95.98	95.89	96.20	96.16	96.45	96.28	96.61	96.96
19414.7	94.90	95.15	95.38	95.65	95.63	95.94	95.85	96.16	96.12	96.41	96.24	96.57	96.92
19420.6	94.87	95.12	95.34	95.60	95.59	95.89	95.80	96.11	96.07	96.35	96.18	96.52	96.86
19426.4	94.84	95.08	95.30	95.55	95.54	95.83	95.75	96.05	96.01	96.29	96.12	96.45	96.80
19432.3	94.80	95.04	95.26	95.51	95.49	95.78	95.70	95.99	95.96	96.23	96.06	96.39	96.72
19438.2	94.77	95.01	95.22	95.47	95.46	95.74	95.66	95.94	95.91	96.18	96.01	96.33	96.66
19444.0	94.74	94.98	95.19	95.43	95.42	95.70	95.62	95.89	95.86	96.12	95.96	96.27	96.59
19449.9	94.71	94.95	95.15	95.39	95.38	95.65	95.57	95.84	95.81	96.06	95.91	96.21	96.52
19455.8	94.68	94.91	95.12	95.35	95.34	95.61	95.53	95.79	95.76	96.01	95.86	96.16	96.47
19461.7	94.65	94.88	95.08	95.31	95.30	95.56	95.48	95.75	95.71	95.96	95.81	96.11	96.42
19467.5	94.62	94.84	95.04	95.27	95.25	95.51	95.43	95.69	95.66	95.90	95.76	96.05	96.36
19473.4	94.59	94.80	95.00	95.21	95.20	95.44	95.37	95.62	95.59	95.83	95.68	95.97	96.28
19479.3	94.55	94.77	94.95	95.16	95.14	95.38	95.31	95.55	95.52	95.75	95.61	95.89	96.19
19485.1	94.52	94.73	94.91	95.10	95.09	95.32	95.25	95.48	95.45	95.68	95.54	95.82	96.12
19491.0	94.49	94.69	94.86	95.06	95.04	95.26	95.20	95.42	95.39	95.62	95.48	95.76	96.07
19497.0	94.45	94.66	94.83	95.01	95.00	95.21	95.15	95.37	95.34	95.57	95.43	95.71	96.03
19503.0	94.42	94.62	94.79	94.97	94.96	95.17	95.11	95.33	95.30	95.53	95.39	95.66	95.98
19509.0	94.39	94.59	94.75	94.93	94.92	95.13	95.07	95.29	95.26	95.48	95.35	95.62	95.93
19515.0	94.36	94.55	94.71	94.89	94.88	95.09	95.03	95.25	95.22	95.44	95.31	95.58	95.89
19521.0	94.32	94.51	94.67	94.85	94.84	95.04	94.98	95.20	95.17	95.40	95.26	95.53	95.84
19527.0	94.29	94.47	94.63	94.81	94.79	95.00	94.94	95.15	95.12	95.35	95.21	95.48	95.79
19533.0	94.26	94.43	94.59	94.77	94.76	94.96	94.90	95.11	95.08	95.31	95.17	95.44	95.76
19539.0	94.22	94.40	94.55	94.73	94.72	94.92	94.86	95.08	95.05	95.27	95.14	95.41	95.72
19545.0	94.19	94.36	94.52	94.69	94.68	94.89	94.82	95.04	95.01	95.24	95.10	95.37	95.69
19551.0	94.15	94.32	94.48	94.65	94.64	94.85	94.78	95.00	94.97	95.20	95.06	95.33	95.65
19557.0	94.12	94.29	94.44	94.61	94.60	94.81	94.75	94.97	94.94	95.16	95.03	95.30	95.62
19563.0	94.09	94.25	94.40	94.58	94.57	94.78	94.71	94.94	94.91	95.13	95.00	95.27	95.59
19569.0	94.05	94.21	94.36	94.54	94.53	94.74	94.67	94.89	94.87	95.09	94.95	95.23	95.55
19575.0	94.02	94.18	94.33	94.50	94.49	94.70	94.63	94.86	94.83	95.05	94.92	95.19	95.51
19581.0	93.99	94.15	94.29	94.47	94.46	94.67	94.60	94.83	94.80	95.03	94.89	95.17	95.49
19587.0	93.95	94.11	94.26	94.44	94.42	94.64	94.57	94.80	94.77	95.00	94.86	95.14	95.47
19593.0	93.91	94.08	94.22	94.40	94.38	94.60	94.53	94.76	94.73	94.97	94.83	95.11	95.44
19599.0	93.88	94.04	94.19	94.36	94.35	94.57	94.50	94.73	94.70	94.94	94.80	95.08	95.42
19605.0	93.85	94.01	94.16	94.34	94.33	94.55	94.48	94.72	94.69	94.92	94.78	95.07	95.41
19611.0	93.81	93.98	94.13	94.31	94.30	94.52	94.45	94.69	94.66	94.90	94.75	95.05	95.39
19617.0	93.76	93.93	94.07	94.25	94.24	94.45	94.39	94.62	94.59	94.83	94.69	94.98	95.32
19622.9	93.77	93.93	94.07	94.24	94.23	94.44	94.37	94.59	94.57	94.79	94.65	94.93	95.26

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
19628.8	93.77	93.93	94.07	94.23	94.22	94.42	94.36	94.57	94.54	94.76	94.63	94.90	95.23
19634.7	93.76	93.92	94.06	94.22	94.21	94.41	94.35	94.56	94.53	94.74	94.61	94.88	95.20
19640.7	93.75	93.91	94.05	94.21	94.20	94.40	94.34	94.55	94.52	94.73	94.60	94.86	95.18
19646.6	93.74	93.90	94.04	94.20	94.19	94.38	94.32	94.53	94.50	94.71	94.58	94.83	95.14
19652.5	93.72	93.88	94.02	94.18	94.17	94.36	94.31	94.51	94.48	94.68	94.56	94.81	95.11
19658.4	93.71	93.87	94.01	94.17	94.16	94.35	94.29	94.49	94.47	94.67	94.54	94.79	95.09
19664.3	93.69	93.85	93.99	94.15	94.14	94.33	94.28	94.48	94.45	94.65	94.53	94.77	95.07
19670.2	93.68	93.84	93.98	94.14	94.13	94.33	94.27	94.47	94.44	94.64	94.52	94.76	95.06
19676.1	93.67	93.83	93.97	94.14	94.13	94.32	94.26	94.46	94.44	94.64	94.52	94.76	95.06
19682.0	93.65	93.81	93.96	94.13	94.12	94.31	94.25	94.46	94.43	94.63	94.51	94.76	95.05
19688.0	93.63	93.80	93.94	94.11	94.10	94.30	94.24	94.45	94.42	94.63	94.50	94.75	95.05
19693.9	93.61	93.78	93.93	94.10	94.09	94.29	94.23	94.43	94.41	94.61	94.49	94.74	95.04
19699.8	93.60	93.76	93.91	94.08	94.07	94.27	94.21	94.42	94.39	94.60	94.48	94.73	95.03
19705.7	93.58	93.74	93.89	94.06	94.05	94.25	94.19	94.41	94.38	94.59	94.46	94.72	95.03
19711.6	93.55	93.72	93.87	94.04	94.03	94.23	94.17	94.39	94.36	94.57	94.44	94.70	95.02
19717.5	93.53	93.70	93.84	94.02	94.00	94.21	94.15	94.36	94.33	94.55	94.42	94.68	94.99
19723.4	93.51	93.67	93.82	93.99	93.98	94.18	94.12	94.33	94.31	94.52	94.39	94.65	94.97
19729.3	93.49	93.65	93.79	93.96	93.95	94.15	94.09	94.31	94.28	94.49	94.36	94.63	94.94
19735.3	93.46	93.62	93.77	93.94	93.93	94.13	94.07	94.28	94.25	94.46	94.33	94.60	94.92
19741.2	93.44	93.60	93.74	93.91	93.90	94.10	94.04	94.25	94.22	94.43	94.30	94.57	94.89
19747.1	93.41	93.57	93.71	93.88	93.87	94.06	94.01	94.21	94.19	94.40	94.27	94.53	94.86
19753.0	93.38	93.54	93.68	93.85	93.84	94.03	93.97	94.18	94.15	94.36	94.24	94.50	94.82
19759.0	93.36	93.52	93.66	93.82	93.81	94.00	93.95	94.15	94.13	94.34	94.21	94.47	94.79
19765.0	93.34	93.49	93.63	93.79	93.78	93.98	93.92	94.12	94.10	94.31	94.18	94.44	94.77
19771.0	93.32	93.47	93.61	93.77	93.76	93.95	93.89	94.09	94.07	94.27	94.15	94.41	94.73
19777.0	93.29	93.44	93.58	93.74	93.73	93.92	93.86	94.06	94.04	94.24	94.12	94.37	94.70
19783.0	93.27	93.42	93.55	93.71	93.70	93.89	93.83	94.03	94.01	94.21	94.09	94.34	94.67
19789.0	93.25	93.39	93.53	93.68	93.67	93.86	93.80	94.00	93.97	94.18	94.05	94.30	94.64
19795.0	93.22	93.37	93.50	93.65	93.64	93.83	93.77	93.97	93.94	94.14	94.02	94.27	94.60
19801.0	93.20	93.34	93.47	93.62	93.61	93.79	93.74	93.93	93.91	94.11	93.99	94.24	94.57
19807.0	93.17	93.31	93.44	93.59	93.59	93.76	93.71	93.90	93.88	94.08	93.96	94.21	94.55
19813.0	93.15	93.29	93.41	93.56	93.55	93.73	93.68	93.87	93.85	94.04	93.92	94.18	94.52
19819.0	93.12	93.26	93.38	93.53	93.52	93.70	93.64	93.83	93.81	94.00	93.88	94.14	94.49
19825.0	93.09	93.22	93.35	93.49	93.48	93.66	93.60	93.79	93.77	93.96	93.84	94.10	94.46
19831.0	93.06	93.19	93.31	93.45	93.44	93.61	93.56	93.75	93.72	93.92	93.80	94.05	94.42
19837.0	93.02	93.15	93.27	93.41	93.40	93.57	93.52	93.70	93.68	93.87	93.75	94.01	94.38
19843.0	92.99	93.12	93.23	93.37	93.36	93.52	93.47	93.65	93.63	93.82	93.70	93.96	94.33
19849.0	92.95	93.07	93.18	93.32	93.31	93.47	93.42	93.60	93.57	93.76	93.64	93.90	94.28
19855.0	92.91	93.03	93.13	93.27	93.26	93.41	93.37	93.54	93.51	93.70	93.59	93.84	94.23
19861.0	92.86	92.98	93.08	93.21	93.20	93.35	93.30	93.47	93.45	93.64	93.52	93.78	94.19
19867.0	92.81	92.92	93.02	93.14	93.14	93.28	93.24	93.41	93.39	93.58	93.46	93.72	94.15
19873.0	92.75	92.86	92.96	93.08	93.07	93.22	93.17	93.34	93.32	93.52	93.39	93.67	94.12
19879.0	92.69	92.80	92.89	93.01	93.00	93.15	93.11	93.28	93.26	93.46	93.33	93.62	94.10
19885.0	92.64	92.74	92.83	92.95	92.95	93.10	93.05	93.23	93.20	93.42	93.28	93.59	94.09
19891.0	92.59	92.69	92.79	92.91	92.90	93.06	93.01	93.19	93.17	93.40	93.25	93.58	94.10
19897.0	92.56	92.67	92.76	92.89	92.88	93.04	93.00	93.19	93.16	93.40	93.25	93.59	94.12

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
19903.0	92.52	92.62	92.72	92.85	92.84	93.00	92.95	93.15	93.12	93.37	93.21	93.57	94.11
19908.9	92.47	92.57	92.67	92.80	92.79	92.96	92.91	93.11	93.08	93.34	93.18	93.54	94.10
19914.9	92.42	92.53	92.62	92.76	92.75	92.92	92.87	93.07	93.04	93.30	93.14	93.52	94.09
19920.8	92.38	92.48	92.58	92.71	92.70	92.87	92.82	93.03	93.00	93.26	93.09	93.48	94.07
19926.8	92.33	92.43	92.53	92.66	92.65	92.83	92.77	92.98	92.95	93.23	93.05	93.45	94.06
19932.7	92.28	92.39	92.49	92.62	92.61	92.79	92.73	92.95	92.92	93.20	93.02	93.43	94.04
19938.7	92.24	92.34	92.44	92.58	92.57	92.75	92.69	92.92	92.88	93.18	92.99	93.41	94.03
19944.6	92.19	92.30	92.40	92.53	92.53	92.71	92.65	92.88	92.85	93.15	92.96	93.39	94.02
19950.6	92.15	92.25	92.36	92.49	92.48	92.67	92.61	92.85	92.82	93.13	92.93	93.37	94.00
19956.5	92.10	92.21	92.31	92.45	92.44	92.64	92.58	92.82	92.79	93.11	92.90	93.35	93.99
19962.5	92.06	92.17	92.27	92.41	92.41	92.60	92.54	92.79	92.76	93.09	92.88	93.33	93.98
19968.5	92.02	92.12	92.23	92.38	92.37	92.57	92.50	92.77	92.73	93.07	92.85	93.32	93.97
19974.4	91.97	92.08	92.19	92.34	92.33	92.54	92.47	92.74	92.70	93.05	92.83	93.31	93.97
19980.4	91.93	92.04	92.15	92.30	92.29	92.51	92.44	92.71	92.67	93.03	92.80	93.29	93.96
19986.3	91.89	92.00	92.11	92.27	92.26	92.48	92.41	92.69	92.65	93.01	92.78	93.28	93.95
19992.3	91.85	91.96	92.07	92.23	92.22	92.45	92.38	92.67	92.63	93.00	92.76	93.27	93.94
19998.2	91.80	91.92	92.04	92.20	92.19	92.42	92.35	92.65	92.60	92.99	92.75	93.26	93.93
20004.2	91.76	91.88	92.00	92.17	92.16	92.40	92.32	92.63	92.58	92.97	92.73	93.25	93.93
20010.1	91.72	91.84	91.96	92.14	92.13	92.37	92.30	92.61	92.56	92.96	92.71	93.24	93.92
20016.1	91.68	91.81	91.93	92.11	92.10	92.35	92.27	92.59	92.54	92.94	92.69	93.23	93.91
20022.0	91.64	91.77	91.90	92.08	92.07	92.32	92.24	92.57	92.52	92.93	92.68	93.21	93.90
20028.0	91.61	91.73	91.87	92.06	92.04	92.30	92.22	92.56	92.51	92.92	92.66	93.20	93.90
20033.8	91.57	91.70	91.84	92.03	92.02	92.28	92.20	92.54	92.49	92.91	92.64	93.19	93.89
20039.7	91.53	91.67	91.80	92.00	91.99	92.26	92.17	92.52	92.47	92.89	92.63	93.17	93.88
20045.5	91.50	91.63	91.78	91.98	91.96	92.24	92.15	92.50	92.45	92.88	92.61	93.16	93.87
20051.3	91.46	91.60	91.75	91.95	91.94	92.22	92.13	92.48	92.43	92.86	92.59	93.15	93.86
20057.2	91.43	91.57	91.72	91.93	91.91	92.20	92.11	92.47	92.41	92.85	92.58	93.13	93.84
20063.0	91.40	91.54	91.69	91.91	91.89	92.18	92.09	92.45	92.40	92.83	92.56	93.12	93.84
20068.8	91.36	91.51	91.67	91.88	91.87	92.16	92.07	92.44	92.39	92.82	92.55	93.11	93.83
20074.7	91.33	91.48	91.64	91.86	91.85	92.15	92.05	92.42	92.37	92.81	92.54	93.11	93.82
20080.5	91.30	91.46	91.62	91.84	91.83	92.13	92.04	92.41	92.36	92.80	92.53	93.10	93.82
20086.3	91.27	91.43	91.59	91.82	91.81	92.11	92.02	92.40	92.34	92.79	92.51	93.09	93.81
20092.2	91.25	91.40	91.57	91.80	91.79	92.10	92.00	92.38	92.33	92.78	92.50	93.08	93.81
20098.0	91.22	91.38	91.55	91.78	91.77	92.08	91.98	92.37	92.31	92.77	92.48	93.07	93.80
20103.8	91.19	91.35	91.53	91.76	91.75	92.06	91.96	92.35	92.30	92.75	92.47	93.05	93.79
20109.7	91.16	91.33	91.51	91.75	91.73	92.04	91.95	92.34	92.28	92.74	92.46	93.05	93.78
20115.5	91.14	91.31	91.49	91.73	91.71	92.03	91.93	92.32	92.27	92.73	92.44	93.04	93.78
20121.3	91.11	91.29	91.47	91.71	91.70	92.01	91.91	92.31	92.25	92.72	92.43	93.03	93.78
20127.2	91.09	91.26	91.45	91.70	91.68	92.00	91.90	92.30	92.24	92.71	92.42	93.02	93.77
20133.0	91.07	91.24	91.43	91.68	91.66	91.98	91.89	92.29	92.23	92.70	92.41	93.01	93.76
20138.8	91.04	91.22	91.41	91.66	91.65	91.97	91.87	92.28	92.22	92.69	92.40	93.00	93.76
20144.7	91.02	91.20	91.40	91.65	91.64	91.96	91.86	92.27	92.21	92.69	92.39	93.00	93.75
20150.5	91.00	91.19	91.38	91.64	91.62	91.95	91.85	92.26	92.20	92.68	92.39	92.99	93.75
20156.3	90.98	91.17	91.37	91.63	91.61	91.94	91.84	92.25	92.19	92.67	92.38	92.99	93.74
20162.2	90.96	91.15	91.35	91.62	91.60	91.93	91.83	92.25	92.19	92.67	92.37	92.98	93.74
20168.0	90.94	91.14	91.34	91.61	91.59	91.93	91.82	92.24	92.18	92.66	92.37	92.98	93.73

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20173.9	90.91	91.11	91.32	91.59	91.58	91.91	91.81	92.23	92.17	92.66	92.36	92.97	93.73
20179.8	90.89	91.09	91.31	91.58	91.56	91.90	91.80	92.22	92.16	92.65	92.35	92.97	93.73
20185.7	90.86	91.07	91.29	91.56	91.55	91.89	91.78	92.21	92.15	92.64	92.34	92.96	93.72
20191.6	90.83	91.05	91.27	91.55	91.53	91.88	91.77	92.20	92.14	92.63	92.33	92.95	93.71
20197.5	90.81	91.03	91.26	91.54	91.52	91.87	91.76	92.19	92.13	92.62	92.32	92.94	93.71
20203.5	90.78	91.01	91.24	91.52	91.50	91.85	91.75	92.18	92.12	92.61	92.31	92.94	93.70
20209.4	90.75	90.98	91.22	91.51	91.49	91.84	91.73	92.17	92.11	92.61	92.30	92.93	93.70
20215.3	90.73	90.96	91.20	91.49	91.47	91.83	91.72	92.16	92.10	92.60	92.29	92.93	93.69
20221.2	90.70	90.94	91.18	91.48	91.46	91.82	91.71	92.15	92.09	92.59	92.28	92.92	93.69
20227.1	90.67	90.91	91.16	91.46	91.44	91.81	91.69	92.14	92.08	92.58	92.27	92.91	93.69
20233.0	90.64	90.89	91.14	91.44	91.43	91.79	91.68	92.13	92.07	92.58	92.26	92.91	93.68
20238.9	90.62	90.86	91.12	91.43	91.41	91.78	91.67	92.12	92.05	92.57	92.25	92.90	93.67
20244.8	90.59	90.83	91.10	91.41	91.39	91.76	91.65	92.11	92.04	92.56	92.24	92.89	93.65
20250.7	90.56	90.81	91.08	91.39	91.38	91.75	91.64	92.09	92.03	92.55	92.23	92.88	93.65
20256.6	90.53	90.79	91.06	91.38	91.36	91.74	91.62	92.08	92.02	92.54	92.22	92.87	93.65
20262.5	90.50	90.76	91.04	91.36	91.34	91.73	91.61	92.07	92.01	92.53	92.21	92.86	93.66
20268.5	90.47	90.74	91.02	91.34	91.32	91.71	91.59	92.06	92.00	92.52	92.20	92.86	93.64
20274.4	90.44	90.71	91.00	91.33	91.31	91.70	91.58	92.05	91.99	92.51	92.19	92.85	93.65
20280.3	90.40	90.68	90.97	91.31	91.29	91.68	91.57	92.04	91.97	92.50	92.18	92.84	93.64
20286.2	90.37	90.66	90.95	91.29	91.27	91.67	91.55	92.03	91.96	92.49	92.17	92.83	93.63
20292.1	90.34	90.63	90.93	91.27	91.25	91.66	91.54	92.02	91.95	92.49	92.16	92.82	93.62
20298.0	90.31	90.60	90.91	91.26	91.24	91.65	91.52	92.01	91.94	92.48	92.15	92.82	93.62
20303.8	90.28	90.58	90.88	91.24	91.22	91.63	91.50	92.00	91.93	92.46	92.14	92.80	93.62
20309.5	90.24	90.54	90.85	91.21	91.19	91.61	91.48	91.98	91.91	92.45	92.12	92.80	93.59
20315.3	90.21	90.51	90.82	91.18	91.16	91.58	91.46	91.95	91.89	92.43	92.10	92.78	93.58
20321.1	90.17	90.47	90.79	91.15	91.13	91.56	91.43	91.93	91.87	92.42	92.08	92.76	93.58
20326.8	90.13	90.43	90.75	91.12	91.10	91.53	91.40	91.92	91.84	92.40	92.06	92.75	93.53
20332.6	90.09	90.40	90.72	91.09	91.07	91.51	91.38	91.90	91.82	92.39	92.03	92.75	93.52
20338.4	90.05	90.36	90.69	91.07	91.05	91.49	91.35	91.88	91.80	92.38	92.02	92.73	93.51
20344.1	90.01	90.33	90.66	91.04	91.02	91.46	91.33	91.85	91.77	92.36	92.00	92.72	93.49
20349.9	89.98	90.30	90.63	91.01	90.99	91.44	91.31	91.83	91.76	92.34	91.98	92.70	93.49
20355.6	89.94	90.26	90.59	90.99	90.97	91.42	91.28	91.81	91.74	92.32	91.97	92.68	93.47
20361.4	89.90	90.23	90.57	90.96	90.94	91.39	91.26	91.79	91.72	92.30	91.95	92.66	93.46
20367.2	89.87	90.20	90.54	90.94	90.91	91.37	91.24	91.77	91.70	92.28	91.93	92.64	93.47
20372.9	89.83	90.17	90.51	90.91	90.89	91.35	91.22	91.75	91.68	92.26	91.91	92.62	93.47
20378.7	89.80	90.13	90.48	90.89	90.86	91.33	91.19	91.74	91.66	92.24	91.89	92.61	93.45
20384.5	89.76	90.10	90.45	90.86	90.84	91.31	91.17	91.71	91.64	92.22	91.87	92.59	93.42
20390.2	89.73	90.06	90.42	90.83	90.81	91.28	91.14	91.69	91.62	92.21	91.85	92.57	93.37
20396.0	89.69	90.03	90.39	90.80	90.78	91.26	91.12	91.67	91.59	92.19	91.83	92.55	93.35
20402.0	89.67	90.01	90.37	90.79	90.77	91.25	91.11	91.67	91.59	92.17	91.83	92.55	93.37
20408.0	89.65	90.00	90.35	90.78	90.75	91.24	91.10	91.66	91.58	92.17	91.82	92.54	93.37
20414.0	89.63	89.98	90.34	90.77	90.74	91.23	91.09	91.65	91.58	92.17	91.82	92.54	93.36
20420.0	89.62	89.97	90.33	90.76	90.73	91.23	91.09	91.65	91.57	92.17	91.81	92.53	93.35
20426.0	89.60	89.95	90.32	90.75	90.72	91.22	91.08	91.65	91.57	92.16	91.81	92.52	93.34
20432.0	89.58	89.94	90.30	90.74	90.71	91.21	91.07	91.64	91.56	92.15	91.80	92.53	93.36
20438.0	89.56	89.92	90.29	90.72	90.70	91.20	91.06	91.64	91.56	92.16	91.80	92.53	93.37

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20444.0	89.54	89.91	90.27	90.71	90.69	91.19	91.05	91.63	91.55	92.16	91.79	92.53	93.36
20450.0	89.53	89.89	90.26	90.70	90.68	91.19	91.04	91.62	91.54	92.15	91.79	92.52	93.35
20456.0	89.52	89.88	90.25	90.69	90.67	91.18	91.03	91.61	91.53	92.14	91.78	92.51	93.34
20462.0	89.50	89.87	90.24	90.68	90.65	91.17	91.02	91.60	91.52	92.13	91.77	92.50	93.32
20468.0	89.49	89.86	90.23	90.67	90.64	91.16	91.01	91.59	91.51	92.12	91.76	92.49	93.31
20474.0	89.48	89.84	90.22	90.66	90.63	91.15	91.00	91.59	91.51	92.11	91.75	92.49	93.31
20474.0	89.48	89.84	90.22	90.66	90.63	91.15	91.00	91.59	91.51	92.11	91.75	92.49	93.31
20480.0	89.45	89.82	90.19	90.64	90.61	91.14	90.99	91.57	91.50	92.11	91.74	92.48	93.31
20486.0	89.43	89.80	90.17	90.62	90.60	91.12	90.98	91.57	91.48	92.10	91.73	92.47	93.29
20492.0	89.40	89.78	90.16	90.61	90.58	91.12	90.97	91.56	91.48	92.10	91.73	92.46	93.28
20498.0	89.38	89.76	90.14	90.60	90.57	91.11	90.96	91.56	91.48	92.09	91.72	92.47	93.29
20504.0	89.36	89.74	90.12	90.58	90.55	91.10	90.95	91.55	91.47	92.09	91.72	92.46	93.29
20510.0	89.30	89.68	90.07	90.53	90.50	91.06	90.90	91.51	91.43	92.06	91.68	92.44	93.28
20516.0	89.24	89.62	90.01	90.47	90.44	91.00	90.85	91.47	91.38	92.02	91.64	92.40	93.24
20522.0	89.18	89.56	89.95	90.42	90.38	90.95	90.79	91.42	91.33	91.97	91.59	92.36	93.21
20528.0	89.13	89.50	89.89	90.36	90.33	90.89	90.73	91.36	91.28	91.93	91.54	92.32	93.16
20534.0	89.09	89.45	89.83	90.30	90.27	90.84	90.68	91.31	91.23	91.87	91.49	92.27	93.12
20540.0	89.04	89.40	89.78	90.24	90.21	90.78	90.62	91.26	91.17	91.82	91.43	92.22	93.08
20546.0	88.99	89.36	89.73	90.19	90.16	90.73	90.57	91.21	91.12	91.77	91.38	92.17	93.04
20552.0	88.95	89.31	89.68	90.14	90.11	90.68	90.52	91.16	91.07	91.73	91.34	92.12	92.99
20558.0	88.91	89.27	89.64	90.10	90.07	90.64	90.47	91.11	91.03	91.68	91.29	92.08	92.95
20564.0	88.86	89.22	89.59	90.06	90.02	90.59	90.43	91.06	90.98	91.63	91.24	92.03	92.89
20570.0	88.82	89.18	89.55	90.01	89.98	90.55	90.39	91.02	90.93	91.59	91.20	91.99	92.84
20576.0	88.77	89.14	89.51	89.97	89.94	90.51	90.35	90.98	90.90	91.55	91.16	91.95	92.79
20582.0	88.73	89.09	89.47	89.94	89.90	90.47	90.32	90.95	90.86	91.52	91.13	91.92	92.75
20588.0	88.68	89.05	89.43	89.90	89.87	90.44	90.28	90.91	90.83	91.48	91.09	91.88	92.71
20593.7	88.65	89.02	89.40	89.88	89.85	90.43	90.27	90.90	90.82	91.48	91.09	91.88	92.71
20599.4	88.62	89.00	89.38	89.86	89.83	90.42	90.25	90.89	90.81	91.47	91.08	91.87	92.71
20605.1	88.59	88.97	89.36	89.85	89.81	90.40	90.24	90.89	90.80	91.47	91.07	91.87	92.70
20610.9	88.56	88.95	89.34	89.83	89.80	90.39	90.23	90.88	90.79	91.46	91.06	91.87	92.71
20616.6	88.52	88.92	89.32	89.82	89.78	90.38	90.22	90.87	90.78	91.45	91.05	91.86	92.70
20622.3	88.49	88.90	89.30	89.80	89.77	90.37	90.21	90.86	90.77	91.45	91.05	91.86	92.71
20628.0	88.46	88.87	89.28	89.79	89.75	90.36	90.20	90.85	90.77	91.44	91.04	91.85	92.70
20633.7	88.43	88.85	89.26	89.77	89.74	90.35	90.19	90.85	90.76	91.43	91.03	91.84	92.69
20639.4	88.40	88.82	89.24	89.76	89.73	90.34	90.18	90.84	90.75	91.43	91.03	91.84	92.70
20645.1	88.36	88.80	89.22	89.75	89.71	90.34	90.17	90.83	90.74	91.42	91.02	91.83	92.70
20650.9	88.33	88.77	89.20	89.74	89.70	90.33	90.16	90.83	90.74	91.42	91.02	91.83	92.70
20656.6	88.30	88.75	89.18	89.72	89.69	90.32	90.15	90.82	90.73	91.41	91.01	91.83	92.71
20662.3	88.26	88.72	89.16	89.71	89.67	90.31	90.14	90.82	90.73	91.40	91.01	91.83	92.70
20668.0	88.23	88.70	89.15	89.70	89.66	90.30	90.13	90.81	90.72	91.40	91.00	91.83	92.70
20673.9	88.23	88.69	89.14	89.69	89.65	90.29	90.12	90.80	90.71	91.39	90.99	91.81	92.67
20679.9	88.22	88.68	89.13	89.68	89.64	90.28	90.11	90.79	90.70	91.38	90.98	91.79	92.64
20685.8	88.21	88.67	89.12	89.67	89.63	90.27	90.09	90.78	90.68	91.37	90.97	91.78	92.62
20691.8	88.20	88.66	89.11	89.65	89.62	90.26	90.08	90.76	90.67	91.36	90.95	91.77	92.61
20697.7	88.19	88.65	89.09	89.64	89.60	90.24	90.07	90.75	90.66	91.34	90.94	91.76	92.59
20703.7	88.18	88.64	89.08	89.63	89.59	90.23	90.05	90.73	90.64	91.33	90.93	91.75	92.59

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20709.6	88.17	88.62	89.06	89.61	89.57	90.21	90.04	90.72	90.63	91.32	90.91	91.74	92.56
20715.6	88.15	88.61	89.05	89.59	89.56	90.20	90.02	90.71	90.61	91.31	90.90	91.74	92.53
20721.5	88.14	88.59	89.03	89.58	89.54	90.18	90.01	90.69	90.60	91.29	90.89	91.74	92.51
20727.4	88.12	88.58	89.01	89.56	89.52	90.17	89.99	90.68	90.59	91.28	90.87	91.71	92.51
20733.4	88.11	88.56	88.99	89.54	89.50	90.15	89.97	90.66	90.57	91.27	90.86	91.69	92.49
20739.3	88.09	88.54	88.97	89.52	89.49	90.14	89.96	90.65	90.56	91.26	90.85	91.68	92.47
20745.3	88.07	88.52	88.95	89.51	89.47	90.12	89.94	90.64	90.54	91.24	90.83	91.67	92.45
20751.2	88.04	88.49	88.93	89.49	89.45	90.11	89.92	90.62	90.53	91.22	90.81	91.65	92.43
20757.2	88.02	88.47	88.91	89.47	89.43	90.09	89.90	90.59	90.51	91.19	90.79	91.64	92.40
20763.1	87.99	88.45	88.89	89.45	89.42	90.06	89.89	90.57	90.48	91.17	90.77	91.60	92.39
20769.1	87.97	88.42	88.87	89.44	89.40	90.05	89.87	90.56	90.46	91.16	90.75	91.58	92.39
20775.0	87.94	88.40	88.85	89.42	89.38	90.03	89.86	90.54	90.45	91.14	90.74	91.56	92.37
20781.0	87.92	88.38	88.83	89.39	89.36	90.01	89.83	90.52	90.43	91.12	90.71	91.53	92.35
20787.0	87.90	88.36	88.80	89.37	89.33	89.98	89.81	90.50	90.40	91.10	90.69	91.50	92.32
20793.0	87.88	88.34	88.78	89.35	89.31	89.96	89.78	90.47	90.38	91.07	90.67	91.48	92.29
20799.0	87.87	88.32	88.76	89.32	89.28	89.93	89.75	90.44	90.35	91.04	90.64	91.45	92.24
20805.0	87.85	88.30	88.73	89.29	89.25	89.89	89.72	90.40	90.31	91.00	90.59	91.39	92.20
20811.0	87.83	88.28	88.71	89.26	89.22	89.85	89.68	90.36	90.26	90.96	90.54	91.33	92.18
20817.0	87.82	88.26	88.69	89.23	89.19	89.82	89.65	90.32	90.22	90.90	90.50	91.28	92.10
20823.0	87.80	88.24	88.67	89.21	89.17	89.79	89.62	90.28	90.20	90.86	90.47	91.24	92.04
20829.0	87.78	88.22	88.65	89.18	89.15	89.77	89.60	90.26	90.17	90.83	90.44	91.22	92.00
20835.0	87.76	88.20	88.63	89.16	89.13	89.74	89.57	90.23	90.14	90.80	90.41	91.19	91.97
20841.0	87.75	88.19	88.61	89.14	89.11	89.72	89.55	90.20	90.12	90.77	90.39	91.16	91.94
20847.0	87.73	88.17	88.59	89.12	89.08	89.69	89.53	90.18	90.09	90.75	90.36	91.14	91.92
20853.0	87.71	88.15	88.57	89.10	89.06	89.67	89.50	90.15	90.07	90.72	90.34	91.11	91.91
20859.0	87.69	88.13	88.55	89.08	89.04	89.65	89.48	90.13	90.04	90.70	90.31	91.08	91.89
20865.0	87.67	88.11	88.53	89.06	89.02	89.62	89.46	90.11	90.02	90.67	90.29	91.06	91.86
20871.0	87.65	88.09	88.51	89.04	89.00	89.60	89.44	90.08	90.00	90.65	90.26	91.04	91.83
20877.0	87.63	88.07	88.49	89.01	88.98	89.58	89.42	90.06	89.97	90.62	90.24	91.01	91.81
20883.0	87.61	88.05	88.47	88.99	88.96	89.56	89.40	90.04	89.95	90.60	90.22	90.98	91.79
20889.0	87.58	88.03	88.45	88.97	88.94	89.54	89.37	90.02	89.93	90.58	90.20	90.96	91.76
20895.0	87.56	88.00	88.43	88.95	88.92	89.52	89.35	90.00	89.91	90.56	90.18	90.95	91.74
20900.8	87.53	87.98	88.40	88.92	88.89	89.49	89.33	89.97	89.88	90.53	90.15	90.92	91.73
20906.7	87.51	87.95	88.38	88.90	88.86	89.46	89.30	89.94	89.85	90.50	90.12	90.89	91.70
20912.5	87.48	87.92	88.35	88.87	88.83	89.43	89.27	89.91	89.82	90.47	90.09	90.86	91.67
20918.3	87.45	87.90	88.32	88.84	88.81	89.40	89.24	89.88	89.79	90.44	90.06	90.83	91.64
20924.2	87.43	87.87	88.29	88.81	88.78	89.37	89.21	89.85	89.76	90.41	90.02	90.79	91.60
20930.0	87.40	87.84	88.26	88.78	88.75	89.34	89.18	89.81	89.73	90.37	89.99	90.76	91.57
20935.8	87.37	87.81	88.24	88.75	88.72	89.31	89.15	89.78	89.70	90.34	89.96	90.73	91.54
20941.7	87.34	87.78	88.21	88.72	88.69	89.28	89.12	89.75	89.66	90.30	89.92	90.69	91.50
20947.5	87.32	87.75	88.18	88.69	88.66	89.25	89.09	89.71	89.63	90.27	89.89	90.65	91.46
20953.3	87.29	87.73	88.15	88.66	88.63	89.21	89.05	89.68	89.60	90.23	89.86	90.62	91.43
20959.2	87.26	87.70	88.12	88.63	88.60	89.18	89.02	89.64	89.56	90.19	89.82	90.58	91.39
20965.0	87.23	87.67	88.09	88.60	88.56	89.15	88.99	89.61	89.53	90.16	89.78	90.54	91.35
20970.8	87.20	87.63	88.05	88.56	88.53	89.11	88.95	89.57	89.49	90.12	89.75	90.50	91.30
20976.7	87.17	87.60	88.02	88.53	88.50	89.08	88.92	89.53	89.45	90.08	89.71	90.46	91.26

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20982.5	87.14	87.57	87.99	88.50	88.47	89.04	88.88	89.50	89.41	90.04	89.67	90.42	91.22
20988.3	87.11	87.54	87.96	88.46	88.43	89.00	88.85	89.46	89.38	90.00	89.63	90.38	91.18
20994.2	87.08	87.51	87.92	88.43	88.40	88.97	88.81	89.42	89.34	89.96	89.60	90.34	91.14
21000.0	87.05	87.47	87.89	88.40	88.36	88.93	88.78	89.39	89.31	89.92	89.56	90.30	91.09
21005.8	87.01	87.44	87.85	88.36	88.33	88.90	88.74	89.35	89.27	89.88	89.52	90.26	91.05
21011.7	86.98	87.41	87.82	88.32	88.29	88.86	88.71	89.31	89.23	89.84	89.48	90.22	91.01
21017.5	86.95	87.37	87.78	88.29	88.25	88.82	88.67	89.27	89.19	89.80	89.44	90.17	90.96
21023.3	86.92	87.34	87.75	88.25	88.22	88.78	88.63	89.23	89.15	89.76	89.40	90.13	90.91
21029.2	86.88	87.30	87.71	88.21	88.18	88.74	88.59	89.19	89.11	89.71	89.35	90.08	90.85
21035.0	86.85	87.27	87.67	88.17	88.14	88.70	88.55	89.14	89.06	89.66	89.31	90.03	90.80
21040.9	86.82	87.24	87.65	88.14	88.11	88.67	88.52	89.11	89.03	89.63	89.27	90.00	90.76
21046.8	86.80	87.21	87.62	88.12	88.08	88.64	88.49	89.07	89.00	89.59	89.24	89.96	90.71
21052.8	86.77	87.19	87.59	88.09	88.06	88.61	88.46	89.04	88.96	89.56	89.21	89.92	90.67
21058.7	86.75	87.16	87.57	88.06	88.03	88.58	88.43	89.01	88.93	89.52	89.17	89.89	90.63
21064.6	86.72	87.14	87.54	88.03	88.00	88.55	88.40	88.98	88.90	89.49	89.14	89.85	90.59
21070.5	86.70	87.11	87.52	88.01	87.97	88.52	88.37	88.95	88.87	89.46	89.11	89.82	90.56
21076.4	86.67	87.09	87.49	87.98	87.95	88.49	88.35	88.92	88.84	89.43	89.08	89.79	90.53
21082.4	86.65	87.06	87.46	87.95	87.92	88.46	88.32	88.89	88.81	89.39	89.05	89.75	90.49
21088.3	86.63	87.04	87.44	87.93	87.89	88.43	88.29	88.86	88.78	89.36	89.02	89.72	90.46
21094.2	86.60	87.01	87.41	87.90	87.87	88.41	88.26	88.83	88.75	89.33	88.99	89.69	90.43
21100.1	86.58	86.99	87.39	87.87	87.84	88.38	88.23	88.80	88.72	89.30	88.96	89.65	90.40
21106.0	86.56	86.97	87.36	87.85	87.81	88.35	88.20	88.77	88.69	89.26	88.92	89.62	90.36
21112.0	86.54	86.94	87.34	87.82	87.79	88.32	88.18	88.73	88.66	89.23	88.89	89.59	90.33
21117.9	86.51	86.92	87.31	87.79	87.76	88.29	88.15	88.70	88.63	89.20	88.86	89.55	90.29
21123.8	86.49	86.90	87.29	87.77	87.73	88.26	88.12	88.67	88.60	89.16	88.83	89.52	90.26
21129.7	86.47	86.87	87.26	87.74	87.71	88.23	88.09	88.64	88.57	89.13	88.80	89.48	90.23
21135.6	86.45	86.85	87.24	87.71	87.68	88.20	88.06	88.61	88.54	89.10	88.76	89.45	90.19
21141.6	86.43	86.83	87.22	87.69	87.66	88.17	88.03	88.58	88.51	89.06	88.73	89.41	90.16
21147.5	86.41	86.80	87.19	87.66	87.63	88.14	88.01	88.55	88.47	89.03	88.70	89.38	90.12
21153.4	86.39	86.78	87.17	87.63	87.60	88.11	87.98	88.51	88.44	88.99	88.67	89.34	90.09
21159.3	86.36	86.76	87.14	87.61	87.58	88.09	87.95	88.48	88.41	88.96	88.63	89.31	90.06
21165.2	86.34	86.74	87.12	87.58	87.55	88.06	87.92	88.45	88.38	88.92	88.60	89.28	90.03
21171.2	86.32	86.72	87.09	87.55	87.52	88.03	87.89	88.42	88.35	88.89	88.57	89.25	89.99
21177.1	86.30	86.69	87.07	87.53	87.50	88.00	87.86	88.39	88.32	88.86	88.54	89.21	89.95
21183.0	86.28	86.67	87.05	87.50	87.47	87.97	87.84	88.36	88.29	88.83	88.51	89.19	89.92
21188.9	86.28	86.67	87.04	87.50	87.47	87.97	87.83	88.35	88.28	88.81	88.50	89.16	89.89
21194.9	86.27	86.66	87.04	87.49	87.46	87.96	87.83	88.34	88.27	88.80	88.49	89.14	89.86
21200.8	86.26	86.65	87.03	87.49	87.46	87.95	87.82	88.33	88.26	88.78	88.48	89.12	89.83
21206.8	86.25	86.64	87.02	87.48	87.45	87.94	87.81	88.32	88.25	88.77	88.46	89.11	89.80
21212.7	86.23	86.62	87.00	87.46	87.43	87.93	87.80	88.31	88.24	88.75	88.45	89.09	89.77
21218.7	86.22	86.61	86.99	87.45	87.42	87.91	87.78	88.29	88.23	88.74	88.44	89.07	89.75
21224.6	86.20	86.59	86.97	87.43	87.40	87.90	87.77	88.28	88.21	88.72	88.42	89.07	89.77
21230.6	86.18	86.57	86.96	87.42	87.39	87.88	87.75	88.26	88.20	88.71	88.41	89.05	89.76
21236.5	86.16	86.56	86.94	87.40	87.37	87.86	87.73	88.25	88.18	88.69	88.39	89.03	89.72
21242.5	86.14	86.53	86.92	87.38	87.35	87.84	87.71	88.22	88.16	88.67	88.37	89.01	89.70
21248.4	86.12	86.51	86.89	87.35	87.32	87.82	87.69	88.20	88.13	88.65	88.34	88.99	89.67

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
21254.4	86.09	86.49	86.87	87.33	87.30	87.79	87.66	88.18	88.11	88.62	88.32	88.97	89.64
21260.3	86.07	86.46	86.84	87.30	87.27	87.77	87.64	88.15	88.08	88.60	88.29	88.94	89.62
21266.3	86.04	86.43	86.82	87.28	87.25	87.74	87.61	88.12	88.05	88.57	88.26	88.92	89.60
21272.2	86.02	86.40	86.79	87.25	87.22	87.71	87.58	88.09	88.02	88.54	88.23	88.89	89.57
21278.2	85.99	86.37	86.75	87.22	87.19	87.68	87.55	88.06	87.99	88.51	88.20	88.86	89.54
21284.1	85.96	86.34	86.72	87.18	87.15	87.65	87.52	88.02	87.96	88.48	88.17	88.83	89.51
21290.1	85.92	86.31	86.69	87.15	87.12	87.61	87.48	87.99	87.92	88.44	88.13	88.79	89.47
21296.0	85.89	86.27	86.65	87.11	87.08	87.57	87.44	87.95	87.88	88.40	88.09	88.76	89.44
21301.9	85.88	86.26	86.64	87.09	87.06	87.55	87.43	87.93	87.86	88.38	88.07	88.74	89.43
21307.9	85.86	86.24	86.62	87.08	87.05	87.53	87.41	87.91	87.84	88.36	88.05	88.72	89.41
21313.8	85.84	86.23	86.60	87.06	87.03	87.52	87.39	87.89	87.82	88.34	88.03	88.70	89.39
21319.8	85.83	86.21	86.59	87.04	87.02	87.50	87.37	87.87	87.80	88.32	88.01	88.68	89.37
21325.7	85.81	86.20	86.57	87.03	87.00	87.48	87.35	87.85	87.78	88.30	87.99	88.66	89.35
21331.6	85.80	86.18	86.56	87.01	86.98	87.46	87.34	87.83	87.76	88.28	87.97	88.64	89.33
21337.6	85.78	86.16	86.54	87.00	86.97	87.44	87.32	87.81	87.74	88.25	87.95	88.62	89.31
21343.5	85.76	86.15	86.52	86.98	86.95	87.42	87.30	87.79	87.72	88.24	87.93	88.60	89.29
21349.5	85.74	86.13	86.51	86.96	86.93	87.41	87.28	87.77	87.71	88.22	87.91	88.58	89.27
21355.4	85.73	86.11	86.49	86.94	86.92	87.39	87.27	87.76	87.69	88.20	87.89	88.56	89.25
21361.4	85.71	86.10	86.47	86.93	86.90	87.37	87.25	87.74	87.67	88.18	87.88	88.54	89.23
21367.3	85.69	86.08	86.46	86.91	86.88	87.35	87.23	87.72	87.65	88.16	87.86	88.52	89.21
21373.2	85.67	86.06	86.44	86.89	86.86	87.33	87.21	87.70	87.63	88.14	87.84	88.50	89.19
21379.2	85.65	86.04	86.42	86.88	86.85	87.32	87.19	87.68	87.61	88.12	87.82	88.49	89.17
21385.1	85.64	86.02	86.40	86.86	86.83	87.30	87.18	87.66	87.59	88.10	87.80	88.47	89.16
21391.1	85.62	86.01	86.38	86.84	86.81	87.28	87.16	87.64	87.57	88.08	87.78	88.45	89.14
21397.0	85.60	85.99	86.37	86.82	86.79	87.26	87.14	87.62	87.55	88.06	87.76	88.43	89.13
21403.0	85.58	85.97	86.35	86.80	86.77	87.24	87.12	87.60	87.53	88.04	87.73	88.41	89.09
21409.0	85.56	85.95	86.33	86.78	86.75	87.22	87.10	87.57	87.51	88.01	87.71	88.38	89.07
21415.0	85.54	85.93	86.31	86.76	86.73	87.19	87.07	87.55	87.49	87.99	87.69	88.36	89.05
21421.0	85.52	85.91	86.29	86.74	86.71	87.17	87.05	87.53	87.46	87.97	87.67	88.34	89.03
21427.0	85.50	85.89	86.27	86.72	86.69	87.15	87.03	87.51	87.44	87.95	87.65	88.32	89.02
21433.0	85.48	85.87	86.25	86.70	86.67	87.13	87.01	87.49	87.42	87.93	87.63	88.30	89.00
21439.0	85.46	85.85	86.23	86.68	86.65	87.11	86.99	87.47	87.40	87.90	87.60	88.29	88.95
21445.0	85.44	85.83	86.21	86.66	86.63	87.09	86.97	87.44	87.38	87.88	87.58	88.27	88.92
21451.0	85.42	85.81	86.19	86.64	86.61	87.06	86.95	87.42	87.36	87.86	87.56	88.25	88.92
21457.0	85.40	85.79	86.16	86.61	86.58	87.04	86.92	87.39	87.33	87.83	87.53	88.22	88.91
21463.0	85.38	85.77	86.14	86.59	86.56	87.02	86.90	87.37	87.30	87.81	87.51	88.20	88.89
21469.0	85.36	85.74	86.12	86.57	86.54	86.99	86.87	87.34	87.28	87.78	87.48	88.17	88.86
21475.0	85.33	85.72	86.09	86.54	86.51	86.96	86.85	87.32	87.25	87.76	87.45	88.15	88.85
21481.0	85.31	85.69	86.07	86.52	86.49	86.94	86.82	87.29	87.23	87.73	87.43	88.13	88.82
21487.0	85.28	85.67	86.04	86.49	86.46	86.91	86.79	87.26	87.20	87.70	87.40	88.10	88.80
21493.0	85.26	85.64	86.02	86.46	86.44	86.88	86.77	87.23	87.17	87.67	87.37	88.08	88.78
21499.0	85.23	85.61	85.99	86.43	86.41	86.85	86.73	87.20	87.13	87.65	87.34	88.06	88.76
21505.0	85.19	85.58	85.95	86.40	86.37	86.82	86.70	87.18	87.11	87.63	87.32	88.04	88.75
21510.8	85.17	85.56	85.93	86.38	86.35	86.80	86.68	87.16	87.09	87.61	87.30	88.02	88.73
21516.6	85.15	85.54	85.91	86.36	86.33	86.78	86.67	87.14	87.08	87.60	87.28	88.01	88.72
21522.3	85.13	85.52	85.89	86.34	86.31	86.77	86.65	87.13	87.06	87.58	87.27	88.00	88.71

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
21528.1	85.11	85.50	85.87	86.32	86.29	86.75	86.63	87.11	87.05	87.57	87.25	87.99	88.70
21533.9	85.09	85.48	85.85	86.30	86.28	86.73	86.61	87.10	87.03	87.55	87.24	87.97	88.69
21539.7	85.07	85.46	85.84	86.28	86.26	86.72	86.60	87.08	87.01	87.54	87.22	87.96	88.68
21545.4	85.05	85.44	85.82	86.27	86.24	86.70	86.58	87.06	87.00	87.53	87.21	87.95	88.67
21551.2	85.03	85.42	85.80	86.25	86.22	86.68	86.56	87.05	86.98	87.51	87.19	87.94	88.67
21557.0	85.01	85.40	85.78	86.23	86.20	86.66	86.54	87.03	86.96	87.50	87.17	87.93	88.66
21562.8	84.99	85.38	85.76	86.21	86.19	86.64	86.52	87.01	86.95	87.48	87.16	87.92	88.65
21568.6	84.97	85.36	85.74	86.20	86.17	86.63	86.51	87.00	86.93	87.47	87.14	87.91	88.64
21574.3	84.95	85.34	85.72	86.18	86.15	86.61	86.49	86.98	86.92	87.46	87.13	87.90	88.63
21580.1	84.93	85.32	85.71	86.16	86.13	86.60	86.47	86.97	86.90	87.44	87.12	87.89	88.62
21585.9	84.91	85.30	85.69	86.14	86.12	86.58	86.46	86.95	86.88	87.43	87.10	87.88	88.62
21591.7	84.89	85.29	85.67	86.13	86.10	86.56	86.44	86.94	86.87	87.42	87.09	87.87	88.61
21597.4	84.87	85.27	85.65	86.11	86.08	86.54	86.42	86.92	86.85	87.41	87.07	87.86	88.61
21603.2	84.85	85.25	85.64	86.09	86.06	86.53	86.41	86.90	86.83	87.39	87.06	87.86	88.60
21609.0	84.83	85.23	85.62	86.08	86.05	86.51	86.39	86.89	86.82	87.38	87.04	87.85	88.60
21615.0	84.81	85.21	85.60	86.05	86.03	86.49	86.37	86.87	86.80	87.37	87.02	87.84	88.59
21621.0	84.79	85.18	85.57	86.03	86.00	86.47	86.34	86.85	86.78	87.35	87.00	87.82	88.58
21627.0	84.76	85.16	85.55	86.01	85.98	86.44	86.32	86.83	86.76	87.33	86.98	87.81	88.57
21633.0	84.74	85.14	85.52	85.98	85.95	86.42	86.30	86.81	86.74	87.31	86.96	87.79	88.56
21639.0	84.71	85.11	85.50	85.96	85.93	86.40	86.28	86.79	86.72	87.30	86.95	87.78	88.55
21645.0	84.69	85.09	85.48	85.93	85.91	86.38	86.25	86.77	86.70	87.28	86.93	87.78	88.54
21651.0	84.66	85.06	85.45	85.91	85.88	86.35	86.23	86.75	86.68	87.27	86.91	87.77	88.53
21657.0	84.64	85.03	85.43	85.88	85.86	86.33	86.20	86.73	86.66	87.25	86.89	87.75	88.53
21663.0	84.61	85.01	85.40	85.86	85.83	86.31	86.18	86.71	86.63	87.24	86.87	87.74	88.52
21669.0	84.58	84.98	85.37	85.83	85.80	86.28	86.15	86.69	86.61	87.22	86.86	87.73	88.51
21675.0	84.55	84.95	85.35	85.81	85.78	86.26	86.13	86.67	86.59	87.21	86.84	87.72	88.50
21681.0	84.53	84.93	85.32	85.78	85.75	86.23	86.10	86.65	86.57	87.19	86.82	87.71	88.49
21687.0	84.50	84.90	85.29	85.75	85.72	86.21	86.08	86.63	86.55	87.18	86.81	87.70	88.49
21693.0	84.47	84.87	85.26	85.73	85.70	86.19	86.06	86.62	86.54	87.17	86.79	87.69	88.48
21699.0	84.44	84.84	85.23	85.70	85.67	86.17	86.03	86.60	86.52	87.16	86.77	87.68	88.47
21705.0	84.40	84.81	85.20	85.67	85.64	86.14	86.01	86.58	86.50	87.14	86.76	87.67	88.47
21711.0	84.37	84.77	85.17	85.64	85.61	86.12	85.98	86.56	86.48	87.13	86.74	87.66	88.47
21716.8	84.35	84.75	85.15	85.62	85.59	86.10	85.96	86.55	86.46	87.11	86.72	87.65	88.46
21722.7	84.32	84.73	85.12	85.59	85.56	86.08	85.94	86.53	86.45	87.10	86.71	87.64	88.45
21728.5	84.30	84.70	85.10	85.57	85.54	86.06	85.91	86.51	86.43	87.09	86.69	87.63	88.44
21734.3	84.27	84.68	85.07	85.55	85.52	86.04	85.89	86.50	86.41	87.07	86.68	87.62	88.43
21740.1	84.25	84.65	85.05	85.52	85.49	86.02	85.87	86.48	86.39	87.06	86.66	87.62	88.42
21746.0	84.22	84.63	85.03	85.50	85.47	86.00	85.85	86.47	86.38	87.05	86.65	87.61	88.41
21751.8	84.20	84.60	85.00	85.48	85.45	85.98	85.83	86.45	86.36	87.04	86.64	87.60	88.41
21757.6	84.17	84.58	84.98	85.46	85.43	85.96	85.81	86.44	86.35	87.03	86.62	87.59	88.40
21763.4	84.15	84.55	84.95	85.43	85.40	85.94	85.79	86.42	86.34	87.01	86.61	87.58	88.38
21769.3	84.12	84.53	84.93	85.41	85.38	85.92	85.77	86.41	86.32	87.00	86.59	87.56	88.38
21775.1	84.09	84.50	84.90	85.38	85.35	85.90	85.75	86.39	86.30	86.98	86.58	87.55	88.39
21780.9	84.07	84.48	84.88	85.36	85.33	85.88	85.72	86.37	86.28	86.97	86.56	87.54	88.37
21786.7	84.04	84.45	84.85	85.33	85.30	85.86	85.70	86.36	86.27	86.95	86.54	87.52	88.35
21792.6	84.02	84.43	84.83	85.31	85.28	85.84	85.68	86.34	86.25	86.94	86.53	87.51	88.31

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
21798.4	83.99	84.40	84.80	85.28	85.25	85.82	85.66	86.32	86.23	86.92	86.51	87.50	88.31
21804.2	83.96	84.37	84.77	85.26	85.23	85.80	85.64	86.30	86.21	86.90	86.49	87.48	88.30
21810.0	83.94	84.35	84.75	85.23	85.20	85.78	85.62	86.28	86.19	86.88	86.47	87.47	88.29
21815.9	83.91	84.32	84.72	85.21	85.18	85.76	85.60	86.26	86.17	86.87	86.45	87.45	88.27
21821.7	83.88	84.30	84.70	85.18	85.15	85.74	85.57	86.24	86.15	86.85	86.44	87.44	88.25
21827.5	83.86	84.27	84.67	85.16	85.12	85.72	85.55	86.22	86.13	86.83	86.42	87.42	88.24
21833.3	83.83	84.24	84.64	85.13	85.10	85.69	85.53	86.20	86.11	86.81	86.40	87.41	88.23
21839.2	83.80	84.22	84.62	85.10	85.07	85.67	85.50	86.18	86.09	86.80	86.38	87.40	88.20
21845.0	83.78	84.19	84.59	85.07	85.04	85.65	85.48	86.16	86.07	86.77	86.36	87.38	88.18
21850.8	83.74	84.16	84.55	85.04	85.01	85.62	85.45	86.13	86.04	86.74	86.33	87.34	88.14
21856.5	83.71	84.12	84.52	85.01	84.97	85.59	85.42	86.11	86.01	86.72	86.30	87.31	88.12
21862.3	83.69	84.09	84.49	84.97	84.94	85.56	85.38	86.08	85.99	86.70	86.28	87.30	88.10
21868.0	83.66	84.06	84.45	84.94	84.90	85.53	85.35	86.06	85.96	86.68	86.25	87.27	88.07
21873.8	83.63	84.03	84.42	84.90	84.87	85.50	85.32	86.04	85.94	86.66	86.23	87.26	88.07
21879.5	83.60	83.99	84.38	84.87	84.84	85.47	85.30	86.01	85.92	86.64	86.21	87.26	88.07
21885.3	83.57	83.96	84.35	84.84	84.80	85.44	85.26	85.99	85.89	86.60	86.17	87.26	88.07
21891.0	83.54	83.93	84.32	84.80	84.77	85.39	85.22	85.92	85.83	86.55	86.12	87.22	88.04
21896.8	83.51	83.90	84.28	84.77	84.73	85.34	85.17	85.86	85.77	86.49	86.06	87.12	87.92
21902.5	83.47	83.87	84.25	84.73	84.70	85.29	85.13	85.81	85.71	86.43	86.00	87.05	87.82
21908.3	83.44	83.83	84.22	84.70	84.67	85.26	85.09	85.77	85.67	86.39	85.96	87.01	87.76
21914.0	83.40	83.79	84.18	84.66	84.63	85.22	85.06	85.73	85.64	86.36	85.93	86.98	87.73
21919.8	83.36	83.75	84.14	84.62	84.59	85.18	85.02	85.69	85.60	86.32	85.89	86.96	87.70
21925.5	83.32	83.71	84.10	84.59	84.55	85.14	84.98	85.66	85.56	86.29	85.86	86.91	87.65
21931.3	83.28	83.67	84.06	84.54	84.51	85.11	84.94	85.62	85.53	86.25	85.82	86.89	87.62
21937.0	83.23	83.62	84.01	84.50	84.47	85.07	84.90	85.58	85.49	86.22	85.78	86.86	87.59
21942.8	83.18	83.58	83.97	84.46	84.43	85.02	84.86	85.54	85.45	86.18	85.74	86.82	87.55
21948.5	83.13	83.53	83.92	84.41	84.38	84.98	84.81	85.50	85.41	86.14	85.70	86.80	87.52
21954.3	83.07	83.47	83.87	84.36	84.33	84.93	84.76	85.46	85.36	86.11	85.65	86.75	87.46
21960.0	83.02	83.41	83.81	84.31	84.27	84.88	84.71	85.41	85.31	86.06	85.60	86.72	87.43
21965.8	82.99	83.39	83.78	84.28	84.24	84.86	84.69	85.36	85.27	86.01	85.59	86.72	87.48
21971.6	82.96	83.36	83.76	84.26	84.22	84.83	84.66	85.34	85.25	85.99	85.56	86.70	87.47
21977.4	82.94	83.34	83.74	84.24	84.20	84.81	84.64	85.33	85.23	85.97	85.53	86.68	87.43
21983.2	82.93	83.33	83.73	84.22	84.19	84.79	84.62	85.31	85.21	85.95	85.51	86.68	87.40
21989.0	82.91	83.32	83.72	84.21	84.18	84.78	84.61	85.29	85.19	85.93	85.50	86.65	87.40
21994.8	82.90	83.31	83.71	84.21	84.18	84.77	84.61	85.28	85.19	85.92	85.49	86.64	87.40
22000.6	82.90	83.31	83.71	84.21	84.18	84.77	84.61	85.28	85.19	85.92	85.49	86.64	87.40
22006.4	82.89	83.30	83.71	84.21	84.18	84.78	84.61	85.29	85.19	85.92	85.49	86.64	87.40
22012.2	82.89	83.30	83.71	84.21	84.18	84.78	84.61	85.29	85.20	85.93	85.49	86.65	87.40
22018.0	82.89	83.30	83.71	84.22	84.18	84.79	84.62	85.30	85.21	85.93	85.50	86.66	87.40
22023.8	82.89	83.30	83.71	84.22	84.19	84.79	84.63	85.31	85.22	85.94	85.51	86.66	87.41
22029.6	82.89	83.31	83.72	84.23	84.19	84.80	84.63	85.32	85.23	85.96	85.52	86.68	87.42
22035.4	82.89	83.31	83.72	84.23	84.20	84.81	84.64	85.33	85.24	85.97	85.53	86.69	87.44
22041.2	82.89	83.31	83.73	84.24	84.21	84.82	84.65	85.34	85.25	85.98	85.54	86.71	87.46
22047.0	82.90	83.32	83.73	84.25	84.21	84.83	84.66	85.35	85.26	86.00	85.56	86.72	87.47
22052.8	82.90	83.32	83.74	84.25	84.22	84.84	84.67	85.36	85.27	86.01	85.57	86.74	87.48
22058.6	82.90	83.33	83.74	84.26	84.23	84.85	84.68	85.38	85.28	86.03	85.58	86.75	87.49

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
22064.4	82.91	83.33	83.75	84.27	84.23	84.86	84.68	85.39	85.29	86.04	85.59	86.77	87.51
22070.2	82.91	83.34	83.76	84.28	84.24	84.87	84.69	85.40	85.30	86.05	85.61	86.78	87.53
22076.0	82.92	83.34	83.76	84.28	84.25	84.88	84.70	85.41	85.31	86.07	85.62	86.79	87.54
22082.0	82.90	83.33	83.75	84.27	84.23	84.86	84.68	85.39	85.30	86.05	85.60	86.78	87.53
22088.0	82.89	83.31	83.73	84.25	84.22	84.84	84.67	85.37	85.28	86.03	85.58	86.76	87.51
22094.0	82.88	83.30	83.72	84.23	84.20	84.82	84.65	85.35	85.26	86.01	85.56	86.74	87.49
22100.0	82.86	83.28	83.70	84.21	84.18	84.80	84.63	85.33	85.23	85.98	85.54	86.72	87.47
22106.0	82.85	83.27	83.68	84.19	84.16	84.78	84.61	85.31	85.21	85.96	85.51	86.70	87.45
22112.0	82.83	83.25	83.66	84.17	84.14	84.76	84.58	85.28	85.19	85.94	85.49	86.68	87.43
22118.0	82.82	83.23	83.64	84.15	84.12	84.73	84.56	85.26	85.16	85.91	85.46	86.67	87.41
22124.0	82.80	83.21	83.62	84.13	84.10	84.71	84.54	85.23	85.14	85.88	85.43	86.64	87.38
22130.0	82.78	83.19	83.60	84.11	84.07	84.68	84.51	85.20	85.11	85.85	85.41	86.61	87.34
22136.0	82.76	83.17	83.58	84.08	84.05	84.66	84.49	85.18	85.08	85.82	85.38	86.58	87.31
22142.0	82.74	83.15	83.55	84.06	84.02	84.63	84.46	85.15	85.05	85.79	85.35	86.55	87.28
22148.0	82.72	83.12	83.53	84.03	84.00	84.60	84.43	85.11	85.02	85.75	85.32	86.52	87.25
22154.0	82.69	83.10	83.50	84.00	83.97	84.57	84.40	85.08	84.99	85.72	85.28	86.49	87.21
22160.0	82.67	83.07	83.47	83.97	83.94	84.53	84.37	85.05	84.95	85.69	85.25	86.46	87.17
22166.0	82.64	83.04	83.44	83.94	83.90	84.50	84.33	85.01	84.92	85.65	85.21	86.43	87.15
22172.0	82.61	83.01	83.41	83.90	83.87	84.47	84.30	84.98	84.88	85.62	85.18	86.40	87.11
22178.0	82.58	82.98	83.38	83.87	83.84	84.43	84.26	84.94	84.85	85.58	85.14	86.36	87.06
22184.0	82.55	82.95	83.34	83.83	83.80	84.39	84.22	84.90	84.81	85.54	85.10	86.33	87.02
22190.0	82.52	82.91	83.30	83.79	83.76	84.35	84.18	84.86	84.76	85.49	85.06	86.29	86.97
22196.0	82.48	82.87	83.26	83.75	83.72	84.30	84.14	84.81	84.72	85.45	85.01	86.25	86.92
22202.0	82.44	82.83	83.22	83.71	83.67	84.26	84.10	84.77	84.67	85.40	84.96	86.21	86.88
22208.0	82.39	82.79	83.18	83.66	83.63	84.21	84.05	84.72	84.62	85.35	84.92	86.17	86.83
22214.0	82.37	82.76	83.15	83.64	83.60	84.19	84.02	84.69	84.60	85.33	84.89	86.15	86.81
22220.0	82.34	82.74	83.13	83.61	83.58	84.16	84.00	84.67	84.58	85.32	84.88	86.14	86.80
22226.0	82.32	82.71	83.10	83.58	83.55	84.14	83.98	84.66	84.56	85.30	84.86	86.13	86.79
22232.0	82.29	82.69	83.07	83.56	83.53	84.12	83.95	84.64	84.55	85.29	84.84	86.12	86.78
22238.0	82.27	82.66	83.05	83.53	83.50	84.10	83.93	84.62	84.53	85.27	84.83	86.12	86.78
22244.0	82.24	82.63	83.02	83.51	83.48	84.08	83.91	84.60	84.51	85.26	84.81	86.10	86.75
22250.0	82.22	82.61	83.00	83.48	83.45	84.05	83.88	84.59	84.49	85.25	84.79	86.09	86.75
22256.0	82.19	82.58	82.97	83.46	83.42	84.03	83.86	84.56	84.47	85.23	84.77	86.08	86.74
22262.0	82.16	82.55	82.94	83.43	83.40	84.01	83.83	84.54	84.45	85.21	84.75	86.06	86.72
22268.0	82.14	82.53	82.92	83.40	83.37	83.98	83.81	84.52	84.42	85.19	84.73	86.05	86.71
22274.0	82.11	82.50	82.89	83.38	83.34	83.96	83.78	84.50	84.40	85.17	84.71	86.03	86.69
22280.0	82.08	82.47	82.86	83.35	83.32	83.93	83.76	84.47	84.38	85.15	84.69	86.02	86.67
22286.0	82.06	82.44	82.83	83.32	83.29	83.90	83.73	84.45	84.35	85.13	84.66	86.00	86.66
22292.0	82.03	82.42	82.81	83.29	83.26	83.88	83.70	84.43	84.33	85.11	84.64	85.99	86.62
22298.0	82.00	82.39	82.78	83.27	83.23	83.85	83.67	84.40	84.30	85.08	84.61	85.98	86.61
22304.0	81.97	82.36	82.75	83.24	83.20	83.82	83.64	84.36	84.26	85.04	84.58	85.94	86.57
22310.0	81.95	82.33	82.72	83.21	83.17	83.78	83.61	84.33	84.22	85.00	84.54	85.89	86.50
22316.0	81.92	82.30	82.69	83.18	83.15	83.75	83.58	84.28	84.18	84.94	84.48	85.83	86.45
22322.0	81.89	82.28	82.66	83.15	83.12	83.72	83.55	84.24	84.14	84.89	84.44	85.79	86.42
22328.0	81.86	82.25	82.63	83.12	83.09	83.69	83.52	84.21	84.12	84.86	84.41	85.78	86.41
22334.0	81.83	82.22	82.60	83.09	83.06	83.66	83.49	84.18	84.09	84.83	84.39	85.76	86.38

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
22340.0	81.80	82.19	82.57	83.06	83.03	83.63	83.46	84.15	84.06	84.81	84.36	85.73	86.36
22346.0	81.77	82.16	82.54	83.03	83.00	83.60	83.43	84.13	84.03	84.78	84.33	85.71	86.33
22351.8	81.74	82.13	82.52	83.01	82.98	83.58	83.41	84.11	84.02	84.77	84.32	85.71	86.32
22357.5	81.72	82.11	82.50	82.99	82.96	83.56	83.39	84.10	84.00	84.76	84.31	85.71	86.32
22363.3	81.69	82.08	82.47	82.97	82.93	83.55	83.37	84.08	83.99	84.75	84.29	85.71	86.32
22369.1	81.67	82.06	82.45	82.95	82.91	83.53	83.36	84.07	83.97	84.74	84.28	85.71	86.31
22374.8	81.64	82.03	82.43	82.93	82.89	83.51	83.34	84.06	83.96	84.74	84.27	85.71	86.31
22380.6	81.62	82.01	82.41	82.91	82.87	83.49	83.32	84.04	83.94	84.73	84.26	85.71	86.31
22386.4	81.59	81.99	82.38	82.89	82.85	83.48	83.30	84.03	83.93	84.72	84.25	85.71	86.31
22392.1	81.57	81.97	82.36	82.87	82.83	83.46	83.29	84.02	83.92	84.71	84.24	85.70	86.31
22397.9	81.55	81.94	82.34	82.85	82.81	83.45	83.27	84.01	83.90	84.70	84.22	85.70	86.31
22403.6	81.52	81.92	82.32	82.83	82.79	83.43	83.25	83.99	83.89	84.69	84.21	85.70	86.30
22409.4	81.50	81.90	82.30	82.81	82.77	83.41	83.23	83.98	83.88	84.69	84.20	85.70	86.30
22415.2	81.48	81.88	82.28	82.79	82.75	83.40	83.22	83.97	83.87	84.68	84.19	85.70	86.30
22420.9	81.45	81.85	82.26	82.77	82.74	83.38	83.20	83.96	83.85	84.67	84.18	85.70	86.30
22426.7	81.43	81.83	82.24	82.75	82.72	83.37	83.19	83.95	83.84	84.66	84.17	85.69	86.29
22432.5	81.41	81.81	82.22	82.73	82.70	83.35	83.17	83.94	83.83	84.66	84.16	85.69	86.29
22438.2	81.39	81.79	82.20	82.72	82.68	83.34	83.15	83.92	83.82	84.65	84.15	85.69	86.29
22444.0	81.37	81.77	82.18	82.70	82.66	83.33	83.14	83.91	83.81	84.64	84.14	85.69	86.29
22450.0	81.35	81.75	82.16	82.68	82.65	83.31	83.12	83.90	83.79	84.63	84.13	85.68	86.28
22456.0	81.32	81.73	82.14	82.67	82.63	83.30	83.11	83.89	83.78	84.62	84.12	85.67	86.27
22462.0	81.30	81.71	82.12	82.65	82.61	83.28	83.09	83.87	83.76	84.61	84.10	85.67	86.26
22468.0	81.28	81.68	82.10	82.63	82.59	83.26	83.08	83.86	83.75	84.59	84.09	85.66	86.26
22474.0	81.25	81.66	82.08	82.61	82.57	83.25	83.06	83.84	83.74	84.58	84.08	85.65	86.25
22480.0	81.22	81.64	82.06	82.59	82.55	83.23	83.04	83.83	83.72	84.57	84.06	85.65	86.24
22486.0	81.20	81.61	82.03	82.57	82.54	83.21	83.02	83.81	83.70	84.56	84.05	85.64	86.23
22492.0	81.17	81.59	82.01	82.55	82.51	83.20	83.00	83.80	83.69	84.54	84.03	85.63	86.22
22498.0	81.14	81.56	81.98	82.53	82.49	83.18	82.99	83.78	83.67	84.53	84.02	85.62	86.21
22504.0	81.12	81.53	81.96	82.51	82.47	83.16	82.97	83.77	83.66	84.52	84.00	85.61	86.20
22510.0	81.09	81.50	81.93	82.49	82.45	83.14	82.95	83.75	83.64	84.50	83.99	85.61	86.19
22516.0	81.06	81.48	81.91	82.46	82.43	83.12	82.93	83.74	83.62	84.49	83.97	85.60	86.18
22522.0	81.03	81.45	81.88	82.44	82.40	83.10	82.91	83.72	83.61	84.48	83.96	85.59	86.17
22528.0	81.00	81.42	81.85	82.42	82.38	83.08	82.89	83.70	83.59	84.46	83.94	85.58	86.16
22534.0	80.96	81.39	81.82	82.39	82.35	83.06	82.86	83.68	83.57	84.45	83.92	85.57	86.15
22540.0	80.93	81.35	81.79	82.37	82.33	83.04	82.84	83.67	83.55	84.43	83.91	85.56	86.14
22546.0	80.90	81.32	81.76	82.34	82.30	83.02	82.82	83.65	83.54	84.42	83.89	85.56	86.13
22551.8	80.87	81.29	81.74	82.32	82.28	83.00	82.80	83.63	83.52	84.40	83.88	85.55	86.12
22557.5	80.84	81.27	81.72	82.30	82.26	82.99	82.78	83.62	83.50	84.39	83.86	85.54	86.11
22563.3	80.82	81.25	81.70	82.28	82.24	82.97	82.77	83.60	83.49	84.38	83.85	85.53	86.10
22569.1	80.79	81.22	81.68	82.26	82.22	82.95	82.75	83.59	83.48	84.37	83.84	85.52	86.09
22574.8	80.77	81.20	81.66	82.25	82.21	82.94	82.74	83.58	83.46	84.35	83.82	85.51	86.08
22580.6	80.74	81.18	81.64	82.23	82.19	82.93	82.72	83.56	83.45	84.34	83.81	85.51	86.07
22586.4	80.72	81.16	81.62	82.22	82.18	82.91	82.71	83.55	83.44	84.33	83.80	85.50	86.06
22592.1	80.70	81.14	81.60	82.20	82.16	82.90	82.69	83.54	83.43	84.32	83.79	85.49	86.05
22597.9	80.68	81.12	81.59	82.19	82.15	82.89	82.68	83.53	83.41	84.31	83.78	85.48	86.04
22603.6	80.65	81.10	81.57	82.17	82.13	82.88	82.67	83.52	83.40	84.30	83.77	85.48	86.03

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
22609.4	80.63	81.09	81.56	82.16	82.12	82.86	82.66	83.51	83.39	84.29	83.76	85.47	86.03
22615.2	80.62	81.07	81.54	82.15	82.11	82.85	82.65	83.50	83.38	84.28	83.75	85.46	86.02
22620.9	80.60	81.06	81.53	82.14	82.10	82.84	82.64	83.49	83.37	84.27	83.74	85.46	86.01
22626.7	80.58	81.04	81.52	82.13	82.09	82.83	82.63	83.48	83.36	84.27	83.73	85.45	86.00
22632.5	80.56	81.03	81.51	82.12	82.08	82.82	82.62	83.47	83.35	84.26	83.72	85.45	86.00
22638.2	80.55	81.02	81.50	82.11	82.07	82.81	82.61	83.46	83.35	84.25	83.71	85.44	85.99
22644.0	80.53	81.00	81.49	82.10	82.06	82.81	82.60	83.45	83.34	84.24	83.70	85.44	85.98
22650.0	80.51	80.99	81.47	82.08	82.04	82.79	82.58	83.44	83.32	84.23	83.69	85.43	85.97
22656.0	80.49	80.97	81.45	82.07	82.02	82.78	82.57	83.43	83.31	84.21	83.68	85.42	85.96
22662.0	80.48	80.95	81.44	82.05	82.01	82.76	82.55	83.41	83.30	84.20	83.66	85.41	85.94
22668.0	80.46	80.93	81.42	82.03	81.99	82.75	82.54	83.40	83.28	84.19	83.65	85.40	85.93
22674.0	80.44	80.91	81.40	82.02	81.98	82.73	82.52	83.38	83.27	84.17	83.63	85.39	85.92
22680.0	80.42	80.90	81.38	82.00	81.96	82.72	82.51	83.37	83.25	84.16	83.62	85.38	85.90
22686.0	80.40	80.88	81.37	81.99	81.94	82.70	82.49	83.35	83.24	84.14	83.60	85.37	85.89
22692.0	80.38	80.86	81.35	81.97	81.93	82.68	82.48	83.34	83.22	84.13	83.59	85.35	85.88
22698.0	80.36	80.84	81.33	81.95	81.91	82.67	82.46	83.32	83.21	84.12	83.57	85.34	85.86
22704.0	80.34	80.82	81.31	81.94	81.89	82.65	82.44	83.31	83.19	84.10	83.56	85.33	85.85
22710.0	80.32	80.80	81.30	81.92	81.88	82.64	82.43	83.29	83.17	84.09	83.54	85.32	85.84
22716.0	80.30	80.79	81.28	81.90	81.86	82.62	82.41	83.28	83.16	84.07	83.53	85.31	85.82
22722.0	80.28	80.77	81.26	81.88	81.84	82.60	82.39	83.26	83.14	84.05	83.51	85.30	85.81
22728.0	80.26	80.75	81.24	81.87	81.82	82.59	82.38	83.24	83.13	84.04	83.50	85.29	85.79
22734.0	80.24	80.73	81.22	81.85	81.81	82.57	82.36	83.23	83.11	84.02	83.48	85.28	85.78
22740.0	80.22	80.71	81.21	81.83	81.79	82.55	82.34	83.21	83.09	84.01	83.46	85.26	85.76
22746.0	80.20	80.69	81.19	81.81	81.77	82.54	82.32	83.19	83.08	83.99	83.45	85.25	85.75
22752.0	80.18	80.67	81.17	81.80	81.75	82.52	82.31	83.18	83.06	83.97	83.43	85.24	85.74
22758.0	80.16	80.65	81.15	81.78	81.73	82.50	82.29	83.16	83.04	83.96	83.41	85.23	85.72
22764.0	80.14	80.63	81.13	81.76	81.72	82.48	82.27	83.14	83.02	83.94	83.40	85.22	85.71
22770.0	80.12	80.61	81.11	81.74	81.70	82.46	82.25	83.12	83.01	83.92	83.38	85.20	85.69
22776.0	80.10	80.59	81.09	81.72	81.68	82.45	82.23	83.11	82.99	83.91	83.36	85.19	85.68
22782.0	80.08	80.57	81.07	81.70	81.66	82.43	82.22	83.09	82.97	83.89	83.34	85.18	85.67
22787.8	80.06	80.55	81.05	81.68	81.64	82.41	82.20	83.07	82.95	83.87	83.32	85.16	85.65
22793.6	80.04	80.53	81.03	81.66	81.62	82.39	82.18	83.05	82.93	83.85	83.30	85.15	85.64
22799.4	80.02	80.51	81.01	81.64	81.60	82.37	82.16	83.03	82.91	83.83	83.29	85.14	85.62
22805.2	80.00	80.49	80.99	81.62	81.58	82.35	82.14	83.01	82.89	83.81	83.27	85.12	85.61
22811.0	79.98	80.47	80.97	81.60	81.56	82.33	82.12	82.99	82.87	83.79	83.25	85.11	85.59
22816.8	79.96	80.45	80.95	81.58	81.54	82.31	82.10	82.97	82.85	83.77	83.23	85.09	85.58
22822.6	79.94	80.43	80.93	81.56	81.52	82.29	82.07	82.95	82.83	83.75	83.20	85.08	85.56
22828.4	79.91	80.41	80.91	81.54	81.50	82.26	82.05	82.93	82.81	83.73	83.18	85.06	85.55
22834.2	79.89	80.38	80.89	81.52	81.47	82.24	82.03	82.91	82.79	83.71	83.16	85.04	85.53
22840.0	79.87	80.36	80.86	81.49	81.45	82.22	82.01	82.88	82.77	83.69	83.14	85.03	85.52
22845.8	79.85	80.34	80.84	81.47	81.43	82.20	81.98	82.86	82.74	83.66	83.11	85.01	85.50
22851.6	79.82	80.31	80.81	81.45	81.40	82.17	81.96	82.84	82.72	83.64	83.09	84.99	85.49
22857.4	79.80	80.29	80.79	81.42	81.38	82.15	81.94	82.81	82.69	83.61	83.07	84.97	85.47
22863.2	79.77	80.27	80.77	81.40	81.35	82.12	81.91	82.79	82.67	83.59	83.04	84.95	85.45
22869.0	79.75	80.24	80.74	81.37	81.33	82.09	81.88	82.76	82.64	83.56	83.01	84.93	85.43
22874.8	79.72	80.21	80.71	81.34	81.30	82.07	81.86	82.73	82.61	83.53	82.99	84.91	85.42

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
22880.6	79.70	80.19	80.68	81.31	81.27	82.04	81.83	82.70	82.58	83.50	82.96	84.89	85.40
22886.4	79.67	80.16	80.66	81.28	81.24	82.01	81.80	82.67	82.55	83.47	82.93	84.87	85.38
22892.2	79.64	80.13	80.63	81.25	81.21	81.98	81.77	82.64	82.52	83.44	82.89	84.85	85.36
22898.0	79.61	80.10	80.59	81.22	81.18	81.94	81.73	82.61	82.49	83.41	82.86	84.82	85.34
22903.8	79.59	80.08	80.57	81.20	81.16	81.92	81.71	82.59	82.47	83.39	82.84	84.81	85.33
22909.5	79.57	80.05	80.55	81.18	81.14	81.90	81.69	82.57	82.45	83.37	82.82	84.80	85.32
22915.3	79.55	80.03	80.53	81.16	81.11	81.88	81.67	82.55	82.43	83.35	82.80	84.79	85.31
22921.1	79.52	80.01	80.51	81.14	81.09	81.86	81.65	82.53	82.41	83.33	82.78	84.78	85.31
22926.8	79.50	79.99	80.49	81.12	81.07	81.84	81.63	82.51	82.39	83.31	82.76	84.77	85.30
22932.6	79.48	79.97	80.47	81.09	81.05	81.82	81.61	82.49	82.37	83.29	82.74	84.76	85.29
22938.4	79.46	79.95	80.44	81.07	81.03	81.80	81.59	82.47	82.35	83.27	82.72	84.75	85.29
22944.1	79.44	79.93	80.42	81.05	81.01	81.78	81.57	82.45	82.33	83.25	82.70	84.74	85.28
22949.9	79.42	79.90	80.40	81.03	80.99	81.76	81.55	82.43	82.31	83.24	82.68	84.72	85.27
22955.6	79.40	79.88	80.38	81.01	80.97	81.74	81.53	82.41	82.29	83.22	82.66	84.71	85.27
22961.4	79.37	79.86	80.36	80.99	80.95	81.72	81.51	82.39	82.27	83.20	82.65	84.70	85.26
22967.2	79.35	79.84	80.34	80.97	80.93	81.70	81.49	82.37	82.25	83.18	82.63	84.69	85.26
22972.9	79.33	79.82	80.32	80.95	80.91	81.68	81.47	82.35	82.23	83.16	82.61	84.68	85.25
22978.7	79.31	79.80	80.30	80.93	80.89	81.66	81.45	82.33	82.21	83.15	82.59	84.67	85.24
22984.5	79.29	79.78	80.28	80.91	80.87	81.64	81.43	82.32	82.20	83.13	82.57	84.66	85.24
22990.2	79.27	79.76	80.26	80.90	80.85	81.63	81.41	82.30	82.18	83.11	82.55	84.65	85.23
22996.0	79.25	79.74	80.24	80.88	80.83	81.61	81.40	82.28	82.16	83.09	82.53	84.64	85.23
22996.0	79.25	79.74	80.24	80.88	80.83	81.61	81.40	82.28	82.16	83.09	82.53	84.64	85.23
23008.3	79.22	79.72	80.24	80.89	80.84	81.63	81.42	82.33	82.21	83.16	82.59	84.70	85.30
23019.7	78.46	78.89	79.35	79.95	79.91	80.63	80.45	81.28	81.17	82.03	81.52	82.53	83.77
23034.0	78.42	78.87	79.37	80.01	79.96	80.70	80.51	81.34	81.23	82.09	81.57	82.58	83.86
23034.0	78.42	78.87	79.37	80.01	79.96	80.70	80.51	81.34	81.23	82.09	81.57	82.58	83.86
23040.0	78.45	78.91	79.41	80.04	80.00	80.74	80.55	81.38	81.26	82.10	81.60	82.63	83.84
23046.0	78.48	78.94	79.44	80.08	80.03	80.77	80.58	81.40	81.28	82.12	81.62	82.66	83.85
23052.0	78.50	78.97	79.47	80.10	80.06	80.79	80.61	81.43	81.31	82.14	81.63	82.69	83.87
23058.0	78.52	78.99	79.48	80.12	80.08	80.81	80.63	81.45	81.33	82.17	81.66	82.71	83.89
23058.0	78.52	78.99	79.48	80.12	80.08	80.81	80.63	81.45	81.33	82.17	81.66	82.71	83.89
23064.0	78.51	78.99	79.49	80.14	80.10	80.84	80.65	81.47	81.36	82.20	81.69	82.73	83.93
23070.0	78.51	79.00	79.50	80.15	80.11	80.85	80.67	81.49	81.38	82.22	81.70	82.74	83.97
23076.0	78.51	79.00	79.51	80.16	80.12	80.87	80.68	81.50	81.40	82.24	81.72	82.73	84.04
23082.0	78.50	79.00	79.52	80.17	80.13	80.88	80.69	81.52	81.41	82.26	81.74	82.74	84.06
23088.0	78.49	79.00	79.52	80.18	80.13	80.89	80.70	81.53	81.42	82.28	81.76	82.76	84.08
23094.0	78.48	78.99	79.52	80.18	80.14	80.90	80.71	81.54	81.44	82.29	81.77	82.78	84.09
23100.0	78.46	78.99	79.52	80.18	80.14	80.91	80.71	81.55	81.45	82.31	81.78	82.79	84.09
23106.0	78.45	78.98	79.52	80.18	80.14	80.91	80.71	81.56	81.46	82.32	81.80	82.81	84.09
23112.0	78.43	78.97	79.51	80.18	80.14	80.91	80.72	81.57	81.48	82.33	81.81	82.82	84.11
23118.0	78.42	78.96	79.51	80.18	80.14	80.92	80.72	81.57	81.49	82.34	81.82	82.83	84.11
23124.0	78.40	78.95	79.50	80.18	80.14	80.92	80.72	81.58	81.48	82.35	81.83	82.84	84.10
23130.0	78.38	78.94	79.49	80.18	80.13	80.92	80.72	81.58	81.48	82.35	81.82	82.84	84.11
23136.0	78.36	78.92	79.48	80.17	80.13	80.91	80.71	81.58	81.48	82.35	81.82	82.84	84.12
23142.0	78.33	78.91	79.47	80.17	80.12	80.91	80.71	81.58	81.48	82.36	81.83	82.85	84.12
23148.0	78.31	78.89	79.46	80.16	80.12	80.91	80.71	81.59	81.47	82.37	81.83	82.86	84.10

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23153.9	78.30	78.88	79.46	80.15	80.11	80.90	80.70	81.58	81.47	82.37	81.83	82.86	84.08
23159.8	78.29	78.87	79.45	80.15	80.10	80.90	80.69	81.58	81.46	82.39	81.83	82.89	84.03
23165.7	78.28	78.87	79.44	80.14	80.09	80.89	80.69	81.57	81.46	82.37	81.82	82.87	84.06
23171.6	78.27	78.86	79.43	80.13	80.09	80.88	80.68	81.57	81.45	82.34	81.82	82.84	84.10
23177.5	78.26	78.85	79.43	80.13	80.08	80.88	80.68	81.56	81.44	82.33	81.81	82.83	84.09
23183.5	78.25	78.84	79.42	80.12	80.07	80.87	80.67	81.55	81.44	82.33	81.80	82.82	84.08
23189.4	78.24	78.83	79.41	80.11	80.07	80.86	80.66	81.55	81.43	82.34	81.80	82.82	84.06
23195.3	78.24	78.83	79.40	80.11	80.06	80.86	80.66	81.54	81.42	82.34	81.79	82.84	84.02
23201.2	78.23	78.82	79.40	80.10	80.05	80.85	80.65	81.53	81.42	82.33	81.78	82.84	84.00
23207.1	78.22	78.81	79.39	80.09	80.05	80.85	80.64	81.53	81.41	82.32	81.78	82.83	83.99
23213.0	78.21	78.81	79.38	80.09	80.04	80.84	80.64	81.52	81.41	82.32	81.77	82.82	83.99
23218.9	78.21	78.80	79.38	80.08	80.04	80.83	80.63	81.52	81.40	82.31	81.77	82.81	83.99
23224.8	78.20	78.79	79.37	80.07	80.03	80.83	80.62	81.51	81.39	82.31	81.76	82.81	83.99
23230.7	78.19	78.79	79.37	80.07	80.02	80.82	80.62	81.50	81.39	82.30	81.75	82.80	83.98
23236.6	78.19	78.78	79.36	80.06	80.02	80.81	80.61	81.50	81.38	82.29	81.75	82.79	83.98
23242.5	78.18	78.77	79.35	80.05	80.01	80.81	80.61	81.49	81.37	82.29	81.74	82.79	83.97
23248.5	78.17	78.77	79.35	80.05	80.00	80.80	80.60	81.48	81.37	82.28	81.73	82.78	83.96
23254.4	78.17	78.76	79.34	80.04	80.00	80.79	80.59	81.48	81.36	82.27	81.73	82.77	83.96
23260.3	78.16	78.75	79.33	80.03	79.99	80.79	80.59	81.47	81.35	82.26	81.72	82.77	83.95
23266.2	78.15	78.75	79.33	80.03	79.98	80.78	80.58	81.46	81.35	82.26	81.71	82.76	83.95
23272.1	78.15	78.74	79.32	80.02	79.98	80.77	80.57	81.45	81.34	82.25	81.71	82.75	83.94
23278.0	78.14	78.73	79.31	80.01	79.97	80.77	80.56	81.45	81.33	82.24	81.70	82.75	83.94
23284.0	78.12	78.72	79.29	79.99	79.95	80.74	80.54	81.42	81.31	82.22	81.67	82.72	83.91
23290.0	78.10	78.70	79.27	79.97	79.93	80.72	80.52	81.40	81.29	82.19	81.65	82.70	83.88
23296.0	78.08	78.67	79.25	79.95	79.90	80.70	80.50	81.37	81.26	82.17	81.62	82.67	83.86
23302.0	78.06	78.65	79.23	79.92	79.88	80.67	80.47	81.35	81.23	82.14	81.60	82.64	83.83
23308.0	78.04	78.63	79.20	79.90	79.85	80.64	80.44	81.32	81.20	82.11	81.57	82.60	83.79
23314.0	78.01	78.60	79.18	79.87	79.83	80.61	80.41	81.29	81.17	82.07	81.53	82.57	83.76
23320.0	77.99	78.58	79.15	79.84	79.80	80.58	80.38	81.26	81.14	82.04	81.50	82.53	83.72
23326.0	77.96	78.55	79.12	79.81	79.77	80.55	80.35	81.22	81.11	82.00	81.47	82.49	83.68
23332.0	77.93	78.52	79.09	79.78	79.73	80.52	80.32	81.18	81.07	81.96	81.43	82.45	83.64
23338.0	77.90	78.49	79.05	79.74	79.70	80.48	80.28	81.15	81.03	81.92	81.39	82.41	83.59
23344.0	77.87	78.45	79.02	79.71	79.66	80.44	80.24	81.11	80.99	81.88	81.35	82.37	83.54
23350.0	77.84	78.42	78.98	79.67	79.62	80.40	80.20	81.06	80.95	81.84	81.30	82.32	83.50
23356.0	77.80	78.38	78.94	79.63	79.58	80.36	80.16	81.02	80.90	81.79	81.26	82.28	83.44
23362.0	77.76	78.34	78.90	79.58	79.54	80.31	80.12	80.97	80.86	81.74	81.21	82.22	83.39
23368.0	77.72	78.30	78.86	79.54	79.49	80.26	80.07	80.92	80.81	81.68	81.16	82.17	83.33
23374.0	77.68	78.25	78.81	79.49	79.44	80.21	80.02	80.86	80.75	81.63	81.10	82.12	83.28
23380.0	77.63	78.20	78.76	79.43	79.39	80.15	79.96	80.80	80.69	81.57	81.04	82.06	83.23
23386.0	77.58	78.15	78.71	79.38	79.33	80.09	79.90	80.74	80.63	81.51	80.98	82.00	83.16
23391.9	77.55	78.12	78.68	79.35	79.30	80.06	79.87	80.71	80.60	81.48	80.95	81.97	83.13
23397.8	77.52	78.09	78.64	79.31	79.27	80.03	79.84	80.68	80.57	81.45	80.92	81.93	83.10
23403.6	77.50	78.06	78.61	79.28	79.24	80.00	79.80	80.65	80.54	81.41	80.89	81.90	83.07
23409.5	77.46	78.03	78.58	79.25	79.20	79.96	79.77	80.61	80.50	81.38	80.85	81.87	83.04
23415.4	77.43	78.00	78.54	79.21	79.17	79.93	79.74	80.58	80.47	81.35	80.82	81.84	83.02
23421.3	77.40	77.96	78.51	79.18	79.14	79.90	79.70	80.55	80.44	81.32	80.79	81.81	82.99

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23427.2	77.37	77.93	78.47	79.14	79.10	79.86	79.67	80.52	80.41	81.29	80.76	81.78	82.96
23433.1	77.33	77.89	78.44	79.11	79.07	79.83	79.64	80.48	80.37	81.26	80.73	81.75	82.93
23438.9	77.30	77.85	78.40	79.07	79.03	79.80	79.60	80.45	80.34	81.23	80.69	81.72	82.91
23444.8	77.26	77.81	78.36	79.04	78.99	79.76	79.57	80.42	80.31	81.19	80.66	81.69	82.88
23450.7	77.22	77.77	78.32	79.00	78.95	79.73	79.53	80.38	80.27	81.16	80.63	81.66	82.85
23456.6	77.17	77.73	78.28	78.96	78.92	79.69	79.49	80.35	80.24	81.13	80.60	81.63	82.83
23462.5	77.13	77.68	78.24	78.92	78.88	79.65	79.46	80.32	80.21	81.10	80.56	81.60	82.80
23468.4	77.08	77.64	78.20	78.88	78.84	79.62	79.42	80.29	80.17	81.07	80.53	81.57	82.77
23474.2	77.03	77.59	78.16	78.84	78.80	79.58	79.39	80.25	80.14	81.04	80.50	81.54	82.75
23480.1	76.98	77.54	78.11	78.80	78.76	79.55	79.35	80.22	80.11	81.01	80.47	81.51	82.72
23486.0	76.92	77.49	78.06	78.76	78.72	79.51	79.31	80.19	80.07	80.98	80.44	81.48	82.69
23491.8	76.91	77.49	78.06	78.76	78.72	79.51	79.31	80.18	80.07	80.96	80.42	81.47	82.69
23497.7	76.90	77.48	78.06	78.76	78.72	79.51	79.31	80.18	80.07	80.95	80.42	81.44	82.64
23503.5	76.89	77.48	78.06	78.76	78.71	79.51	79.31	80.18	80.07	80.96	80.42	81.45	82.65
23509.4	76.89	77.48	78.05	78.76	78.71	79.51	79.31	80.18	80.07	80.96	80.42	81.45	82.65
23515.2	76.88	77.47	78.05	78.76	78.71	79.51	79.31	80.18	80.07	80.95	80.42	81.44	82.65
23521.1	76.88	77.47	78.05	78.76	78.71	79.51	79.31	80.18	80.06	80.95	80.42	81.44	82.65
23526.9	76.88	77.47	78.05	78.76	78.71	79.51	79.31	80.17	80.06	80.95	80.42	81.44	82.65
23532.8	76.88	77.47	78.05	78.76	78.71	79.51	79.30	80.17	80.06	80.95	80.42	81.44	82.65
23538.6	76.88	77.47	78.05	78.76	78.71	79.50	79.30	80.17	80.06	80.95	80.42	81.44	82.65
23544.5	76.87	77.47	78.05	78.76	78.71	79.50	79.30	80.17	80.06	80.95	80.42	81.44	82.65
23550.3	76.87	77.47	78.05	78.76	78.71	79.50	79.30	80.17	80.06	80.95	80.42	81.44	82.65
23556.2	76.87	77.46	78.05	78.75	78.71	79.50	79.30	80.17	80.06	80.95	80.42	81.44	82.65
23562.0	76.87	77.46	78.05	78.75	78.71	79.50	79.30	80.17	80.06	80.95	80.42	81.44	82.64
23568.0	76.85	77.44	78.02	78.73	78.68	79.48	79.28	80.15	80.04	80.93	80.39	81.45	82.57
23574.0	76.82	77.41	78.00	78.71	78.66	79.46	79.26	80.13	80.01	80.91	80.37	81.40	82.58
23580.0	76.80	77.39	77.97	78.68	78.64	79.43	79.23	80.10	79.99	80.88	80.35	81.37	82.57
23586.0	76.77	77.36	77.95	78.66	78.61	79.41	79.21	80.08	79.97	80.86	80.32	81.35	82.55
23592.0	76.74	77.34	77.92	78.63	78.58	79.38	79.18	80.05	79.94	80.83	80.30	81.32	82.53
23598.0	76.72	77.31	77.89	78.60	78.56	79.36	79.16	80.03	79.92	80.81	80.27	81.30	82.51
23604.0	76.69	77.28	77.87	78.58	78.53	79.33	79.13	80.00	79.89	80.78	80.25	81.27	82.49
23610.0	76.66	77.25	77.84	78.55	78.50	79.31	79.10	79.98	79.87	80.76	80.22	81.25	82.47
23616.0	76.63	77.23	77.81	78.52	78.47	79.28	79.07	79.95	79.84	80.73	80.20	81.22	82.44
23622.0	76.61	77.20	77.78	78.49	78.44	79.25	79.05	79.92	79.81	80.71	80.17	81.20	82.42
23628.0	76.58	77.17	77.75	78.46	78.42	79.22	79.02	79.90	79.78	80.68	80.14	81.17	82.39
23634.0	76.55	77.14	77.72	78.43	78.38	79.19	78.99	79.87	79.76	80.65	80.12	81.14	82.38
23640.0	76.52	77.11	77.69	78.40	78.35	79.16	78.96	79.84	79.73	80.63	80.09	81.12	82.37
23646.0	76.49	77.08	77.66	78.37	78.32	79.13	78.93	79.82	79.70	80.61	80.07	81.11	82.32
23652.0	76.45	77.04	77.63	78.34	78.29	79.10	78.89	79.79	79.67	80.59	80.04	81.09	82.32
23658.0	76.42	77.01	77.59	78.30	78.26	79.07	78.86	79.76	79.64	80.56	80.01	81.06	82.31
23664.0	76.39	76.98	77.56	78.27	78.22	79.03	78.83	79.73	79.61	80.53	79.98	81.03	82.29
23670.0	76.36	76.94	77.52	78.24	78.19	79.00	78.79	79.69	79.58	80.50	79.95	81.01	82.27
23676.0	76.32	76.91	77.49	78.20	78.15	78.97	78.76	79.66	79.55	80.47	79.92	80.98	82.25
23682.0	76.29	76.88	77.45	78.17	78.12	78.93	78.72	79.63	79.52	80.45	79.89	80.96	82.24
23687.8	76.27	76.86	77.43	78.14	78.10	78.91	78.70	79.61	79.49	80.43	79.87	80.94	82.21
23693.6	76.26	76.84	77.42	78.12	78.08	78.89	78.68	79.59	79.47	80.41	79.84	80.92	82.19

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23699.5	76.24	76.83	77.40	78.10	78.06	78.86	78.66	79.56	79.45	80.39	79.82	80.90	82.15
23705.3	76.23	76.81	77.38	78.08	78.04	78.84	78.64	79.54	79.42	80.37	79.80	80.88	82.12
23711.1	76.21	76.80	77.37	78.06	78.02	78.82	78.62	79.52	79.40	80.35	79.78	80.86	82.10
23716.9	76.20	76.78	77.35	78.05	78.00	78.80	78.60	79.50	79.38	80.33	79.76	80.85	82.08
23722.7	76.18	76.77	77.34	78.03	77.99	78.79	78.58	79.48	79.36	80.31	79.74	80.83	82.07
23728.5	76.17	76.75	77.32	78.01	77.97	78.77	78.56	79.46	79.34	80.29	79.72	80.81	82.05
23734.4	76.15	76.74	77.31	78.00	77.95	78.75	78.55	79.44	79.33	80.27	79.70	80.79	82.03
23740.2	76.14	76.72	77.29	77.98	77.94	78.73	78.53	79.43	79.31	80.25	79.68	80.77	82.00
23746.0	76.12	76.71	77.28	77.97	77.93	78.72	78.51	79.41	79.29	80.24	79.67	80.76	82.00
23751.8	76.11	76.69	77.26	77.95	77.91	78.70	78.50	79.39	79.28	80.22	79.65	80.74	82.01
23757.6	76.09	76.68	77.25	77.94	77.90	78.69	78.48	79.38	79.26	80.20	79.64	80.73	81.98
23763.5	76.08	76.66	77.23	77.93	77.88	78.67	78.47	79.36	79.25	80.17	79.62	80.70	81.97
23769.3	76.06	76.65	77.22	77.91	77.87	78.66	78.45	79.35	79.23	80.15	79.60	80.67	81.92
23775.1	76.05	76.63	77.21	77.90	77.85	78.64	78.44	79.33	79.21	80.14	79.57	80.66	81.87
23780.9	76.03	76.62	77.19	77.88	77.84	78.63	78.43	79.31	79.19	80.11	79.56	80.61	81.85
23786.7	76.01	76.60	77.18	77.87	77.82	78.61	78.41	79.29	79.18	80.09	79.54	80.59	81.84
23792.5	76.00	76.59	77.16	77.85	77.81	78.60	78.40	79.28	79.16	80.08	79.53	80.57	81.84
23798.4	75.98	76.57	77.15	77.84	77.80	78.58	78.38	79.26	79.15	80.06	79.51	80.56	81.82
23804.2	75.97	76.56	77.13	77.83	77.78	78.57	78.37	79.25	79.13	80.05	79.50	80.54	81.82
23810.0	75.95	76.54	77.12	77.81	77.77	78.56	78.35	79.24	79.12	80.03	79.49	80.53	81.78
23815.9	75.93	76.52	77.09	77.79	77.74	78.53	78.33	79.21	79.09	80.02	79.46	80.48	81.71
23821.8	75.90	76.49	77.07	77.76	77.72	78.50	78.30	79.17	79.06	79.97	79.42	80.43	81.61
23827.7	75.88	76.47	77.04	77.74	77.69	78.48	78.28	79.14	79.03	79.92	79.39	80.41	81.58
23833.6	75.86	76.45	77.02	77.71	77.67	78.45	78.25	79.12	79.00	79.89	79.36	80.37	81.54
23839.5	75.83	76.42	77.00	77.69	77.64	78.42	78.23	79.09	78.98	79.86	79.33	80.34	81.49
23845.5	75.81	76.40	76.97	77.66	77.62	78.40	78.20	79.06	78.95	79.83	79.30	80.32	81.46
23851.4	75.79	76.38	76.95	77.64	77.59	78.37	78.17	79.03	78.92	79.80	79.28	80.29	81.43
23857.3	75.77	76.36	76.93	77.61	77.57	78.35	78.15	79.01	78.90	79.78	79.25	80.26	81.40
23863.2	75.74	76.33	76.90	77.59	77.54	78.32	78.12	78.98	78.87	79.75	79.22	80.23	81.36
23869.1	75.72	76.31	76.88	77.56	77.52	78.30	78.10	78.95	78.84	79.72	79.20	80.20	81.33
23875.0	75.70	76.29	76.85	77.54	77.50	78.27	78.07	78.93	78.82	79.69	79.17	80.17	81.30
23880.9	75.68	76.26	76.83	77.51	77.47	78.24	78.05	78.90	78.79	79.66	79.14	80.14	81.27
23886.8	75.66	76.24	76.81	77.49	77.45	78.22	78.02	78.87	78.76	79.63	79.11	80.11	81.24
23892.7	75.63	76.22	76.78	77.47	77.42	78.19	78.00	78.85	78.74	79.61	79.09	80.08	81.20
23898.6	75.61	76.20	76.76	77.44	77.40	78.17	77.97	78.82	78.71	79.58	79.06	80.05	81.17
23904.5	75.59	76.17	76.74	77.42	77.37	78.14	77.95	78.79	78.68	79.55	79.03	80.02	81.14
23910.5	75.57	76.15	76.71	77.39	77.35	78.12	77.92	78.77	78.66	79.52	79.01	79.99	81.11
23916.4	75.55	76.13	76.69	77.37	77.33	78.09	77.90	78.74	78.63	79.49	78.98	79.96	81.08
23922.3	75.53	76.11	76.67	77.34	77.30	78.07	77.87	78.71	78.61	79.47	78.95	79.93	81.04
23928.2	75.51	76.09	76.65	77.32	77.28	78.04	77.85	78.69	78.58	79.44	78.92	79.91	81.01
23934.1	75.48	76.06	76.62	77.30	77.25	78.02	77.82	78.66	78.55	79.41	78.90	79.88	80.98
23940.0	75.46	76.04	76.60	77.27	77.23	77.99	77.80	78.64	78.53	79.38	78.87	79.85	80.95
23945.8	75.45	76.02	76.58	77.25	77.21	77.97	77.78	78.61	78.51	79.36	78.85	79.82	80.92
23951.6	75.43	76.01	76.56	77.24	77.19	77.95	77.76	78.59	78.49	79.34	78.83	79.80	80.89
23957.4	75.41	75.99	76.55	77.22	77.17	77.93	77.74	78.57	78.46	79.31	78.81	79.78	80.87
23963.2	75.40	75.97	76.53	77.20	77.15	77.91	77.72	78.55	78.44	79.29	78.78	79.75	80.84

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23969.0	75.38	75.95	76.51	77.18	77.13	77.89	77.70	78.53	78.42	79.26	78.76	79.72	80.81
23974.9	75.36	75.93	76.49	77.16	77.11	77.87	77.68	78.50	78.39	79.24	78.73	79.70	80.78
23980.7	75.34	75.91	76.47	77.13	77.09	77.84	77.65	78.48	78.37	79.21	78.71	79.67	80.75
23986.5	75.32	75.89	76.45	77.11	77.07	77.82	77.63	78.45	78.35	79.19	78.68	79.64	80.72
23992.3	75.30	75.87	76.43	77.09	77.05	77.79	77.61	78.43	78.32	79.16	78.66	79.61	80.69
23998.1	75.28	75.85	76.40	77.07	77.02	77.77	77.58	78.40	78.29	79.13	78.63	79.58	80.66
24003.9	75.26	75.83	76.38	77.04	77.00	77.74	77.55	78.37	78.27	79.10	78.60	79.55	80.62
24009.7	75.24	75.81	76.36	77.02	76.97	77.72	77.53	78.34	78.24	79.07	78.57	79.52	80.59
24015.5	75.22	75.79	76.33	76.99	76.95	77.69	77.50	78.31	78.21	79.04	78.54	79.49	80.56
24021.3	75.20	75.76	76.31	76.96	76.92	77.66	77.47	78.28	78.18	79.01	78.51	79.46	80.52
24027.1	75.17	75.74	76.28	76.93	76.89	77.63	77.44	78.25	78.15	78.97	78.48	79.42	80.49
24033.0	75.15	75.71	76.25	76.90	76.86	77.59	77.41	78.22	78.11	78.94	78.44	79.39	80.46
24038.8	75.12	75.68	76.22	76.87	76.83	77.56	77.38	78.18	78.08	78.90	78.41	79.35	80.42
24044.6	75.09	75.65	76.19	76.84	76.79	77.53	77.34	78.15	78.04	78.87	78.37	79.32	80.39
24050.4	75.06	75.62	76.15	76.80	76.76	77.49	77.31	78.11	78.01	78.83	78.34	79.28	80.36
24056.2	75.03	75.58	76.12	76.76	76.72	77.45	77.27	78.07	77.97	78.80	78.30	79.25	80.33
24062.0	74.99	75.55	76.08	76.72	76.68	77.41	77.23	78.04	77.93	78.76	78.26	79.22	80.30
24067.8	74.97	75.52	76.05	76.69	76.65	77.38	77.20	78.00	77.90	78.73	78.23	79.18	80.26
24073.7	74.94	75.49	76.02	76.67	76.62	77.35	77.17	77.97	77.87	78.69	78.20	79.15	80.23
24079.6	74.91	75.46	75.99	76.64	76.59	77.32	77.14	77.94	77.83	78.66	78.16	79.11	80.19
24085.4	74.89	75.44	75.97	76.61	76.57	77.29	77.11	77.91	77.80	78.62	78.13	79.08	80.15
24091.3	74.86	75.41	75.94	76.58	76.54	77.26	77.08	77.87	77.77	78.59	78.10	79.04	80.11
24097.1	74.83	75.38	75.91	76.55	76.51	77.23	77.05	77.84	77.74	78.56	78.06	79.01	80.08
24102.9	74.81	75.35	75.88	76.52	76.48	77.20	77.01	77.81	77.71	78.52	78.03	78.97	80.04
24108.8	74.78	75.33	75.85	76.49	76.45	77.17	76.98	77.78	77.67	78.49	78.00	78.93	80.00
24114.7	74.75	75.30	75.82	76.46	76.42	77.14	76.95	77.74	77.64	78.45	77.97	78.90	79.96
24120.5	74.73	75.27	75.79	76.43	76.39	77.10	76.92	77.71	77.61	78.42	77.93	78.86	79.93
24126.3	74.70	75.24	75.76	76.40	76.36	77.07	76.89	77.68	77.58	78.38	77.90	78.83	79.89
24132.2	74.67	75.21	75.73	76.37	76.33	77.04	76.86	77.64	77.54	78.35	77.87	78.79	79.85
24138.1	74.64	75.18	75.71	76.34	76.30	77.01	76.83	77.61	77.51	78.31	77.83	78.75	79.81
24143.9	74.61	75.15	75.68	76.31	76.26	76.98	76.80	77.58	77.48	78.28	77.80	78.72	79.77
24149.8	74.58	75.12	75.64	76.27	76.23	76.95	76.77	77.55	77.45	78.25	77.77	78.68	79.73
24155.6	74.55	75.09	75.61	76.24	76.20	76.91	76.73	77.51	77.41	78.21	77.73	78.65	79.70
24161.4	74.52	75.06	75.58	76.21	76.17	76.88	76.70	77.48	77.38	78.18	77.70	78.61	79.66
24167.3	74.49	75.03	75.55	76.18	76.14	76.85	76.67	77.45	77.35	78.14	77.67	78.58	79.62
24173.2	74.46	75.00	75.52	76.15	76.11	76.82	76.64	77.41	77.31	78.11	77.63	78.54	79.58
24179.0	74.43	74.97	75.49	76.12	76.08	76.78	76.61	77.38	77.28	78.07	77.60	78.50	79.54
24184.8	74.41	74.96	75.48	76.11	76.06	76.77	76.59	77.37	77.27	78.06	77.59	78.49	79.52
24190.7	74.40	74.94	75.47	76.09	76.05	76.76	76.58	77.35	77.26	78.04	77.57	78.47	79.49
24196.5	74.39	74.93	75.45	76.08	76.04	76.75	76.57	77.34	77.24	78.03	77.56	78.46	79.47
24202.3	74.37	74.92	75.44	76.07	76.03	76.73	76.55	77.32	77.23	78.01	77.54	78.44	79.44
24208.2	74.36	74.90	75.43	76.05	76.01	76.72	76.54	77.31	77.21	77.99	77.52	78.42	79.42
24214.0	74.35	74.89	75.41	76.04	76.00	76.70	76.52	77.29	77.19	77.97	77.50	78.39	79.39
24219.8	74.33	74.88	75.40	76.02	75.98	76.68	76.51	77.27	77.17	77.95	77.48	78.37	79.36
24225.7	74.32	74.86	75.38	76.01	75.97	76.67	76.49	77.25	77.15	77.93	77.46	78.35	79.33
24231.5	74.31	74.85	75.37	75.99	75.95	76.65	76.47	77.23	77.13	77.90	77.44	78.32	79.30

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
24237.3	74.29	74.83	75.35	75.97	75.93	76.63	76.45	77.21	77.11	77.88	77.42	78.29	79.27
24243.2	74.28	74.82	75.33	75.95	75.91	76.61	76.43	77.18	77.09	77.85	77.39	78.26	79.23
24249.0	74.26	74.80	75.32	75.93	75.89	76.58	76.41	77.16	77.06	77.82	77.37	78.23	79.20
24254.9	74.24	74.78	75.29	75.91	75.87	76.56	76.38	77.13	77.03	77.79	77.34	78.20	79.16
24260.7	74.22	74.76	75.27	75.88	75.84	76.53	76.36	77.10	77.01	77.76	77.31	78.17	79.13
24266.6	74.20	74.74	75.25	75.86	75.82	76.50	76.33	77.07	76.98	77.73	77.28	78.14	79.09
24272.5	74.19	74.72	75.23	75.84	75.80	76.48	76.31	77.05	76.95	77.70	77.25	78.11	79.06
24278.3	74.17	74.70	75.21	75.81	75.77	76.45	76.28	77.02	76.92	77.67	77.22	78.08	79.02
24284.2	74.15	74.68	75.19	75.79	75.75	76.43	76.26	76.99	76.90	77.64	77.20	78.05	78.99
24290.1	74.13	74.66	75.17	75.77	75.73	76.41	76.24	76.97	76.87	77.61	77.17	78.02	78.96
24296.0	74.12	74.64	75.15	75.75	75.71	76.38	76.21	76.94	76.85	77.59	77.14	77.99	78.93
24301.8	74.10	74.63	75.13	75.73	75.69	76.36	76.19	76.92	76.82	77.56	77.12	77.96	78.89
24307.7	74.09	74.61	75.11	75.71	75.67	76.34	76.17	76.89	76.80	77.53	77.09	77.93	78.86
24313.6	74.07	74.59	75.09	75.69	75.65	76.32	76.15	76.87	76.78	77.51	77.07	77.90	78.83
24319.4	74.06	74.58	75.07	75.67	75.63	76.30	76.13	76.85	76.75	77.48	77.05	77.87	78.79
24325.3	74.04	74.56	75.06	75.65	75.61	76.28	76.11	76.82	76.73	77.45	77.02	77.84	78.76
24331.2	74.03	74.55	75.04	75.63	75.59	76.26	76.09	76.80	76.71	77.43	77.00	77.82	78.73
24337.0	74.02	74.53	75.02	75.61	75.58	76.24	76.07	76.78	76.69	77.40	76.98	77.79	78.70
24342.9	74.00	74.52	75.01	75.60	75.56	76.22	76.05	76.76	76.67	77.38	76.96	77.76	78.67
24348.8	73.99	74.50	74.99	75.58	75.54	76.20	76.03	76.74	76.65	77.36	76.93	77.74	78.63
24354.7	73.98	74.49	74.98	75.56	75.53	76.18	76.02	76.72	76.63	77.33	76.91	77.71	78.60
24360.5	73.96	74.47	74.96	75.55	75.51	76.16	76.00	76.70	76.61	77.31	76.89	77.69	78.57
24366.4	73.95	74.46	74.95	75.53	75.49	76.14	75.98	76.68	76.59	77.29	76.87	77.66	78.54
24372.3	73.94	74.45	74.93	75.51	75.48	76.13	75.96	76.66	76.57	77.27	76.85	77.64	78.51
24378.1	73.93	74.43	74.92	75.50	75.46	76.11	75.95	76.64	76.55	77.25	76.83	77.62	78.48
24384.0	73.92	74.42	74.90	75.48	75.44	76.09	75.93	76.62	76.53	77.22	76.81	77.59	78.45
24389.4	73.90	74.40	74.88	75.46	75.42	76.07	75.91	76.60	76.51	77.20	76.79	77.57	78.43
24394.9	73.87	74.38	74.86	75.44	75.40	76.04	75.88	76.57	76.48	77.18	76.76	77.54	78.41
24400.3	73.85	74.35	74.83	75.41	75.38	76.02	75.86	76.55	76.46	77.15	76.74	77.52	78.40
24405.7	73.83	74.33	74.81	75.39	75.35	76.00	75.84	76.53	76.44	77.13	76.72	77.50	78.38
24411.1	73.81	74.31	74.79	75.37	75.33	75.98	75.82	76.51	76.42	77.11	76.70	77.49	78.36
24416.6	73.78	74.29	74.77	75.35	75.31	75.96	75.80	76.49	76.40	77.10	76.68	77.47	78.35
24422.0	73.76	74.26	74.75	75.33	75.29	75.94	75.78	76.47	76.38	77.08	76.66	77.45	78.33
24427.9	73.74	74.25	74.73	75.31	75.27	75.92	75.76	76.45	76.36	77.06	76.64	77.43	78.30
24433.8	73.72	74.23	74.71	75.29	75.25	75.90	75.74	76.43	76.34	77.04	76.62	77.41	78.28
24439.7	73.71	74.21	74.69	75.27	75.24	75.88	75.72	76.41	76.32	77.02	76.60	77.39	78.26
24445.6	73.69	74.19	74.68	75.26	75.22	75.87	75.70	76.39	76.31	77.00	76.59	77.37	78.23
24451.5	73.67	74.18	74.66	75.24	75.20	75.85	75.69	76.37	76.29	76.98	76.57	77.35	78.21
24457.4	73.66	74.16	74.64	75.22	75.18	75.83	75.67	76.36	76.27	76.96	76.55	77.33	78.19
24463.3	73.64	74.14	74.62	75.20	75.17	75.81	75.65	76.34	76.25	76.94	76.53	77.31	78.16
24469.2	73.62	74.13	74.61	75.19	75.15	75.79	75.63	76.32	76.23	76.92	76.51	77.29	78.14
24475.1	73.61	74.11	74.59	75.17	75.13	75.78	75.61	76.30	76.21	76.90	76.49	77.27	78.12
24481.0	73.59	74.09	74.57	75.15	75.11	75.76	75.60	76.28	76.19	76.88	76.47	77.25	78.10
24486.9	73.58	74.08	74.56	75.13	75.10	75.74	75.58	76.26	76.17	76.86	76.45	77.23	78.08
24492.8	73.56	74.06	74.54	75.12	75.08	75.72	75.56	76.24	76.16	76.84	76.43	77.21	78.06
24498.7	73.54	74.05	74.52	75.10	75.06	75.71	75.55	76.23	76.14	76.82	76.41	77.19	78.04

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
24504.6	73.53	74.03	74.51	75.08	75.05	75.69	75.53	76.21	76.12	76.81	76.40	77.17	78.02
24510.4	73.51	74.01	74.49	75.07	75.03	75.67	75.51	76.19	76.10	76.79	76.38	77.15	78.00
24516.3	73.50	74.00	74.48	75.05	75.01	75.65	75.49	76.17	76.09	76.77	76.36	77.13	77.98
24522.2	73.48	73.98	74.46	75.03	75.00	75.64	75.48	76.16	76.07	76.75	76.34	77.11	77.96
24528.1	73.47	73.97	74.44	75.02	74.98	75.62	75.46	76.14	76.05	76.73	76.33	77.09	77.94
24534.0	73.45	73.95	74.43	75.00	74.96	75.60	75.45	76.12	76.03	76.71	76.31	77.08	77.92
24539.9	73.44	73.94	74.41	74.99	74.95	75.59	75.43	76.10	76.02	76.70	76.29	77.06	77.90
24545.8	73.42	73.92	74.40	74.97	74.93	75.57	75.41	76.09	76.00	76.68	76.27	77.04	77.88
24551.7	73.41	73.91	74.38	74.96	74.92	75.56	75.40	76.07	75.99	76.66	76.26	77.02	77.86
24557.6	73.39	73.89	74.37	74.94	74.90	75.54	75.38	76.06	75.97	76.65	76.24	77.01	77.85
24563.5	73.38	73.88	74.35	74.92	74.89	75.53	75.37	76.04	75.95	76.63	76.23	76.99	77.83
24569.4	73.36	73.86	74.34	74.91	74.87	75.51	75.35	76.02	75.94	76.61	76.21	76.97	77.81
24575.3	73.35	73.85	74.32	74.89	74.86	75.49	75.34	76.01	75.92	76.60	76.19	76.96	77.80
24581.2	73.34	73.83	74.31	74.88	74.84	75.48	75.32	75.99	75.91	76.58	76.18	76.94	77.78
24587.1	73.32	73.82	74.29	74.87	74.83	75.47	75.31	75.98	75.89	76.57	76.16	76.93	77.77
24593.0	73.31	73.81	74.28	74.85	74.81	75.45	75.29	75.96	75.88	76.55	76.15	76.91	77.75
24598.8	73.29	73.79	74.27	74.84	74.80	75.43	75.28	75.95	75.86	76.53	76.13	76.89	77.73
24604.6	73.28	73.78	74.25	74.82	74.78	75.42	75.26	75.93	75.84	76.52	76.11	76.87	77.71
24610.5	73.27	73.76	74.24	74.81	74.77	75.40	75.25	75.91	75.83	76.50	76.10	76.85	77.69
24616.3	73.25	73.75	74.22	74.79	74.75	75.39	75.23	75.90	75.81	76.48	76.08	76.84	77.67
24622.1	73.24	73.74	74.21	74.78	74.74	75.37	75.22	75.88	75.80	76.46	76.06	76.82	77.64
24627.9	73.23	73.72	74.19	74.76	74.73	75.36	75.20	75.86	75.78	76.44	76.05	76.80	77.62
24633.8	73.21	73.71	74.18	74.75	74.71	75.34	75.19	75.85	75.76	76.43	76.03	76.78	77.60
24639.6	73.20	73.70	74.17	74.73	74.70	75.33	75.17	75.83	75.75	76.41	76.01	76.76	77.58
24645.4	73.19	73.68	74.15	74.72	74.68	75.31	75.16	75.82	75.73	76.39	76.00	76.74	77.56
24651.2	73.17	73.67	74.14	74.71	74.67	75.30	75.14	75.80	75.72	76.38	75.98	76.72	77.54
24657.1	73.16	73.66	74.13	74.69	74.66	75.29	75.13	75.79	75.70	76.36	75.97	76.71	77.52
24662.9	73.15	73.64	74.11	74.68	74.64	75.27	75.12	75.77	75.69	76.34	75.95	76.69	77.50
24668.7	73.14	73.63	74.10	74.67	74.63	75.26	75.10	75.76	75.67	76.33	75.94	76.67	77.48
24674.5	73.13	73.62	74.09	74.65	74.62	75.25	75.09	75.74	75.66	76.31	75.92	76.65	77.46
24680.4	73.12	73.61	74.08	74.64	74.61	75.23	75.08	75.73	75.64	76.29	75.91	76.64	77.44
24686.2	73.11	73.60	74.07	74.63	74.59	75.22	75.06	75.71	75.63	76.28	75.89	76.62	77.42
24692.0	73.09	73.59	74.05	74.62	74.58	75.21	75.05	75.70	75.62	76.26	75.88	76.60	77.40
24697.9	73.08	73.58	74.04	74.60	74.57	75.19	75.04	75.68	75.60	76.24	75.86	76.59	77.38
24703.9	73.07	73.57	74.03	74.59	74.56	75.18	75.02	75.67	75.59	76.23	75.84	76.57	77.36
24709.8	73.06	73.55	74.02	74.58	74.54	75.16	75.01	75.65	75.57	76.21	75.83	76.55	77.34
24715.8	73.05	73.54	74.01	74.57	74.53	75.15	75.00	75.64	75.56	76.20	75.81	76.54	77.33
24721.7	73.04	73.53	74.00	74.55	74.52	75.14	74.98	75.62	75.54	76.18	75.80	76.52	77.31
24727.6	73.03	73.52	73.99	74.54	74.51	75.12	74.97	75.61	75.53	76.17	75.78	76.50	77.30
24733.6	73.02	73.51	73.97	74.53	74.49	75.11	74.96	75.59	75.51	76.15	75.77	76.49	77.28
24739.5	73.01	73.50	73.96	74.52	74.48	75.09	74.94	75.58	75.50	76.14	75.76	76.48	77.26
24745.5	73.00	73.49	73.95	74.50	74.47	75.08	74.93	75.57	75.48	76.12	75.74	76.46	77.25
24751.4	72.99	73.48	73.94	74.49	74.45	75.07	74.92	75.55	75.47	76.11	75.73	76.45	77.24
24757.4	72.98	73.47	73.93	74.48	74.44	75.05	74.90	75.54	75.46	76.10	75.71	76.44	77.22
24763.3	72.97	73.46	73.91	74.46	74.43	75.04	74.89	75.52	75.44	76.09	75.70	76.43	77.21
24769.2	72.96	73.45	73.90	74.45	74.42	75.03	74.88	75.51	75.43	76.07	75.68	76.42	77.20

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
24775.2	72.95	73.44	73.89	74.44	74.40	75.01	74.86	75.49	75.41	76.06	75.67	76.40	77.19
24781.1	72.94	73.42	73.88	74.42	74.39	75.00	74.85	75.48	75.40	76.05	75.66	76.39	77.18
24787.1	72.93	73.41	73.87	74.41	74.38	74.99	74.84	75.47	75.39	76.04	75.65	76.39	77.17
24793.0	72.92	73.40	73.85	74.40	74.36	74.97	74.82	75.46	75.38	76.04	75.64	76.38	77.17
24793.0	72.92	73.40	73.85	74.40	74.36	74.97	74.82	75.46	75.38	76.04	75.64	76.38	77.17
24799.0	72.90	73.38	73.85	74.43	74.40	75.01	74.85	75.50	75.42	76.05	75.67	76.38	77.19
24805.0	72.87	73.35	73.80	74.35	74.32	74.97	74.81	75.48	75.39	76.04	75.66	76.39	77.17
24811.0	72.85	73.32	73.77	74.31	74.27	74.87	74.72	75.37	75.28	75.95	75.56	76.30	77.09
24815.0	72.56	73.00	73.43	73.93	73.90	74.46	74.32	74.92	74.84	75.50	75.10	75.85	76.66
24821.0	72.53	72.97	73.40	73.91	73.88	74.44	74.30	74.92	74.83	75.51	75.11	75.85	76.66
24827.0	72.51	72.95	73.38	73.88	73.85	74.41	74.27	74.93	74.84	75.51	75.12	75.85	76.67
24833.0	72.48	72.92	73.35	73.86	73.83	74.42	74.26	74.93	74.85	75.50	75.12	75.84	76.62
24839.0	72.45	72.90	73.33	73.83	73.80	74.42	74.26	74.93	74.85	75.48	75.10	75.81	76.59
24845.0	72.43	72.87	73.30	73.83	73.80	74.41	74.26	74.89	74.81	75.44	75.07	75.76	76.55
24851.0	72.40	72.84	73.27	73.83	73.79	74.37	74.22	74.85	74.77	75.38	75.02	75.71	76.50
24857.0	72.37	72.81	73.26	73.78	73.75	74.32	74.18	74.79	74.72	75.33	74.96	75.67	76.46
24863.0	72.33	72.78	73.21	73.72	73.68	74.25	74.11	74.72	74.65	75.28	74.90	75.62	76.41
24863.0	72.33	72.78	73.21	73.72	73.68	74.25	74.11	74.72	74.65	75.28	74.90	75.62	76.41
24868.3	72.33	72.77	73.20	73.71	73.67	74.24	74.10	74.71	74.63	75.26	74.88	75.60	76.39
24873.7	72.32	72.76	73.19	73.70	73.66	74.23	74.09	74.70	74.62	75.25	74.87	75.59	76.37
24879.0	72.31	72.76	73.18	73.69	73.65	74.22	74.08	74.69	74.61	75.24	74.86	75.57	76.35
24884.3	72.31	72.75	73.17	73.68	73.65	74.21	74.07	74.68	74.60	75.22	74.85	75.56	76.33
24889.7	72.31	72.75	73.17	73.67	73.64	74.20	74.06	74.67	74.59	75.21	74.84	75.54	76.32
24895.0	72.30	72.74	73.17	73.67	73.64	74.20	74.05	74.66	74.58	75.20	74.83	75.53	76.30
24900.9	72.29	72.73	73.15	73.65	73.62	74.17	74.03	74.64	74.56	75.18	74.81	75.50	76.27
24906.9	72.27	72.71	73.13	73.63	73.60	74.15	74.01	74.62	74.54	75.15	74.78	75.48	76.24
24912.8	72.26	72.69	73.11	73.61	73.58	74.13	73.99	74.60	74.52	75.13	74.76	75.46	76.22
24918.8	72.24	72.68	73.09	73.59	73.56	74.11	73.97	74.57	74.50	75.11	74.74	75.43	76.19
24924.7	72.22	72.66	73.08	73.57	73.54	74.09	73.95	74.55	74.48	75.09	74.72	75.41	76.16
24930.6	72.21	72.64	73.06	73.55	73.52	74.07	73.93	74.53	74.45	75.06	74.70	75.38	76.13
24936.6	72.19	72.62	73.04	73.53	73.50	74.05	73.91	74.51	74.43	75.04	74.68	75.36	76.11
24942.5	72.17	72.61	73.02	73.51	73.48	74.03	73.89	74.49	74.41	75.01	74.65	75.33	76.08
24948.5	72.16	72.59	73.00	73.49	73.46	74.01	73.87	74.46	74.39	74.99	74.63	75.31	76.05
24954.4	72.14	72.57	72.98	73.47	73.44	73.98	73.85	74.44	74.36	74.97	74.61	75.28	76.02
24960.4	72.12	72.55	72.96	73.45	73.42	73.96	73.83	74.42	74.34	74.94	74.58	75.26	75.99
24966.3	72.10	72.53	72.95	73.43	73.40	73.94	73.80	74.39	74.32	74.92	74.56	75.23	75.96
24972.2	72.09	72.52	72.93	73.41	73.38	73.92	73.78	74.37	74.30	74.89	74.54	75.20	75.93
24978.2	72.07	72.50	72.91	73.39	73.36	73.89	73.76	74.35	74.27	74.87	74.51	75.18	75.90
24984.1	72.05	72.48	72.89	73.37	73.34	73.87	73.74	74.32	74.25	74.84	74.49	75.15	75.87
24990.1	72.03	72.46	72.87	73.35	73.32	73.85	73.71	74.30	74.22	74.82	74.46	75.12	75.84
24996.0	72.01	72.44	72.85	73.33	73.30	73.82	73.69	74.27	74.20	74.79	74.44	75.09	75.81
25001.8	72.00	72.42	72.83	73.31	73.28	73.80	73.67	74.25	74.17	74.76	74.41	75.07	75.78
25007.5	71.98	72.40	72.81	73.28	73.25	73.78	73.65	74.23	74.15	74.74	74.39	75.04	75.74
25013.3	71.96	72.38	72.79	73.26	73.23	73.76	73.63	74.20	74.13	74.71	74.37	75.01	75.71
25019.1	71.94	72.36	72.77	73.24	73.21	73.74	73.60	74.18	74.11	74.69	74.34	74.99	75.68
25024.8	71.92	72.34	72.75	73.22	73.19	73.71	73.58	74.16	74.08	74.66	74.32	74.96	75.65

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
25030.6	71.91	72.32	72.73	73.20	73.17	73.69	73.56	74.13	74.06	74.64	74.29	74.93	75.62
25036.4	71.89	72.31	72.71	73.18	73.15	73.67	73.54	74.11	74.04	74.61	74.27	74.91	75.59
25042.1	71.87	72.29	72.69	73.16	73.13	73.65	73.52	74.09	74.01	74.59	74.25	74.88	75.56
25047.9	71.85	72.27	72.67	73.14	73.11	73.63	73.49	74.06	73.99	74.56	74.22	74.85	75.53
25053.6	71.83	72.25	72.65	73.11	73.09	73.60	73.47	74.04	73.97	74.54	74.20	74.83	75.50
25059.4	71.81	72.23	72.62	73.09	73.06	73.58	73.45	74.02	73.94	74.51	74.17	74.80	75.47
25065.2	71.79	72.21	72.60	73.07	73.04	73.56	73.43	73.99	73.92	74.49	74.15	74.77	75.44
25070.9	71.77	72.19	72.58	73.05	73.02	73.53	73.40	73.97	73.90	74.46	74.13	74.75	75.41
25076.7	71.75	72.17	72.56	73.03	73.00	73.51	73.38	73.95	73.87	74.44	74.10	74.72	75.39
25082.5	71.74	72.15	72.54	73.01	72.98	73.49	73.36	73.92	73.85	74.42	74.08	74.70	75.36
25088.2	71.72	72.13	72.52	72.98	72.95	73.46	73.33	73.90	73.83	74.39	74.06	74.68	75.34
25094.0	71.70	72.10	72.50	72.96	72.93	73.44	73.31	73.88	73.81	74.37	74.04	74.65	75.31
25099.9	71.67	72.08	72.47	72.94	72.91	73.41	73.29	73.85	73.78	74.34	74.01	74.63	75.29
25105.8	71.65	72.06	72.45	72.91	72.88	73.39	73.26	73.83	73.75	74.32	73.99	74.60	75.26
25111.6	71.63	72.04	72.43	72.89	72.86	73.36	73.23	73.80	73.73	74.29	73.96	74.58	75.23
25117.5	71.61	72.01	72.40	72.86	72.83	73.34	73.21	73.78	73.70	74.27	73.93	74.55	75.20
25123.4	71.59	71.99	72.38	72.83	72.81	73.31	73.18	73.75	73.68	74.24	73.91	74.52	75.17
25129.3	71.57	71.97	72.35	72.81	72.78	73.29	73.16	73.72	73.65	74.21	73.88	74.49	75.14
25135.1	71.54	71.94	72.33	72.78	72.75	73.26	73.13	73.69	73.62	74.18	73.85	74.46	75.10
25141.0	71.52	71.92	72.30	72.76	72.73	73.23	73.10	73.66	73.59	74.15	73.82	74.43	75.07
25146.9	71.50	71.90	72.28	72.73	72.70	73.21	73.08	73.64	73.57	74.12	73.79	74.40	75.04
25152.8	71.48	71.87	72.25	72.70	72.67	73.18	73.05	73.61	73.54	74.10	73.76	74.37	75.01
25158.6	71.46	71.85	72.23	72.68	72.65	73.15	73.02	73.58	73.51	74.07	73.74	74.34	74.97
25164.5	71.43	71.82	72.20	72.65	72.62	73.12	72.99	73.55	73.48	74.04	73.71	74.31	74.94
25170.4	71.41	71.80	72.18	72.62	72.59	73.09	72.97	73.52	73.45	74.01	73.68	74.28	74.91
25176.3	71.39	71.78	72.15	72.59	72.56	73.07	72.94	73.49	73.42	73.98	73.65	74.25	74.87
25182.1	71.37	71.75	72.12	72.56	72.54	73.04	72.91	73.46	73.39	73.95	73.62	74.22	74.84
25188.0	71.34	71.73	72.10	72.54	72.51	73.01	72.88	73.43	73.36	73.92	73.59	74.19	74.80
25194.0	71.32	71.70	72.07	72.51	72.49	72.99	72.86	73.41	73.34	73.90	73.57	74.17	74.78
25200.0	71.30	71.68	72.05	72.49	72.46	72.97	72.84	73.39	73.32	73.87	73.55	74.14	74.75
25206.0	71.28	71.66	72.03	72.47	72.44	72.94	72.82	73.37	73.30	73.85	73.52	74.12	74.73
25212.0	71.26	71.64	72.01	72.45	72.42	72.92	72.79	73.35	73.28	73.83	73.50	74.10	74.70
25218.0	71.24	71.62	71.98	72.43	72.40	72.90	72.77	73.33	73.26	73.81	73.48	74.07	74.68
25224.0	71.22	71.59	71.96	72.40	72.38	72.88	72.75	73.31	73.24	73.79	73.46	74.05	74.65
25230.0	71.20	71.57	71.94	72.38	72.35	72.86	72.73	73.29	73.22	73.77	73.44	74.03	74.63
25236.0	71.18	71.55	71.91	72.36	72.33	72.84	72.71	73.27	73.20	73.75	73.42	74.01	74.60
25242.0	71.15	71.53	71.89	72.34	72.31	72.81	72.69	73.25	73.17	73.73	73.40	73.99	74.58
25248.0	71.13	71.51	71.87	72.31	72.28	72.79	72.66	73.23	73.15	73.71	73.38	73.97	74.55
25254.0	71.11	71.48	71.84	72.29	72.26	72.77	72.64	73.21	73.13	73.69	73.36	73.95	74.53
25260.0	71.09	71.46	71.82	72.27	72.24	72.75	72.62	73.19	73.11	73.67	73.34	73.93	74.51
25266.0	71.07	71.44	71.80	72.24	72.21	72.73	72.60	73.16	73.09	73.65	73.32	73.90	74.48
25272.0	71.05	71.41	71.77	72.22	72.19	72.71	72.57	73.14	73.07	73.63	73.30	73.88	74.46
25278.0	71.03	71.39	71.75	72.20	72.17	72.68	72.55	73.12	73.05	73.61	73.28	73.86	74.44
25284.0	71.00	71.37	71.72	72.17	72.14	72.66	72.53	73.10	73.03	73.59	73.26	73.84	74.41
25290.0	70.98	71.34	71.70	72.15	72.12	72.64	72.51	73.08	73.01	73.57	73.24	73.82	74.39
25295.9	70.96	71.32	71.67	72.12	72.09	72.61	72.48	73.06	72.98	73.54	73.21	73.80	74.36

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
25301.9	70.94	71.30	71.65	72.09	72.07	72.59	72.45	73.03	72.96	73.52	73.19	73.77	74.34
25307.8	70.91	71.27	71.62	72.07	72.04	72.56	72.43	73.00	72.93	73.49	73.16	73.75	74.31
25313.8	70.89	71.25	71.60	72.04	72.01	72.53	72.40	72.98	72.90	73.47	73.14	73.72	74.29
25319.7	70.87	71.22	71.57	72.02	71.99	72.50	72.37	72.95	72.88	73.45	73.11	73.70	74.26
25325.6	70.84	71.20	71.55	71.99	71.96	72.48	72.34	72.93	72.85	73.42	73.09	73.68	74.24
25331.6	70.82	71.17	71.52	71.96	71.93	72.45	72.32	72.90	72.82	73.40	73.06	73.65	74.21
25337.5	70.79	71.15	71.50	71.93	71.91	72.42	72.29	72.87	72.80	73.37	73.03	73.63	74.19
25343.4	70.77	71.12	71.47	71.91	71.88	72.39	72.26	72.84	72.77	73.35	73.01	73.60	74.16
25349.4	70.74	71.09	71.44	71.88	71.85	72.36	72.23	72.81	72.74	73.32	72.98	73.58	74.14
25355.3	70.72	71.07	71.42	71.85	71.82	72.33	72.20	72.79	72.71	73.30	72.95	73.55	74.11
25361.3	70.69	71.04	71.39	71.82	71.79	72.30	72.17	72.76	72.68	73.27	72.92	73.53	74.08
25367.2	70.67	71.01	71.36	71.79	71.77	72.27	72.14	72.73	72.65	73.24	72.89	73.50	74.06
25373.1	70.64	70.98	71.33	71.77	71.74	72.24	72.11	72.70	72.62	73.21	72.86	73.48	74.03
25379.1	70.61	70.95	71.30	71.74	71.71	72.21	72.08	72.67	72.59	73.19	72.83	73.45	74.00
25385.0	70.58	70.92	71.27	71.71	71.68	72.18	72.05	72.64	72.56	73.16	72.80	73.42	73.98
25390.8	70.56	70.90	71.25	71.68	71.65	72.16	72.02	72.61	72.53	73.13	72.78	73.39	73.95
25396.6	70.54	70.88	71.22	71.65	71.62	72.13	72.00	72.58	72.50	73.10	72.75	73.36	73.93
25402.3	70.51	70.85	71.20	71.63	71.60	72.10	71.97	72.55	72.47	73.07	72.72	73.33	73.90
25408.1	70.49	70.83	71.17	71.60	71.57	72.07	71.94	72.52	72.44	73.04	72.69	73.31	73.87
25413.9	70.47	70.80	71.14	71.57	71.54	72.04	71.91	72.49	72.41	73.02	72.65	73.28	73.84
25419.7	70.44	70.78	71.12	71.54	71.52	72.01	71.88	72.46	72.38	72.99	72.62	73.25	73.81
25425.4	70.42	70.75	71.09	71.52	71.49	71.99	71.86	72.43	72.35	72.96	72.59	73.22	73.78
25431.2	70.39	70.72	71.06	71.49	71.46	71.96	71.83	72.40	72.32	72.93	72.56	73.19	73.75
25437.0	70.36	70.70	71.03	71.46	71.43	71.93	71.80	72.37	72.29	72.90	72.53	73.16	73.72
25442.8	70.34	70.67	71.01	71.43	71.40	71.90	71.77	72.34	72.26	72.86	72.50	73.12	73.69
25448.6	70.31	70.64	70.98	71.40	71.37	71.87	71.74	72.31	72.23	72.83	72.47	73.09	73.66
25454.3	70.28	70.61	70.95	71.37	71.35	71.84	71.71	72.28	72.20	72.80	72.44	73.06	73.63
25460.1	70.25	70.58	70.92	71.34	71.32	71.81	71.68	72.25	72.17	72.77	72.41	73.03	73.59
25465.9	70.22	70.56	70.89	71.31	71.29	71.78	71.65	72.22	72.14	72.74	72.38	72.99	73.56
25471.7	70.19	70.53	70.86	71.28	71.26	71.75	71.62	72.19	72.11	72.70	72.35	72.96	73.52
25477.4	70.16	70.49	70.83	71.25	71.23	71.72	71.59	72.16	72.08	72.67	72.32	72.93	73.49
25483.2	70.13	70.46	70.80	71.22	71.20	71.69	71.56	72.13	72.05	72.64	72.29	72.89	73.45
25489.0	70.10	70.43	70.77	71.19	71.17	71.66	71.53	72.10	72.02	72.61	72.26	72.86	73.42
25494.8	70.06	70.40	70.74	71.16	71.13	71.63	71.50	72.07	71.99	72.58	72.23	72.83	73.39
25500.6	70.03	70.36	70.70	71.13	71.10	71.60	71.47	72.04	71.96	72.55	72.20	72.80	73.37
25506.5	69.99	70.33	70.67	71.10	71.07	71.57	71.44	72.01	71.93	72.52	72.17	72.77	73.34
25512.3	69.96	70.29	70.63	71.06	71.04	71.54	71.41	71.97	71.90	72.49	72.14	72.74	73.32
25518.1	69.92	70.26	70.60	71.03	71.00	71.50	71.38	71.94	71.87	72.46	72.11	72.71	73.30
25523.9	69.88	70.22	70.56	71.00	70.97	71.47	71.34	71.91	71.84	72.44	72.08	72.69	73.27
25529.8	69.84	70.18	70.53	70.96	70.93	71.44	71.31	71.88	71.81	72.41	72.05	72.66	73.25
25535.6	69.80	70.14	70.49	70.93	70.90	71.41	71.28	71.85	71.78	72.38	72.02	72.63	73.22
25541.4	69.76	70.11	70.45	70.89	70.87	71.38	71.25	71.82	71.75	72.35	71.99	72.60	73.20
25547.2	69.72	70.07	70.42	70.86	70.83	71.35	71.21	71.79	71.72	72.33	71.96	72.57	73.18
25553.1	69.68	70.03	70.38	70.83	70.80	71.31	71.18	71.76	71.69	72.30	71.93	72.54	73.15
25558.9	69.63	69.99	70.34	70.79	70.76	71.28	71.15	71.73	71.66	72.27	71.90	72.51	73.13
25564.7	69.59	69.94	70.30	70.76	70.73	71.25	71.11	71.70	71.63	72.24	71.87	72.48	73.11

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
25570.5	69.54	69.90	70.26	70.72	70.69	71.22	71.08	71.67	71.60	72.21	71.84	72.45	73.08
25576.4	69.49	69.86	70.22	70.68	70.65	71.18	71.05	71.64	71.57	72.18	71.81	72.42	73.06
25582.2	69.44	69.81	70.18	70.65	70.62	71.15	71.02	71.61	71.54	72.15	71.78	72.39	73.04
25588.0	69.39	69.76	70.14	70.61	70.58	71.12	70.98	71.58	71.50	72.12	71.75	72.36	73.02
25593.7	69.35	69.73	70.11	70.58	70.55	71.09	70.96	71.56	71.48	72.10	71.73	72.34	73.00
25599.3	69.31	69.69	70.08	70.56	70.53	71.07	70.93	71.53	71.45	72.08	71.70	72.32	72.98
25605.0	69.27	69.66	70.05	70.53	70.50	71.04	70.90	71.51	71.43	72.06	71.68	72.30	72.96
25610.7	69.23	69.62	70.02	70.50	70.47	71.02	70.88	71.49	71.41	72.04	71.66	72.28	72.95
25616.3	69.19	69.59	69.99	70.48	70.45	70.99	70.85	71.46	71.38	72.02	71.64	72.26	72.93
25622.0	69.16	69.56	69.96	70.45	70.42	70.97	70.83	71.44	71.36	72.00	71.61	72.23	72.91
25627.7	69.13	69.53	69.93	70.43	70.40	70.95	70.81	71.42	71.34	71.98	71.59	72.21	72.89
25633.3	69.09	69.50	69.91	70.40	70.37	70.92	70.78	71.40	71.32	71.96	71.57	72.19	72.88
25639.0	69.06	69.48	69.88	70.38	70.35	70.90	70.76	71.38	71.30	71.94	71.55	72.17	72.86
25644.7	69.03	69.45	69.86	70.36	70.33	70.88	70.74	71.36	71.28	71.92	71.53	72.15	72.84
25650.3	69.01	69.42	69.84	70.34	70.30	70.86	70.72	71.34	71.26	71.90	71.51	72.13	72.82
25656.0	68.98	69.40	69.81	70.31	70.28	70.84	70.70	71.32	71.24	71.88	71.49	72.11	72.81
25661.7	68.95	69.38	69.79	70.29	70.26	70.82	70.68	71.30	71.22	71.87	71.47	72.09	72.79
25667.3	68.93	69.35	69.77	70.27	70.24	70.80	70.66	71.28	71.20	71.85	71.46	72.07	72.78
25673.0	68.90	69.33	69.75	70.25	70.22	70.78	70.64	71.26	71.18	71.83	71.44	72.05	72.76
25679.0	68.87	69.30	69.72	70.22	70.19	70.75	70.61	71.23	71.15	71.80	71.41	72.02	72.74
25685.0	68.84	69.27	69.69	70.19	70.16	70.72	70.58	71.20	71.12	71.77	71.38	71.99	72.71
25691.0	68.81	69.24	69.66	70.16	70.13	70.69	70.55	71.17	71.09	71.74	71.35	71.96	72.68
25697.0	68.79	69.21	69.63	70.14	70.10	70.66	70.52	71.14	71.06	71.71	71.32	71.92	72.64
25703.0	68.76	69.19	69.60	70.11	70.07	70.63	70.49	71.11	71.03	71.68	71.29	71.88	72.60
25709.0	68.73	69.16	69.58	70.08	70.05	70.60	70.46	71.08	71.00	71.64	71.26	71.85	72.56
25709.0	68.73	69.16	69.58	70.08	70.05	70.60	70.46	71.08	71.00	71.64	71.26	71.85	72.56
25737.0	68.77	69.21	69.63	70.14	70.11	70.68	70.54	71.17	71.09	71.73	71.35	71.93	72.64
25791.0	67.64	67.94	68.24	68.60	68.57	68.98	68.88	69.34	69.28	69.76	69.47	70.02	70.62
25791.0	67.64	67.94	68.24	68.60	68.57	68.98	68.88	69.34	69.28	69.76	69.47	70.02	70.62
25796.8	67.64	67.94	68.24	68.59	68.57	68.97	68.87	69.32	69.27	69.74	69.45	70.00	70.58
25802.6	67.65	67.94	68.24	68.59	68.57	68.98	68.87	69.32	69.27	69.73	69.45	69.99	70.56
25808.3	67.65	67.94	68.23	68.59	68.57	68.97	68.87	69.33	69.27	69.73	69.45	69.99	70.56
25814.1	67.64	67.94	68.23	68.58	68.56	68.97	68.87	69.32	69.26	69.73	69.45	69.99	70.56
25819.9	67.63	67.93	68.22	68.57	68.55	68.96	68.86	69.32	69.26	69.73	69.45	69.99	70.56
25825.7	67.61	67.91	68.20	68.56	68.54	68.95	68.84	69.30	69.24	69.72	69.43	69.98	70.56
25831.4	67.60	67.89	68.19	68.54	68.52	68.93	68.83	69.29	69.23	69.70	69.42	69.96	70.55
25837.2	67.57	67.87	68.16	68.52	68.50	68.91	68.81	69.27	69.21	69.69	69.40	69.95	70.54
25843.0	67.55	67.84	68.14	68.50	68.47	68.89	68.78	69.24	69.19	69.66	69.38	69.92	70.52
25848.8	67.52	67.81	68.10	68.46	68.44	68.85	68.75	69.21	69.15	69.63	69.34	69.89	70.49
25854.7	67.49	67.78	68.07	68.43	68.41	68.82	68.71	69.17	69.12	69.59	69.30	69.85	70.45
25860.5	67.45	67.75	68.04	68.40	68.37	68.79	68.68	69.14	69.08	69.56	69.27	69.82	70.41
25866.3	67.42	67.72	68.01	68.37	68.34	68.75	68.65	69.11	69.05	69.52	69.24	69.78	70.38
25872.2	67.39	67.68	67.98	68.33	68.31	68.72	68.62	69.08	69.02	69.49	69.21	69.75	70.35
25878.0	67.36	67.65	67.95	68.30	68.28	68.69	68.59	69.05	68.99	69.46	69.18	69.72	70.31
25883.8	67.33	67.62	67.92	68.28	68.25	68.66	68.56	69.02	68.96	69.43	69.15	69.69	70.28
25889.7	67.30	67.59	67.89	68.25	68.22	68.64	68.53	68.99	68.93	69.40	69.12	69.66	70.25

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
25895.5	67.27	67.57	67.86	68.22	68.20	68.61	68.50	68.96	68.90	69.38	69.09	69.63	70.22
25901.3	67.24	67.54	67.83	68.19	68.17	68.58	68.48	68.94	68.88	69.35	69.07	69.60	70.19
25907.2	67.21	67.51	67.81	68.17	68.15	68.56	68.45	68.91	68.86	69.33	69.04	69.58	70.17
25913.0	67.18	67.49	67.78	68.15	68.12	68.54	68.43	68.89	68.83	69.30	69.02	69.56	70.14
25919.0	67.16	67.46	67.76	68.13	68.10	68.52	68.41	68.87	68.81	69.28	69.00	69.53	70.12
25925.0	67.14	67.44	67.74	68.10	68.08	68.50	68.39	68.85	68.79	69.26	68.98	69.52	70.10
25931.0	67.11	67.42	67.72	68.08	68.06	68.48	68.37	68.83	68.77	69.24	68.96	69.50	70.08
25937.0	67.09	67.39	67.70	68.06	68.04	68.46	68.35	68.81	68.75	69.23	68.94	69.48	70.06
25943.0	67.06	67.37	67.67	68.04	68.02	68.44	68.33	68.79	68.73	69.21	68.92	69.46	70.05
25949.0	67.04	67.35	67.65	68.02	68.00	68.42	68.31	68.78	68.72	69.19	68.91	69.45	70.03
25955.0	67.02	67.33	67.63	68.00	67.98	68.40	68.29	68.76	68.70	69.18	68.89	69.43	70.01
25961.0	67.00	67.31	67.62	67.99	67.96	68.38	68.28	68.74	68.68	69.16	68.87	69.41	70.00
25967.0	66.98	67.29	67.60	67.97	67.95	68.37	68.26	68.73	68.67	69.14	68.86	69.40	69.98
25972.9	66.96	67.27	67.58	67.95	67.92	68.35	68.24	68.71	68.65	69.12	68.84	69.37	69.96
25978.8	66.93	67.25	67.55	67.93	67.90	68.32	68.22	68.68	68.62	69.10	68.81	69.35	69.93
25984.6	66.91	67.23	67.53	67.90	67.88	68.30	68.19	68.66	68.60	69.07	68.79	69.33	69.90
25990.5	66.89	67.20	67.51	67.88	67.86	68.28	68.17	68.64	68.58	69.05	68.77	69.30	69.88
25996.4	66.87	67.18	67.49	67.86	67.83	68.26	68.15	68.61	68.55	69.03	68.74	69.28	69.85
26002.3	66.85	67.16	67.46	67.84	67.81	68.23	68.13	68.59	68.53	69.00	68.72	69.26	69.82
26008.2	66.82	67.13	67.44	67.81	67.79	68.21	68.10	68.56	68.51	68.98	68.69	69.23	69.79
26014.1	66.80	67.11	67.42	67.79	67.77	68.19	68.08	68.54	68.48	68.95	68.67	69.21	69.76
26019.9	66.78	67.09	67.39	67.77	67.74	68.16	68.05	68.52	68.46	68.93	68.65	69.18	69.73
26025.8	66.75	67.06	67.37	67.74	67.72	68.14	68.03	68.49	68.43	68.90	68.62	69.15	69.71
26031.7	66.73	67.04	67.35	67.72	67.69	68.11	68.01	68.47	68.41	68.88	68.60	69.13	69.68
26037.6	66.70	67.02	67.32	67.69	67.67	68.09	67.98	68.44	68.38	68.85	68.57	69.10	69.65
26043.5	66.68	66.99	67.30	67.67	67.64	68.06	67.95	68.41	68.36	68.82	68.54	69.07	69.62
26049.4	66.65	66.96	67.27	67.64	67.62	68.03	67.93	68.38	68.33	68.79	68.51	69.04	69.60
26055.2	66.63	66.94	67.24	67.61	67.59	68.00	67.90	68.35	68.30	68.76	68.48	69.01	69.57
26061.1	66.60	66.91	67.22	67.58	67.56	67.97	67.87	68.32	68.26	68.73	68.45	68.98	69.55
26067.0	66.57	66.88	67.19	67.55	67.53	67.94	67.84	68.29	68.23	68.70	68.42	68.95	69.52
26072.8	66.55	66.86	67.16	67.53	67.51	67.92	67.81	68.26	68.21	68.67	68.39	68.93	69.50
26078.5	66.52	66.84	67.14	67.51	67.48	67.89	67.79	68.24	68.18	68.65	68.37	68.90	69.47
26084.3	66.50	66.81	67.12	67.48	67.46	67.87	67.76	68.21	68.16	68.62	68.34	68.88	69.44
26090.1	66.48	66.79	67.09	67.46	67.43	67.84	67.74	68.19	68.13	68.60	68.32	68.85	69.42
26095.8	66.46	66.77	67.07	67.43	67.41	67.82	67.71	68.16	68.10	68.57	68.29	68.82	69.39
26101.6	66.43	66.74	67.05	67.41	67.38	67.79	67.69	68.14	68.08	68.54	68.26	68.79	69.36
26107.4	66.41	66.72	67.02	67.38	67.36	67.76	67.66	68.11	68.05	68.51	68.24	68.77	69.33
26113.1	66.39	66.70	66.99	67.35	67.33	67.74	67.63	68.08	68.02	68.49	68.21	68.74	69.30
26118.9	66.36	66.67	66.97	67.33	67.30	67.71	67.60	68.05	68.00	68.46	68.18	68.71	69.28
26124.6	66.34	66.65	66.94	67.30	67.28	67.68	67.58	68.03	67.97	68.43	68.15	68.68	69.25
26130.4	66.32	66.62	66.92	67.27	67.25	67.65	67.55	68.00	67.94	68.40	68.12	68.65	69.21
26136.2	66.29	66.60	66.89	67.24	67.22	67.62	67.52	67.97	67.91	68.37	68.09	68.62	69.18
26141.9	66.27	66.57	66.86	67.21	67.19	67.59	67.49	67.94	67.88	68.34	68.06	68.59	69.15
26147.7	66.24	66.54	66.83	67.18	67.16	67.56	67.46	67.90	67.85	68.31	68.03	68.56	69.12
26153.5	66.22	66.52	66.80	67.15	67.13	67.53	67.43	67.87	67.81	68.28	68.00	68.52	69.08
26159.2	66.19	66.49	66.78	67.12	67.10	67.50	67.40	67.84	67.78	68.24	67.97	68.49	69.05

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
26165.0	66.16	66.46	66.75	67.09	67.07	67.46	67.36	67.81	67.75	68.21	67.93	68.46	69.02
26170.9	66.14	66.43	66.72	67.07	67.04	67.44	67.34	67.78	67.72	68.18	67.90	68.43	68.99
26176.7	66.12	66.41	66.69	67.04	67.02	67.41	67.31	67.75	67.69	68.15	67.88	68.40	68.96
26182.6	66.09	66.39	66.67	67.01	66.99	67.38	67.28	67.72	67.67	68.12	67.85	68.37	68.93
26188.4	66.07	66.36	66.64	66.99	66.96	67.36	67.26	67.70	67.64	68.10	67.82	68.34	68.90
26194.3	66.04	66.33	66.62	66.96	66.94	67.33	67.23	67.67	67.61	68.07	67.79	68.31	68.87
26200.1	66.02	66.31	66.59	66.93	66.91	67.30	67.20	67.64	67.58	68.04	67.76	68.28	68.84
26206.0	65.99	66.28	66.56	66.90	66.88	67.27	67.17	67.61	67.55	68.01	67.73	68.25	68.81
26211.9	65.97	66.26	66.54	66.88	66.85	67.24	67.14	67.58	67.52	67.98	67.71	68.22	68.78
26217.7	65.94	66.23	66.51	66.85	66.83	67.22	67.12	67.55	67.50	67.95	67.68	68.19	68.75
26223.6	65.92	66.20	66.48	66.82	66.80	67.19	67.09	67.52	67.47	67.92	67.65	68.16	68.72
26229.4	65.89	66.17	66.45	66.79	66.77	67.16	67.06	67.49	67.44	67.89	67.62	68.13	68.69
26235.3	65.86	66.15	66.43	66.76	66.74	67.13	67.03	67.46	67.41	67.86	67.59	68.10	68.66
26241.1	65.84	66.12	66.40	66.73	66.71	67.10	67.00	67.43	67.37	67.83	67.55	68.07	68.63
26247.0	65.81	66.09	66.37	66.70	66.68	67.07	66.97	67.40	67.34	67.80	67.52	68.04	68.60
26252.9	65.78	66.06	66.34	66.67	66.65	67.03	66.94	67.37	67.31	67.76	67.49	68.01	68.57
26258.7	65.75	66.03	66.31	66.64	66.62	67.00	66.90	67.34	67.28	67.73	67.46	67.98	68.53
26264.6	65.72	66.00	66.28	66.61	66.59	66.97	66.87	67.30	67.25	67.70	67.43	67.94	68.50
26270.4	65.70	65.97	66.25	66.58	66.56	66.94	66.84	67.27	67.22	67.67	67.40	67.91	68.47
26276.3	65.67	65.94	66.21	66.55	66.52	66.90	66.81	67.24	67.18	67.63	67.36	67.88	68.44
26282.1	65.64	65.91	66.18	66.51	66.49	66.87	66.77	67.20	67.15	67.60	67.33	67.85	68.41
26288.0	65.61	65.88	66.15	66.48	66.46	66.84	66.74	67.17	67.11	67.57	67.29	67.81	68.37
26294.0	65.58	65.86	66.13	66.46	66.43	66.81	66.72	67.14	67.09	67.54	67.27	67.79	68.35
26300.0	65.56	65.83	66.10	66.43	66.41	66.79	66.69	67.12	67.06	67.52	67.24	67.76	68.32
26306.0	65.53	65.81	66.08	66.41	66.39	66.76	66.67	67.09	67.04	67.49	67.22	67.73	68.29
26312.0	65.51	65.78	66.05	66.38	66.36	66.74	66.64	67.07	67.01	67.47	67.19	67.71	68.27
26318.0	65.48	65.76	66.03	66.36	66.34	66.72	66.62	67.05	66.99	67.44	67.17	67.68	68.24
26324.0	65.46	65.73	66.00	66.34	66.31	66.69	66.60	67.02	66.97	67.42	67.15	67.66	68.22
26330.0	65.43	65.71	65.98	66.31	66.29	66.67	66.57	67.00	66.94	67.39	67.12	67.64	68.20
26336.0	65.41	65.68	65.95	66.29	66.26	66.64	66.55	66.97	66.92	67.37	67.10	67.61	68.17
26342.0	65.38	65.65	65.93	66.26	66.24	66.62	66.52	66.95	66.90	67.35	67.07	67.59	68.15
26348.0	65.35	65.63	65.90	66.23	66.21	66.60	66.50	66.93	66.87	67.32	67.05	67.56	68.13
26354.0	65.33	65.60	65.87	66.21	66.19	66.57	66.47	66.90	66.85	67.30	67.03	67.54	68.10
26360.0	65.30	65.57	65.84	66.18	66.16	66.55	66.45	66.88	66.82	67.28	67.00	67.52	68.08
26366.0	65.27	65.54	65.82	66.15	66.13	66.52	66.42	66.86	66.80	67.25	66.98	67.50	68.06
26372.0	65.24	65.51	65.79	66.13	66.10	66.49	66.39	66.83	66.77	67.23	66.96	67.47	68.04
26378.0	65.21	65.49	65.76	66.10	66.08	66.47	66.37	66.81	66.75	67.21	66.93	67.45	68.02
26384.0	65.18	65.45	65.73	66.07	66.05	66.44	66.34	66.78	66.72	67.18	66.91	67.43	68.00
26390.0	65.15	65.42	65.70	66.04	66.02	66.41	66.31	66.76	66.70	67.16	66.88	67.40	67.97
26396.0	65.12	65.39	65.67	66.01	65.99	66.39	66.28	66.73	66.67	67.14	66.86	67.38	67.95
26402.0	65.08	65.36	65.64	65.98	65.96	66.36	66.25	66.70	66.65	67.11	66.83	67.36	67.93
26407.9	65.06	65.33	65.61	65.95	65.93	66.33	66.23	66.68	66.62	67.09	66.81	67.34	67.91
26413.7	65.03	65.31	65.59	65.93	65.91	66.31	66.21	66.66	66.60	67.07	66.79	67.32	67.89
26419.6	65.00	65.28	65.56	65.91	65.89	66.29	66.19	66.64	66.58	67.05	66.77	67.30	67.87
26425.5	64.98	65.26	65.54	65.89	65.87	66.27	66.17	66.62	66.56	67.03	66.75	67.28	67.86
26431.3	64.95	65.24	65.52	65.87	65.85	66.25	66.15	66.60	66.54	67.01	66.73	67.26	67.84

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
26437.2	64.93	65.21	65.50	65.85	65.83	66.23	66.13	66.58	66.52	66.99	66.71	67.24	67.82
26443.0	64.91	65.19	65.48	65.83	65.81	66.21	66.11	66.57	66.51	66.98	66.69	67.22	67.81
26448.9	64.88	65.17	65.46	65.81	65.79	66.20	66.09	66.55	66.49	66.96	66.68	67.21	67.79
26454.8	64.86	65.15	65.44	65.80	65.77	66.18	66.08	66.53	66.47	66.95	66.66	67.19	67.78
26460.6	64.84	65.13	65.42	65.78	65.76	66.16	66.06	66.52	66.46	66.93	66.65	67.18	67.76
26466.5	64.82	65.11	65.41	65.76	65.74	66.15	66.04	66.50	66.44	66.92	66.63	67.16	67.75
26472.4	64.80	65.10	65.39	65.75	65.72	66.14	66.03	66.49	66.43	66.90	66.62	67.15	67.74
26478.2	64.78	65.08	65.37	65.73	65.71	66.12	66.02	66.47	66.42	66.89	66.60	67.14	67.72
26484.1	64.76	65.06	65.36	65.72	65.70	66.11	66.00	66.46	66.40	66.88	66.59	67.12	67.71
26490.0	64.75	65.05	65.35	65.71	65.68	66.10	65.99	66.45	66.39	66.86	66.58	67.11	67.70
26495.8	64.73	65.03	65.33	65.69	65.67	66.08	65.98	66.44	66.38	66.85	66.57	67.10	67.69
26501.7	64.72	65.02	65.32	65.68	65.66	66.07	65.97	66.43	66.37	66.84	66.56	67.09	67.68
26507.5	64.70	65.01	65.31	65.67	65.65	66.06	65.96	66.42	66.36	66.83	66.55	67.08	67.67
26513.4	64.69	65.00	65.30	65.66	65.64	66.05	65.95	66.41	66.35	66.82	66.54	67.07	67.66
26519.3	64.68	64.98	65.29	65.65	65.63	66.04	65.94	66.40	66.34	66.81	66.53	67.06	67.66
26525.1	64.66	64.97	65.28	65.64	65.62	66.03	65.93	66.39	66.33	66.80	66.52	67.05	67.65
26531.0	64.65	64.96	65.27	65.63	65.61	66.02	65.92	66.38	66.32	66.80	66.51	67.05	67.64
26537.0	64.63	64.94	65.25	65.62	65.59	66.01	65.90	66.36	66.30	66.78	66.49	67.03	67.63
26542.9	64.61	64.93	65.23	65.60	65.57	65.99	65.88	66.35	66.29	66.76	66.48	67.02	67.61
26548.9	64.60	64.91	65.21	65.58	65.56	65.97	65.87	66.33	66.27	66.75	66.46	67.00	67.60
26554.8	64.58	64.89	65.20	65.56	65.54	65.96	65.85	66.31	66.25	66.73	66.44	66.98	67.59
26560.8	64.56	64.87	65.18	65.55	65.52	65.94	65.83	66.30	66.24	66.72	66.43	66.97	67.57
26566.7	64.54	64.85	65.16	65.53	65.51	65.92	65.82	66.28	66.22	66.70	66.41	66.95	67.56
26572.7	64.52	64.84	65.14	65.51	65.49	65.90	65.80	66.26	66.20	66.68	66.39	66.93	67.54
26578.6	64.50	64.82	65.13	65.49	65.47	65.89	65.78	66.24	66.19	66.66	66.38	66.92	67.53
26584.6	64.48	64.80	65.11	65.48	65.45	65.87	65.76	66.23	66.17	66.65	66.36	66.90	67.51
26590.5	64.46	64.78	65.09	65.46	65.43	65.85	65.74	66.21	66.15	66.63	66.34	66.88	67.50
26596.5	64.44	64.76	65.07	65.44	65.42	65.83	65.73	66.19	66.13	66.61	66.32	66.87	67.48
26602.4	64.43	64.74	65.05	65.42	65.40	65.81	65.71	66.17	66.11	66.59	66.30	66.85	67.47
26608.4	64.41	64.72	65.03	65.40	65.38	65.80	65.69	66.15	66.10	66.58	66.29	66.83	67.45
26614.3	64.39	64.71	65.01	65.38	65.36	65.78	65.67	66.14	66.08	66.56	66.27	66.81	67.44
26620.3	64.37	64.69	65.00	65.36	65.34	65.76	65.65	66.12	66.06	66.54	66.25	66.80	67.42
26626.2	64.35	64.67	64.98	65.35	65.32	65.74	65.63	66.10	66.04	66.52	66.23	66.78	67.41
26632.2	64.33	64.65	64.96	65.33	65.30	65.72	65.61	66.08	66.02	66.50	66.21	66.76	67.39
26638.1	64.31	64.63	64.94	65.31	65.28	65.70	65.59	66.06	66.00	66.48	66.19	66.74	67.38
26644.1	64.29	64.61	64.92	65.29	65.26	65.68	65.57	66.04	65.98	66.46	66.17	66.72	67.36
26650.0	64.27	64.59	64.90	65.27	65.24	65.66	65.55	66.02	65.96	66.44	66.15	66.70	67.34
26656.0	64.25	64.57	64.88	65.25	65.22	65.64	65.53	66.00	65.94	66.42	66.13	66.68	67.32
26661.9	64.23	64.55	64.86	65.23	65.20	65.62	65.51	65.98	65.92	66.40	66.11	66.66	67.31
26667.8	64.21	64.53	64.84	65.21	65.18	65.60	65.49	65.96	65.90	66.39	66.09	66.65	67.29
26673.6	64.19	64.51	64.82	65.19	65.16	65.58	65.47	65.94	65.88	66.37	66.07	66.63	67.28
26679.5	64.17	64.49	64.80	65.17	65.14	65.56	65.46	65.92	65.86	66.35	66.05	66.61	67.26
26685.4	64.15	64.47	64.78	65.15	65.13	65.54	65.44	65.90	65.84	66.33	66.03	66.59	67.24
26691.3	64.13	64.45	64.76	65.13	65.11	65.52	65.42	65.88	65.82	66.31	66.01	66.57	67.23
26697.2	64.11	64.43	64.74	65.11	65.09	65.50	65.40	65.86	65.80	66.29	66.00	66.55	67.21
26703.1	64.09	64.41	64.72	65.09	65.07	65.48	65.38	65.84	65.78	66.27	65.98	66.54	67.20

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
26708.9	64.07	64.39	64.70	65.07	65.05	65.47	65.36	65.82	65.76	66.25	65.96	66.52	67.18
26714.8	64.05	64.37	64.69	65.06	65.03	65.45	65.34	65.80	65.75	66.23	65.94	66.50	67.17
26720.7	64.03	64.35	64.67	65.04	65.01	65.43	65.32	65.79	65.73	66.22	65.92	66.48	67.15
26726.6	64.01	64.33	64.65	65.02	64.99	65.41	65.30	65.77	65.71	66.20	65.90	66.46	67.14
26732.5	63.99	64.31	64.63	65.00	64.97	65.39	65.28	65.75	65.69	66.18	65.88	66.45	67.12
26738.4	63.97	64.30	64.61	64.98	64.95	65.37	65.26	65.73	65.67	66.16	65.86	66.43	67.11
26744.2	63.95	64.28	64.59	64.96	64.93	65.35	65.25	65.71	65.65	66.14	65.84	66.41	67.09
26750.1	63.93	64.26	64.57	64.94	64.92	65.33	65.23	65.69	65.63	66.12	65.82	66.39	67.07
26756.0	63.92	64.24	64.55	64.92	64.90	65.31	65.21	65.67	65.61	66.10	65.80	66.37	67.06
26761.7	63.90	64.22	64.54	64.91	64.88	65.30	65.19	65.65	65.60	66.09	65.79	66.36	67.04
26767.4	63.89	64.21	64.52	64.89	64.87	65.28	65.18	65.64	65.58	66.07	65.77	66.34	67.03
26773.2	63.87	64.19	64.51	64.88	64.85	65.27	65.16	65.62	65.56	66.06	65.76	66.32	67.01
26778.9	63.86	64.18	64.49	64.86	64.84	65.25	65.15	65.61	65.55	66.04	65.74	66.31	67.00
26784.6	63.85	64.17	64.48	64.85	64.82	65.24	65.13	65.59	65.53	66.02	65.73	66.29	66.99
26790.3	63.83	64.15	64.47	64.83	64.81	65.22	65.12	65.58	65.52	66.01	65.71	66.28	66.97
26796.1	63.82	64.14	64.45	64.82	64.80	65.21	65.10	65.56	65.50	66.00	65.70	66.27	66.96
26801.8	63.81	64.13	64.44	64.81	64.78	65.19	65.09	65.55	65.49	65.98	65.68	66.25	66.95
26807.5	63.80	64.12	64.43	64.80	64.77	65.18	65.08	65.54	65.48	65.97	65.67	66.24	66.94
26813.2	63.78	64.11	64.42	64.78	64.76	65.17	65.06	65.52	65.46	65.95	65.65	66.22	66.92
26818.9	63.77	64.09	64.41	64.77	64.75	65.16	65.05	65.51	65.45	65.94	65.64	66.21	66.91
26824.7	63.76	64.08	64.39	64.76	64.73	65.14	65.04	65.50	65.44	65.93	65.63	66.20	66.90
26830.4	63.75	64.07	64.38	64.75	64.72	65.13	65.03	65.48	65.43	65.92	65.62	66.19	66.89
26836.1	63.74	64.06	64.37	64.74	64.71	65.12	65.02	65.47	65.41	65.91	65.61	66.18	66.88
26841.8	63.73	64.05	64.36	64.73	64.70	65.11	65.00	65.46	65.40	65.89	65.59	66.16	66.87
26847.6	63.72	64.04	64.35	64.72	64.69	65.10	64.99	65.45	65.39	65.88	65.58	66.15	66.86
26853.3	63.71	64.03	64.34	64.71	64.68	65.09	64.98	65.44	65.38	65.87	65.57	66.14	66.85
26859.0	63.70	64.02	64.33	64.70	64.67	65.08	64.97	65.43	65.37	65.86	65.56	66.13	66.84
26864.7	63.69	64.01	64.32	64.69	64.66	65.07	64.96	65.42	65.36	65.85	65.55	66.12	66.83
26870.4	63.68	64.00	64.31	64.67	64.65	65.05	64.95	65.40	65.35	65.84	65.54	66.11	66.82
26876.1	63.67	63.99	64.30	64.66	64.64	65.04	64.94	65.39	65.34	65.83	65.53	66.10	66.81
26881.8	63.66	63.98	64.29	64.65	64.63	65.03	64.93	65.38	65.32	65.82	65.51	66.09	66.79
26887.5	63.65	63.97	64.28	64.64	64.62	65.02	64.92	65.37	65.31	65.80	65.50	66.08	66.78
26893.2	63.64	63.96	64.27	64.63	64.61	65.01	64.91	65.36	65.30	65.79	65.49	66.07	66.77
26898.8	63.63	63.95	64.26	64.62	64.60	65.00	64.90	65.35	65.29	65.78	65.48	66.05	66.75
26904.5	63.62	63.94	64.25	64.61	64.59	64.99	64.89	65.34	65.28	65.77	65.47	66.04	66.73
26910.2	63.61	63.93	64.24	64.60	64.58	64.98	64.88	65.33	65.27	65.76	65.46	66.03	66.71
26915.9	63.60	63.92	64.23	64.59	64.57	64.97	64.86	65.32	65.26	65.75	65.45	66.02	66.69
26921.6	63.59	63.91	64.22	64.58	64.56	64.96	64.85	65.31	65.25	65.74	65.44	66.01	66.67
26927.3	63.58	63.91	64.22	64.57	64.55	64.95	64.84	65.29	65.24	65.73	65.43	65.99	66.64
26933.0	63.57	63.90	64.21	64.56	64.54	64.94	64.83	65.28	65.23	65.72	65.42	65.98	66.62
26933.0	63.57	63.90	64.21	64.56	64.54	64.94	64.83	65.28	65.23	65.72	65.42	65.98	66.62
26969.0	63.03	63.34	63.63	63.97	63.95	64.32	64.23	64.63	64.58	64.98	64.74	65.19	65.68
26969.0	63.03	63.34	63.63	63.97	63.95	64.32	64.23	64.63	64.58	64.98	64.74	65.19	65.68
26974.6	63.01	63.32	63.61	63.95	63.93	64.30	64.21	64.62	64.56	64.96	64.73	65.17	65.66
26980.3	62.99	63.30	63.59	63.93	63.91	64.29	64.19	64.60	64.55	64.95	64.71	65.15	65.64
26985.9	62.98	63.28	63.57	63.91	63.89	64.27	64.17	64.58	64.53	64.93	64.69	65.14	65.62

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
26991.5	62.96	63.26	63.55	63.90	63.87	64.25	64.16	64.56	64.51	64.91	64.68	65.12	65.60
26997.2	62.94	63.24	63.54	63.88	63.86	64.23	64.14	64.55	64.50	64.89	64.66	65.10	65.58
27002.8	62.92	63.23	63.52	63.86	63.84	64.22	64.12	64.53	64.48	64.87	64.64	65.08	65.56
27008.5	62.90	63.21	63.50	63.84	63.82	64.20	64.11	64.51	64.46	64.86	64.62	65.06	65.54
27014.1	62.88	63.19	63.48	63.82	63.80	64.18	64.09	64.50	64.45	64.84	64.61	65.05	65.52
27019.7	62.86	63.17	63.46	63.81	63.79	64.17	64.07	64.48	64.43	64.82	64.59	65.03	65.50
27025.4	62.84	63.15	63.44	63.79	63.77	64.15	64.05	64.46	64.41	64.80	64.57	65.01	65.48
27031.0	62.82	63.13	63.43	63.77	63.75	64.13	64.04	64.44	64.39	64.79	64.55	64.99	65.47
27036.7	62.80	63.11	63.40	63.75	63.73	64.11	64.01	64.42	64.37	64.76	64.53	64.97	65.44
27042.5	62.78	63.09	63.38	63.73	63.70	64.08	63.99	64.40	64.34	64.74	64.51	64.94	65.42
27048.2	62.76	63.07	63.36	63.70	63.68	64.06	63.97	64.37	64.32	64.71	64.48	64.92	65.39
27053.9	62.74	63.04	63.34	63.68	63.66	64.04	63.94	64.35	64.30	64.69	64.46	64.90	65.37
27059.7	62.72	63.02	63.31	63.66	63.63	64.01	63.92	64.32	64.27	64.67	64.43	64.87	65.35
27065.4	62.70	63.00	63.29	63.63	63.61	63.99	63.89	64.30	64.25	64.64	64.41	64.85	65.32
27071.2	62.68	62.98	63.27	63.61	63.59	63.96	63.87	64.27	64.22	64.62	64.38	64.82	65.29
27076.9	62.66	62.96	63.24	63.58	63.56	63.94	63.84	64.25	64.20	64.59	64.36	64.80	65.27
27082.6	62.63	62.93	63.22	63.56	63.54	63.91	63.82	64.22	64.17	64.56	64.33	64.77	65.24
27088.4	62.61	62.91	63.20	63.54	63.51	63.89	63.79	64.19	64.14	64.54	64.30	64.74	65.21
27094.1	62.59	62.89	63.17	63.51	63.49	63.86	63.77	64.17	64.12	64.51	64.28	64.71	65.18
27099.8	62.57	62.87	63.15	63.49	63.46	63.84	63.74	64.14	64.09	64.48	64.25	64.69	65.16
27105.6	62.55	62.84	63.13	63.46	63.44	63.81	63.72	64.12	64.07	64.46	64.22	64.66	65.13
27111.3	62.53	62.82	63.10	63.43	63.41	63.78	63.69	64.09	64.04	64.43	64.20	64.63	65.10
27117.1	62.51	62.80	63.08	63.41	63.39	63.76	63.66	64.06	64.01	64.40	64.17	64.61	65.07
27122.8	62.49	62.77	63.05	63.38	63.36	63.73	63.64	64.03	63.98	64.37	64.14	64.58	65.04
27128.5	62.47	62.75	63.03	63.36	63.33	63.70	63.61	64.01	63.96	64.34	64.11	64.55	65.01
27134.3	62.45	62.73	63.00	63.33	63.31	63.67	63.58	63.98	63.93	64.31	64.08	64.52	64.98
27140.0	62.43	62.70	62.97	63.30	63.28	63.65	63.55	63.95	63.90	64.28	64.05	64.49	64.95
27145.8	62.41	62.68	62.95	63.28	63.26	63.62	63.53	63.92	63.87	64.26	64.03	64.46	64.92
27151.7	62.39	62.67	62.93	63.26	63.24	63.60	63.51	63.90	63.85	64.23	64.00	64.43	64.89
27157.5	62.37	62.65	62.91	63.23	63.21	63.57	63.48	63.87	63.82	64.20	63.98	64.41	64.86
27163.4	62.35	62.63	62.89	63.21	63.19	63.55	63.46	63.84	63.79	64.18	63.95	64.38	64.84
27169.2	62.33	62.61	62.87	63.19	63.17	63.52	63.43	63.82	63.77	64.15	63.92	64.35	64.81
27175.1	62.32	62.59	62.85	63.17	63.15	63.50	63.41	63.79	63.74	64.12	63.89	64.32	64.77
27180.9	62.30	62.57	62.83	63.14	63.12	63.47	63.38	63.76	63.72	64.09	63.87	64.29	64.74
27186.7	62.28	62.55	62.81	63.12	63.10	63.45	63.36	63.74	63.69	64.06	63.84	64.26	64.71
27192.6	62.26	62.52	62.78	63.10	63.08	63.42	63.34	63.71	63.66	64.03	63.81	64.23	64.68
27198.4	62.24	62.50	62.76	63.07	63.05	63.40	63.31	63.68	63.64	64.00	63.79	64.20	64.65
27204.3	62.22	62.48	62.74	63.05	63.03	63.37	63.28	63.66	63.61	63.98	63.76	64.17	64.62
27210.1	62.20	62.46	62.72	63.02	63.00	63.34	63.26	63.63	63.58	63.95	63.73	64.14	64.59
27215.9	62.18	62.44	62.69	63.00	62.98	63.32	63.23	63.60	63.55	63.92	63.70	64.11	64.56
27221.8	62.16	62.42	62.67	62.97	62.95	63.29	63.21	63.57	63.53	63.89	63.67	64.08	64.53
27227.6	62.14	62.40	62.65	62.95	62.93	63.26	63.18	63.54	63.50	63.86	63.64	64.05	64.49
27233.5	62.12	62.37	62.62	62.92	62.90	63.24	63.15	63.51	63.47	63.83	63.61	64.02	64.46
27239.3	62.10	62.35	62.60	62.89	62.87	63.21	63.12	63.49	63.44	63.80	63.58	63.99	64.43
27245.2	62.07	62.33	62.57	62.87	62.85	63.18	63.10	63.46	63.41	63.77	63.55	63.96	64.40
27251.0	62.05	62.31	62.55	62.84	62.82	63.15	63.07	63.43	63.38	63.74	63.52	63.93	64.36

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
27256.9	62.03	62.28	62.52	62.81	62.80	63.12	63.04	63.40	63.35	63.71	63.50	63.90	64.33
27262.8	62.01	62.26	62.50	62.79	62.77	63.10	63.02	63.37	63.33	63.68	63.47	63.87	64.30
27268.7	61.99	62.23	62.47	62.76	62.75	63.07	62.99	63.34	63.30	63.65	63.44	63.84	64.27
27274.6	61.96	62.21	62.45	62.74	62.72	63.05	62.96	63.31	63.27	63.62	63.41	63.81	64.24
27280.5	61.94	62.19	62.42	62.71	62.70	63.02	62.94	63.29	63.24	63.59	63.38	63.78	64.21
27286.4	61.92	62.16	62.40	62.69	62.67	62.99	62.91	63.26	63.21	63.56	63.35	63.75	64.18
27292.3	61.89	62.14	62.37	62.66	62.64	62.96	62.88	63.23	63.19	63.53	63.33	63.72	64.15
27298.2	61.87	62.11	62.35	62.64	62.62	62.94	62.86	63.20	63.16	63.51	63.30	63.69	64.12
27304.1	61.85	62.09	62.33	62.61	62.59	62.91	62.83	63.17	63.13	63.48	63.27	63.66	64.09
27309.9	61.82	62.06	62.30	62.58	62.57	62.88	62.80	63.14	63.10	63.45	63.24	63.63	64.06
27315.8	61.80	62.04	62.27	62.56	62.54	62.85	62.78	63.12	63.07	63.42	63.21	63.60	64.03
27321.7	61.77	62.01	62.25	62.53	62.51	62.83	62.75	63.09	63.04	63.39	63.18	63.57	64.00
27327.6	61.75	61.99	62.22	62.50	62.49	62.80	62.72	63.06	63.02	63.36	63.15	63.55	63.97
27333.5	61.73	61.97	62.20	62.48	62.46	62.77	62.69	63.03	62.99	63.33	63.12	63.52	63.94
27339.4	61.70	61.94	62.17	62.45	62.43	62.74	62.67	63.00	62.96	63.30	63.10	63.49	63.91
27345.3	61.68	61.92	62.15	62.42	62.41	62.72	62.64	62.97	62.93	63.27	63.07	63.46	63.88
27351.2	61.65	61.89	62.12	62.40	62.38	62.69	62.61	62.95	62.90	63.24	63.04	63.43	63.86
27357.1	61.63	61.87	62.09	62.37	62.35	62.66	62.58	62.92	62.88	63.21	63.01	63.40	63.83
27363.0	61.60	61.84	62.07	62.34	62.33	62.63	62.56	62.89	62.85	63.19	62.98	63.37	63.80
27368.9	61.58	61.82	62.04	62.32	62.30	62.61	62.53	62.87	62.82	63.16	62.96	63.34	63.77
27374.8	61.56	61.79	62.02	62.29	62.28	62.58	62.51	62.84	62.80	63.14	62.93	63.32	63.74
27380.7	61.53	61.77	62.00	62.27	62.25	62.56	62.48	62.82	62.78	63.11	62.91	63.29	63.71
27386.6	61.51	61.74	61.97	62.25	62.23	62.54	62.46	62.79	62.75	63.09	62.89	63.27	63.68
27392.5	61.48	61.72	61.95	62.22	62.20	62.51	62.43	62.77	62.73	63.06	62.86	63.24	63.65
27398.4	61.46	61.70	61.92	62.20	62.18	62.49	62.41	62.75	62.70	63.04	62.84	63.22	63.63
27404.3	61.44	61.67	61.90	62.17	62.16	62.46	62.39	62.72	62.68	63.01	62.82	63.19	63.60
27410.2	61.41	61.65	61.88	62.15	62.13	62.44	62.36	62.70	62.66	62.99	62.79	63.17	63.58
27416.1	61.39	61.62	61.85	62.13	62.11	62.42	62.34	62.67	62.63	62.97	62.77	63.14	63.55
27421.9	61.37	61.60	61.83	62.10	62.08	62.39	62.31	62.65	62.61	62.94	62.74	63.12	63.52
27427.8	61.34	61.58	61.80	62.08	62.06	62.37	62.29	62.63	62.58	62.92	62.72	63.09	63.50
27433.7	61.32	61.55	61.78	62.05	62.04	62.34	62.27	62.60	62.56	62.89	62.70	63.07	63.47
27439.6	61.30	61.53	61.76	62.03	62.01	62.32	62.24	62.58	62.54	62.87	62.67	63.04	63.44
27445.5	61.27	61.51	61.73	62.01	61.99	62.30	62.22	62.55	62.51	62.84	62.64	63.01	63.41
27451.4	61.25	61.48	61.71	61.98	61.97	62.27	62.19	62.53	62.49	62.82	62.62	62.99	63.39
27457.3	61.23	61.46	61.69	61.96	61.94	62.25	62.17	62.50	62.46	62.79	62.60	62.96	63.36
27463.2	61.20	61.44	61.66	61.93	61.92	62.22	62.15	62.48	62.44	62.77	62.57	62.94	63.33
27469.1	61.18	61.41	61.64	61.91	61.89	62.20	62.12	62.46	62.41	62.74	62.55	62.91	63.30
27475.0	61.16	61.39	61.62	61.89	61.87	62.18	62.10	62.43	62.39	62.72	62.52	62.89	63.28
27480.7	61.13	61.37	61.59	61.86	61.85	62.15	62.08	62.41	62.37	62.69	62.50	62.86	63.25
27486.5	61.11	61.34	61.57	61.84	61.82	62.13	62.05	62.39	62.34	62.67	62.48	62.84	63.22
27492.2	61.09	61.32	61.55	61.82	61.80	62.11	62.03	62.36	62.32	62.64	62.45	62.81	63.19
27497.9	61.07	61.30	61.53	61.80	61.78	62.09	62.01	62.34	62.30	62.62	62.43	62.79	63.17
27503.7	61.05	61.28	61.50	61.78	61.76	62.07	61.99	62.32	62.28	62.60	62.41	62.77	63.14
27509.4	61.02	61.26	61.48	61.75	61.74	62.04	61.97	62.30	62.26	62.58	62.39	62.74	63.12
27515.2	61.00	61.23	61.46	61.73	61.72	62.02	61.95	62.27	62.23	62.55	62.36	62.72	63.09
27520.9	60.98	61.21	61.44	61.71	61.69	62.00	61.92	62.25	62.21	62.53	62.34	62.70	63.06

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
27526.6	60.96	61.19	61.42	61.69	61.67	61.98	61.90	62.23	62.19	62.51	62.32	62.67	63.04
27532.4	60.94	61.17	61.40	61.67	61.65	61.96	61.88	62.21	62.17	62.49	62.30	62.65	63.01
27538.1	60.92	61.15	61.37	61.65	61.63	61.94	61.86	62.19	62.15	62.47	62.28	62.63	62.99
27543.8	60.89	61.13	61.35	61.63	61.61	61.92	61.84	62.17	62.13	62.45	62.26	62.61	62.97
27549.6	60.87	61.11	61.33	61.61	61.59	61.90	61.83	62.15	62.11	62.43	62.24	62.59	62.95
27555.3	60.85	61.08	61.31	61.59	61.57	61.88	61.81	62.13	62.09	62.41	62.22	62.57	62.93
27561.1	60.83	61.06	61.29	61.57	61.55	61.87	61.79	62.11	62.07	62.39	62.20	62.55	62.91
27566.8	60.81	61.04	61.27	61.55	61.54	61.85	61.77	62.10	62.06	62.37	62.18	62.53	62.89
27572.5	60.79	61.02	61.25	61.54	61.52	61.83	61.75	62.08	62.04	62.35	62.17	62.51	62.87
27578.3	60.77	61.00	61.24	61.52	61.50	61.81	61.74	62.06	62.02	62.33	62.15	62.49	62.86
27584.0	60.75	60.98	61.22	61.50	61.48	61.80	61.72	62.05	62.01	62.32	62.13	62.48	62.84
27589.8	60.73	60.96	61.19	61.48	61.46	61.77	61.70	62.02	61.98	62.29	62.11	62.46	62.82
27595.6	60.70	60.94	61.17	61.46	61.44	61.75	61.67	62.00	61.96	62.27	62.09	62.43	62.80
27601.4	60.68	60.92	61.15	61.43	61.42	61.73	61.65	61.98	61.94	62.25	62.07	62.41	62.77
27607.2	60.66	60.90	61.13	61.41	61.39	61.71	61.63	61.96	61.92	62.23	62.04	62.39	62.75
27613.0	60.64	60.87	61.11	61.39	61.37	61.69	61.61	61.93	61.89	62.20	62.02	62.37	62.73
27618.8	60.62	60.85	61.08	61.37	61.35	61.66	61.59	61.91	61.87	62.18	62.00	62.35	62.71
27624.6	60.59	60.83	61.06	61.35	61.33	61.64	61.56	61.89	61.85	62.16	61.97	62.32	62.69
27630.4	60.57	60.81	61.04	61.32	61.31	61.62	61.54	61.87	61.83	62.13	61.95	62.30	62.67
27636.2	60.55	60.79	61.02	61.30	61.28	61.60	61.52	61.84	61.80	62.11	61.93	62.27	62.65
27642.0	60.53	60.76	61.00	61.28	61.26	61.57	61.50	61.82	61.78	62.09	61.91	62.25	62.62
27647.8	60.50	60.74	60.97	61.26	61.24	61.55	61.48	61.80	61.76	62.06	61.88	62.23	62.60
27653.6	60.48	60.72	60.95	61.24	61.22	61.53	61.45	61.77	61.73	62.04	61.86	62.20	62.58
27659.4	60.46	60.70	60.93	61.22	61.20	61.51	61.43	61.75	61.71	62.02	61.84	62.18	62.56
27665.2	60.44	60.67	60.91	61.19	61.18	61.49	61.41	61.73	61.69	61.99	61.81	62.16	62.53
27671.0	60.41	60.65	60.89	61.17	61.15	61.46	61.39	61.71	61.67	61.97	61.79	62.13	62.51
27676.8	60.39	60.63	60.87	61.15	61.13	61.44	61.37	61.68	61.65	61.95	61.77	62.11	62.49
27682.6	60.37	60.61	60.84	61.13	61.11	61.42	61.35	61.66	61.62	61.93	61.75	62.09	62.47
27688.4	60.35	60.59	60.82	61.11	61.09	61.40	61.33	61.64	61.60	61.91	61.73	62.07	62.45
27694.2	60.32	60.56	60.80	61.09	61.07	61.38	61.30	61.62	61.58	61.88	61.71	62.05	62.43
27700.0	60.30	60.54	60.78	61.07	61.05	61.36	61.28	61.60	61.56	61.86	61.68	62.03	62.41
27705.8	60.28	60.52	60.76	61.04	61.03	61.34	61.26	61.58	61.54	61.84	61.66	62.00	62.39
27711.7	60.26	60.50	60.73	61.02	61.00	61.32	61.24	61.56	61.52	61.82	61.64	61.98	62.37
27717.5	60.23	60.47	60.71	61.00	60.98	61.30	61.22	61.54	61.50	61.80	61.62	61.96	62.35
27723.4	60.21	60.45	60.69	60.98	60.96	61.27	61.20	61.52	61.48	61.78	61.60	61.94	62.33
27729.2	60.19	60.43	60.67	60.96	60.94	61.25	61.18	61.49	61.46	61.76	61.58	61.92	62.31
27735.1	60.17	60.41	60.65	60.94	60.92	61.23	61.16	61.47	61.43	61.74	61.56	61.90	62.28
27740.9	60.14	60.39	60.63	60.92	60.90	61.21	61.14	61.45	61.41	61.72	61.54	61.88	62.26
27746.7	60.12	60.36	60.60	60.90	60.88	61.19	61.11	61.43	61.39	61.69	61.51	61.86	62.24
27752.6	60.10	60.34	60.58	60.88	60.86	61.17	61.09	61.41	61.37	61.67	61.49	61.83	62.22
27758.4	60.08	60.32	60.56	60.85	60.84	61.15	61.07	61.39	61.35	61.65	61.47	61.81	62.20
27764.3	60.05	60.30	60.54	60.83	60.82	61.13	61.05	61.37	61.33	61.63	61.45	61.79	62.18
27770.1	60.03	60.28	60.52	60.81	60.80	61.11	61.03	61.35	61.31	61.61	61.43	61.77	62.15
27775.9	60.01	60.26	60.50	60.79	60.78	61.09	61.01	61.33	61.29	61.59	61.41	61.75	62.13
27781.8	59.99	60.24	60.48	60.78	60.76	61.07	60.99	61.31	61.27	61.57	61.39	61.72	62.11
27787.6	59.97	60.22	60.46	60.76	60.74	61.05	60.97	61.29	61.25	61.55	61.37	61.70	62.09

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
27793.5	59.95	60.20	60.44	60.74	60.72	61.03	60.96	61.27	61.23	61.53	61.35	61.68	62.07
27799.3	59.93	60.18	60.42	60.72	60.70	61.01	60.94	61.25	61.21	61.51	61.33	61.66	62.05
27805.2	59.91	60.16	60.40	60.70	60.68	60.99	60.92	61.23	61.19	61.49	61.31	61.65	62.03
27811.0	59.88	60.14	60.38	60.68	60.66	60.97	60.90	61.21	61.17	61.47	61.29	61.63	62.01
27816.8	59.86	60.11	60.36	60.66	60.64	60.95	60.88	61.19	61.15	61.44	61.27	61.60	61.99
27822.7	59.84	60.09	60.34	60.64	60.62	60.93	60.86	61.16	61.13	61.42	61.25	61.58	61.96
27828.6	59.82	60.07	60.32	60.62	60.60	60.91	60.84	61.14	61.10	61.40	61.22	61.56	61.94
27834.4	59.80	60.05	60.30	60.59	60.58	60.89	60.81	61.12	61.08	61.38	61.20	61.54	61.92
27840.3	59.77	60.03	60.27	60.57	60.55	60.87	60.79	61.09	61.06	61.35	61.18	61.51	61.90
27846.1	59.75	60.00	60.25	60.55	60.53	60.84	60.77	61.07	61.03	61.33	61.15	61.49	61.87
27851.9	59.73	59.98	60.23	60.53	60.51	60.82	60.75	61.05	61.01	61.30	61.13	61.46	61.84
27857.8	59.71	59.96	60.21	60.50	60.49	60.80	60.72	61.02	60.98	61.28	61.10	61.43	61.82
27863.7	59.68	59.94	60.18	60.48	60.46	60.77	60.70	61.00	60.96	61.25	61.08	61.41	61.79
27869.5	59.66	59.91	60.16	60.46	60.44	60.75	60.68	60.97	60.94	61.23	61.05	61.38	61.77
27875.3	59.64	59.89	60.14	60.44	60.42	60.73	60.65	60.95	60.91	61.20	61.03	61.36	61.74
27881.2	59.61	59.87	60.12	60.41	60.39	60.70	60.63	60.92	60.89	61.17	61.00	61.33	61.71
27887.1	59.59	59.85	60.09	60.39	60.37	60.68	60.60	60.90	60.86	61.15	60.98	61.30	61.69
27892.9	59.57	59.82	60.07	60.36	60.34	60.65	60.58	60.87	60.84	61.12	60.95	61.28	61.66
27898.8	59.54	59.80	60.04	60.34	60.32	60.63	60.56	60.85	60.81	61.10	60.92	61.25	61.64
27904.6	59.52	59.77	60.02	60.31	60.29	60.60	60.53	60.82	60.78	61.07	60.90	61.23	61.61
27910.4	59.50	59.75	60.00	60.29	60.27	60.58	60.50	60.79	60.76	61.04	60.87	61.20	61.59
27916.3	59.47	59.73	59.97	60.26	60.24	60.55	60.48	60.77	60.73	61.02	60.85	61.17	61.56
27922.2	59.45	59.70	59.95	60.24	60.22	60.52	60.45	60.74	60.70	60.99	60.82	61.15	61.53
27928.0	59.43	59.68	59.92	60.21	60.19	60.49	60.42	60.71	60.68	60.96	60.79	61.12	61.51
27933.9	59.40	59.66	59.90	60.19	60.17	60.47	60.40	60.69	60.65	60.94	60.77	61.10	61.48
27939.7	59.38	59.63	59.88	60.16	60.15	60.45	60.38	60.66	60.63	60.91	60.74	61.07	61.46
27945.6	59.36	59.61	59.85	60.14	60.12	60.42	60.35	60.64	60.60	60.89	60.72	61.05	61.44
27951.5	59.34	59.59	59.83	60.12	60.10	60.40	60.33	60.62	60.58	60.87	60.69	61.03	61.42
27957.3	59.31	59.56	59.81	60.09	60.08	60.37	60.30	60.59	60.56	60.84	60.67	61.00	61.40
27963.2	59.29	59.54	59.78	60.07	60.05	60.35	60.28	60.57	60.53	60.82	60.65	60.98	61.38
27969.0	59.27	59.52	59.76	60.05	60.03	60.33	60.26	60.54	60.51	60.80	60.62	60.96	61.36
27974.9	59.25	59.50	59.74	60.03	60.01	60.30	60.23	60.52	60.49	60.77	60.60	60.94	61.33
27980.8	59.23	59.47	59.71	60.00	59.98	60.28	60.21	60.50	60.46	60.75	60.58	60.92	61.31
27986.6	59.20	59.45	59.69	59.98	59.96	60.26	60.19	60.48	60.44	60.73	60.56	60.90	61.29
27992.5	59.18	59.43	59.67	59.96	59.94	60.24	60.17	60.46	60.42	60.71	60.54	60.88	61.28
27998.4	59.16	59.41	59.64	59.93	59.92	60.21	60.14	60.44	60.40	60.69	60.52	60.86	61.26
28004.2	59.14	59.38	59.62	59.91	59.89	60.19	60.12	60.41	60.38	60.67	60.49	60.83	61.24
28010.1	59.11	59.36	59.60	59.89	59.87	60.17	60.10	60.39	60.35	60.65	60.47	60.81	61.22
28016.0	59.09	59.34	59.58	59.86	59.85	60.14	60.07	60.37	60.33	60.63	60.45	60.79	61.20
28021.8	59.07	59.32	59.55	59.84	59.82	60.12	60.05	60.35	60.31	60.61	60.43	60.77	61.18
28027.7	59.05	59.29	59.53	59.82	59.80	60.10	60.03	60.32	60.28	60.58	60.40	60.75	61.17
28033.5	59.03	59.27	59.51	59.79	59.77	60.07	60.00	60.30	60.26	60.56	60.38	60.73	61.15
28039.4	59.00	59.25	59.48	59.77	59.75	60.05	59.98	60.28	60.24	60.54	60.36	60.71	61.13
28045.3	58.98	59.23	59.46	59.75	59.73	60.03	59.96	60.25	60.21	60.52	60.33	60.69	61.11
28051.1	58.96	59.20	59.44	59.72	59.70	60.00	59.93	60.23	60.19	60.49	60.31	60.66	61.09
28057.0	58.94	59.18	59.42	59.70	59.68	59.98	59.91	60.21	60.17	60.47	60.29	60.64	61.07

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
28062.9	58.91	59.16	59.39	59.68	59.66	59.96	59.89	60.18	60.15	60.45	60.27	60.62	61.05
28068.8	58.89	59.14	59.37	59.66	59.64	59.94	59.87	60.16	60.13	60.43	60.24	60.61	61.04
28074.7	58.87	59.12	59.35	59.64	59.62	59.92	59.85	60.14	60.11	60.41	60.23	60.59	61.02
28080.6	58.85	59.10	59.33	59.62	59.60	59.90	59.83	60.12	60.09	60.39	60.21	60.57	61.01
28086.5	58.83	59.08	59.31	59.60	59.58	59.88	59.81	60.10	60.07	60.38	60.19	60.55	60.99
28092.4	58.81	59.05	59.29	59.58	59.56	59.86	59.79	60.09	60.05	60.36	60.17	60.53	60.98
28098.3	58.79	59.03	59.27	59.56	59.54	59.84	59.77	60.07	60.03	60.34	60.15	60.52	60.96
28104.2	58.77	59.01	59.25	59.54	59.52	59.82	59.75	60.05	60.01	60.32	60.13	60.50	60.95
28110.1	58.75	58.99	59.23	59.52	59.50	59.80	59.73	60.03	59.99	60.31	60.11	60.48	60.93
28116.0	58.73	58.97	59.21	59.50	59.48	59.78	59.71	60.01	59.97	60.29	60.10	60.47	60.92
28121.9	58.71	58.95	59.19	59.48	59.46	59.76	59.69	59.99	59.96	60.27	60.08	60.45	60.90
28127.8	58.69	58.93	59.17	59.46	59.44	59.75	59.67	59.98	59.94	60.26	60.06	60.44	60.89
28133.7	58.67	58.91	59.15	59.44	59.42	59.73	59.66	59.96	59.92	60.24	60.05	60.42	60.88
28139.6	58.65	58.89	59.13	59.42	59.41	59.71	59.64	59.95	59.91	60.23	60.03	60.41	60.86
28145.5	58.63	58.87	59.12	59.40	59.39	59.69	59.62	59.93	59.89	60.21	60.02	60.39	60.85
28151.4	58.61	58.86	59.10	59.39	59.37	59.68	59.60	59.91	59.87	60.20	60.00	60.38	60.83
28157.3	58.59	58.84	59.08	59.37	59.35	59.66	59.58	59.90	59.86	60.18	59.98	60.36	60.82
28163.2	58.57	58.82	59.06	59.35	59.33	59.64	59.57	59.88	59.84	60.16	59.97	60.35	60.80
28169.1	58.55	58.80	59.04	59.33	59.31	59.62	59.55	59.86	59.82	60.15	59.95	60.33	60.79
28175.0	58.53	58.78	59.03	59.31	59.30	59.61	59.53	59.84	59.81	60.13	59.93	60.31	60.77
28180.9	58.51	58.76	59.01	59.30	59.28	59.59	59.51	59.83	59.79	60.11	59.92	60.30	60.76
28186.9	58.49	58.75	58.99	59.28	59.26	59.57	59.49	59.81	59.77	60.10	59.90	60.28	60.74
28192.8	58.47	58.73	58.97	59.26	59.24	59.55	59.48	59.79	59.75	60.08	59.88	60.27	60.73
28198.8	58.46	58.71	58.95	59.24	59.22	59.53	59.46	59.78	59.74	60.07	59.86	60.25	60.72
28204.7	58.44	58.69	58.93	59.22	59.21	59.52	59.44	59.76	59.72	60.05	59.85	60.24	60.70
28210.7	58.42	58.67	58.92	59.21	59.19	59.50	59.42	59.74	59.70	60.03	59.83	60.22	60.69
28216.6	58.40	58.65	58.90	59.19	59.17	59.48	59.41	59.73	59.69	60.02	59.82	60.21	60.67
28222.6	58.38	58.64	58.88	59.17	59.15	59.47	59.39	59.71	59.67	60.00	59.80	60.19	60.66
28228.5	58.37	58.62	58.86	59.15	59.14	59.45	59.37	59.69	59.65	59.99	59.78	60.18	60.65
28234.5	58.35	58.60	58.85	59.14	59.12	59.43	59.36	59.68	59.64	59.97	59.77	60.16	60.63
28240.4	58.33	58.59	58.83	59.12	59.10	59.42	59.34	59.66	59.62	59.96	59.75	60.15	60.62
28246.4	58.31	58.57	58.81	59.10	59.09	59.40	59.32	59.65	59.61	59.94	59.74	60.13	60.61
28252.3	58.30	58.55	58.80	59.09	59.07	59.38	59.31	59.63	59.59	59.93	59.72	60.12	60.59
28258.3	58.28	58.53	58.78	59.07	59.05	59.37	59.29	59.61	59.57	59.91	59.71	60.10	60.58
28264.2	58.26	58.52	58.76	59.05	59.04	59.35	59.28	59.60	59.56	59.90	59.69	60.09	60.56
28270.2	58.25	58.50	58.75	59.04	59.02	59.34	59.26	59.58	59.54	59.88	59.67	60.07	60.55
28276.1	58.23	58.49	58.73	59.02	59.00	59.32	59.24	59.57	59.53	59.87	59.66	60.06	60.53
28282.1	58.21	58.47	58.72	59.01	58.99	59.30	59.23	59.55	59.51	59.85	59.64	60.04	60.52
28288.0	58.20	58.45	58.70	58.99	58.97	59.29	59.21	59.54	59.50	59.84	59.63	60.03	60.51
28293.8	58.18	58.44	58.68	58.97	58.95	59.27	59.19	59.52	59.48	59.82	59.61	60.01	60.49
28299.5	58.16	58.42	58.66	58.95	58.94	59.25	59.17	59.50	59.46	59.80	59.59	59.99	60.47
28305.3	58.15	58.40	58.64	58.94	58.92	59.23	59.15	59.48	59.44	59.78	59.57	59.98	60.45
28311.0	58.13	58.38	58.63	58.92	58.90	59.21	59.13	59.46	59.42	59.77	59.56	59.96	60.44
28316.8	58.11	58.36	58.61	58.90	58.88	59.19	59.11	59.44	59.40	59.75	59.53	59.94	60.41
28322.5	58.09	58.35	58.59	58.88	58.86	59.17	59.09	59.42	59.38	59.72	59.51	59.92	60.39
28328.3	58.07	58.33	58.57	58.86	58.84	59.15	59.07	59.40	59.36	59.70	59.49	59.90	60.37

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
28334.0	58.06	58.31	58.55	58.84	58.82	59.13	59.05	59.38	59.34	59.68	59.47	59.88	60.35
28339.8	58.04	58.29	58.53	58.82	58.80	59.11	59.03	59.36	59.32	59.66	59.45	59.86	60.33
28345.5	58.02	58.27	58.51	58.80	58.78	59.09	59.01	59.34	59.30	59.64	59.43	59.84	60.31
28351.3	58.00	58.25	58.49	58.78	58.76	59.07	58.99	59.32	59.28	59.63	59.41	59.82	60.29
28357.0	57.98	58.23	58.47	58.76	58.74	59.05	58.97	59.30	59.26	59.61	59.39	59.80	60.27
28362.8	57.96	58.21	58.45	58.74	58.72	59.02	58.95	59.28	59.23	59.59	59.37	59.78	60.25
28368.5	57.94	58.19	58.43	58.71	58.70	59.00	58.93	59.26	59.21	59.57	59.35	59.76	60.23
28374.3	57.93	58.17	58.41	58.69	58.67	58.98	58.91	59.24	59.19	59.55	59.33	59.74	60.21
28380.0	57.91	58.15	58.39	58.67	58.65	58.96	58.88	59.21	59.17	59.53	59.31	59.72	60.19
28385.8	57.89	58.13	58.37	58.65	58.63	58.94	58.86	59.19	59.15	59.51	59.29	59.70	60.17
28391.5	57.87	58.11	58.35	58.63	58.61	58.91	58.84	59.17	59.13	59.49	59.27	59.68	60.15
28397.3	57.85	58.09	58.32	58.60	58.58	58.89	58.82	59.15	59.10	59.47	59.25	59.66	60.13
28403.0	57.83	58.07	58.30	58.58	58.56	58.87	58.79	59.13	59.08	59.44	59.22	59.64	60.11
28408.8	57.81	58.05	58.28	58.56	58.54	58.85	58.77	59.10	59.06	59.42	59.20	59.62	60.08
28414.7	57.79	58.03	58.26	58.53	58.52	58.82	58.75	59.08	59.04	59.40	59.18	59.60	60.06
28420.5	57.77	58.01	58.23	58.51	58.49	58.80	58.72	59.06	59.01	59.38	59.16	59.57	60.04
28426.3	57.74	57.98	58.21	58.49	58.47	58.77	58.70	59.03	58.99	59.36	59.14	59.55	60.02
28432.2	57.72	57.96	58.19	58.46	58.45	58.75	58.67	59.01	58.97	59.34	59.11	59.53	60.00
28438.0	57.70	57.94	58.17	58.44	58.42	58.73	58.65	58.99	58.94	59.31	59.09	59.51	59.98
28443.8	57.68	57.92	58.14	58.41	58.40	58.70	58.62	58.96	58.92	59.29	59.06	59.48	59.95
28449.7	57.66	57.89	58.12	58.39	58.37	58.67	58.60	58.94	58.89	59.27	59.04	59.46	59.93
28455.5	57.63	57.87	58.09	58.36	58.35	58.65	58.57	58.91	58.87	59.24	59.02	59.44	59.91
28461.3	57.61	57.84	58.07	58.34	58.32	58.62	58.54	58.89	58.84	59.22	58.99	59.41	59.88
28467.2	57.59	57.82	58.04	58.31	58.29	58.59	58.52	58.86	58.81	59.19	58.96	59.39	59.86
28473.0	57.56	57.79	58.01	58.28	58.26	58.57	58.49	58.83	58.79	59.16	58.94	59.36	59.83
28478.8	57.54	57.77	57.99	58.25	58.24	58.54	58.46	58.80	58.76	59.13	58.91	59.33	59.80
28484.7	57.51	57.74	57.96	58.22	58.21	58.51	58.43	58.77	58.73	59.10	58.88	59.30	59.77
28490.5	57.49	57.71	57.93	58.19	58.18	58.48	58.40	58.74	58.70	59.07	58.85	59.26	59.74
28496.3	57.46	57.68	57.90	58.16	58.15	58.45	58.37	58.71	58.67	59.04	58.81	59.23	59.70
28502.2	57.43	57.65	57.87	58.13	58.12	58.42	58.34	58.68	58.63	59.01	58.78	59.20	59.67
28508.0	57.40	57.62	57.84	58.10	58.08	58.38	58.30	58.65	58.60	58.98	58.75	59.17	59.64
28513.8	57.37	57.59	57.81	58.07	58.05	58.35	58.27	58.61	58.57	58.94	58.72	59.13	59.60
28519.7	57.34	57.56	57.77	58.03	58.02	58.32	58.24	58.58	58.54	58.91	58.68	59.10	59.57
28525.5	57.31	57.53	57.74	58.00	57.98	58.28	58.20	58.55	58.50	58.87	58.65	59.06	59.53
28531.3	57.28	57.49	57.70	57.96	57.95	58.24	58.17	58.51	58.46	58.84	58.61	59.03	59.49
28537.2	57.25	57.46	57.67	57.92	57.91	58.21	58.13	58.47	58.43	58.80	58.57	58.99	59.45
28543.0	57.21	57.42	57.63	57.89	57.87	58.17	58.09	58.43	58.39	58.76	58.53	58.94	59.41
28548.9	57.18	57.39	57.60	57.86	57.84	58.14	58.06	58.40	58.36	58.73	58.51	58.92	59.39
28554.8	57.16	57.36	57.57	57.83	57.81	58.11	58.03	58.38	58.33	58.71	58.48	58.89	59.37
28560.7	57.13	57.34	57.54	57.80	57.78	58.08	58.00	58.35	58.30	58.68	58.45	58.87	59.34
28566.6	57.10	57.31	57.52	57.77	57.75	58.05	57.97	58.31	58.27	58.65	58.42	58.84	59.32
28572.5	57.07	57.28	57.49	57.74	57.73	58.02	57.94	58.28	58.24	58.62	58.39	58.81	59.29
28578.4	57.04	57.25	57.46	57.71	57.70	57.99	57.91	58.26	58.21	58.59	58.36	58.78	59.26
28584.3	57.02	57.22	57.43	57.69	57.67	57.97	57.89	58.23	58.19	58.57	58.34	58.75	59.23
28590.2	56.99	57.20	57.41	57.66	57.64	57.94	57.86	58.21	58.16	58.54	58.31	58.73	59.20
28596.1	56.96	57.17	57.38	57.63	57.62	57.91	57.84	58.18	58.14	58.52	58.29	58.70	59.18

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
28601.9	56.93	57.14	57.35	57.61	57.59	57.89	57.81	58.16	58.11	58.49	58.27	58.68	59.15
28607.8	56.91	57.12	57.33	57.58	57.57	57.87	57.79	58.14	58.09	58.47	58.25	58.66	59.13
28613.7	56.88	57.09	57.30	57.56	57.54	57.85	57.77	58.12	58.07	58.46	58.23	58.64	59.11
28619.6	56.85	57.07	57.28	57.54	57.52	57.82	57.74	58.10	58.05	58.44	58.21	58.62	59.10
28625.5	56.83	57.04	57.25	57.51	57.50	57.80	57.72	58.08	58.03	58.42	58.19	58.60	59.08
28631.4	56.80	57.02	57.23	57.49	57.47	57.78	57.70	58.06	58.01	58.40	58.17	58.59	59.07
28637.3	56.78	56.99	57.21	57.47	57.45	57.77	57.68	58.04	58.00	58.39	58.15	58.57	59.06
28643.2	56.75	56.97	57.19	57.45	57.43	57.75	57.66	58.03	57.98	58.37	58.14	58.56	59.06
28649.1	56.73	56.95	57.16	57.43	57.41	57.73	57.65	58.01	57.96	58.36	58.12	58.55	59.05
28655.0	56.71	56.93	57.14	57.41	57.39	57.71	57.63	58.00	57.95	58.35	58.11	58.53	59.04
28660.8	56.67	56.90	57.11	57.38	57.36	57.68	57.60	57.97	57.92	58.32	58.08	58.51	59.02
28666.5	56.64	56.86	57.08	57.35	57.33	57.65	57.57	57.94	57.89	58.29	58.05	58.48	58.99
28672.3	56.61	56.83	57.05	57.32	57.30	57.62	57.54	57.90	57.86	58.25	58.02	58.45	58.97
28678.0	56.57	56.80	57.02	57.29	57.27	57.59	57.50	57.87	57.82	58.22	57.98	58.41	58.93
28683.8	56.54	56.77	56.98	57.25	57.24	57.55	57.47	57.83	57.79	58.18	57.94	58.38	58.90
28689.6	56.51	56.73	56.95	57.22	57.20	57.52	57.44	57.80	57.75	58.15	57.91	58.34	58.87
28695.3	56.47	56.70	56.92	57.19	57.17	57.49	57.40	57.77	57.72	58.11	57.88	58.31	58.84
28701.1	56.44	56.67	56.89	57.16	57.14	57.45	57.37	57.74	57.69	58.08	57.85	58.28	58.81
28706.9	56.41	56.63	56.85	57.12	57.11	57.42	57.34	57.70	57.66	58.05	57.81	58.25	58.78
28712.6	56.37	56.60	56.82	57.09	57.07	57.39	57.31	57.67	57.62	58.01	57.78	58.21	58.75
28718.4	56.34	56.57	56.79	57.06	57.04	57.35	57.27	57.64	57.59	57.98	57.75	58.18	58.72
28724.1	56.31	56.53	56.75	57.02	57.01	57.32	57.24	57.60	57.55	57.95	57.71	58.15	58.69
28729.9	56.27	56.50	56.72	56.99	56.97	57.29	57.20	57.57	57.52	57.91	57.68	58.11	58.65
28735.7	56.24	56.47	56.69	56.96	56.94	57.25	57.17	57.53	57.48	57.88	57.64	58.08	58.62
28741.4	56.21	56.43	56.66	56.92	56.91	57.22	57.14	57.50	57.45	57.84	57.61	58.04	58.58
28747.2	56.18	56.40	56.62	56.89	56.87	57.19	57.10	57.46	57.42	57.81	57.57	58.01	58.55
28753.0	56.14	56.37	56.59	56.86	56.84	57.15	57.07	57.43	57.38	57.77	57.54	57.97	58.51
28758.7	56.11	56.34	56.56	56.83	56.81	57.12	57.04	57.39	57.35	57.74	57.50	57.94	58.48
28764.5	56.08	56.30	56.52	56.79	56.78	57.09	57.01	57.36	57.31	57.70	57.47	57.90	58.44
28770.2	56.05	56.27	56.49	56.76	56.74	57.05	56.97	57.32	57.28	57.67	57.43	57.87	58.40
28776.0	56.01	56.24	56.46	56.73	56.71	57.02	56.94	57.29	57.24	57.63	57.40	57.83	58.37
28781.8	55.99	56.21	56.43	56.70	56.68	56.99	56.91	57.26	57.22	57.60	57.37	57.80	58.34
28787.6	55.96	56.18	56.41	56.67	56.66	56.97	56.89	57.24	57.19	57.58	57.35	57.78	58.31
28793.3	55.93	56.16	56.38	56.65	56.63	56.94	56.86	57.21	57.17	57.55	57.32	57.75	58.28
28799.1	55.90	56.13	56.35	56.62	56.61	56.92	56.84	57.19	57.14	57.53	57.30	57.72	58.25
28804.9	55.87	56.10	56.33	56.60	56.58	56.89	56.81	57.17	57.12	57.50	57.27	57.70	58.23
28810.7	55.84	56.08	56.30	56.57	56.56	56.87	56.79	57.14	57.10	57.48	57.25	57.68	58.20
28816.5	55.82	56.05	56.28	56.55	56.53	56.85	56.77	57.12	57.08	57.46	57.23	57.65	58.18
28822.3	55.79	56.03	56.25	56.53	56.51	56.82	56.74	57.10	57.05	57.44	57.21	57.63	58.15
28828.0	55.77	56.00	56.23	56.50	56.49	56.80	56.72	57.08	57.03	57.41	57.19	57.61	58.13
28833.8	55.74	55.98	56.21	56.48	56.47	56.78	56.70	57.06	57.01	57.39	57.16	57.59	58.11
28839.6	55.72	55.96	56.19	56.46	56.44	56.76	56.68	57.04	56.99	57.37	57.14	57.57	58.09
28845.4	55.70	55.93	56.16	56.44	56.42	56.74	56.66	57.02	56.97	57.35	57.12	57.55	58.07
28851.2	55.67	55.91	56.14	56.42	56.40	56.72	56.64	57.00	56.95	57.33	57.10	57.53	58.05
28857.0	55.65	55.89	56.12	56.40	56.38	56.70	56.62	56.98	56.93	57.32	57.09	57.51	58.03
28862.7	55.63	55.87	56.10	56.38	56.36	56.68	56.60	56.96	56.91	57.30	57.07	57.49	58.01

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
28868.5	55.61	55.85	56.08	56.36	56.34	56.66	56.58	56.94	56.89	57.28	57.05	57.47	57.99
28874.3	55.59	55.83	56.07	56.34	56.33	56.65	56.56	56.92	56.88	57.26	57.03	57.46	57.97
28880.1	55.57	55.81	56.05	56.33	56.31	56.63	56.55	56.91	56.86	57.24	57.02	57.44	57.96
28885.9	55.55	55.80	56.03	56.31	56.29	56.61	56.53	56.89	56.84	57.23	57.00	57.42	57.94
28891.7	55.54	55.78	56.01	56.29	56.28	56.60	56.51	56.87	56.83	57.21	56.98	57.41	57.92
28897.4	55.52	55.76	56.00	56.28	56.26	56.58	56.50	56.86	56.81	57.20	56.97	57.39	57.91
28903.2	55.51	55.75	55.98	56.26	56.25	56.57	56.48	56.84	56.80	57.18	56.95	57.38	57.89
28909.0	55.49	55.73	55.97	56.25	56.23	56.55	56.47	56.83	56.78	57.17	56.94	57.36	57.88
28914.9	55.47	55.71	55.95	56.23	56.21	56.53	56.45	56.81	56.76	57.14	56.91	57.34	57.85
28920.8	55.45	55.69	55.92	56.20	56.19	56.51	56.42	56.78	56.73	57.12	56.89	57.31	57.83
28926.7	55.43	55.67	55.90	56.18	56.16	56.48	56.40	56.76	56.71	57.09	56.86	57.29	57.80
28932.6	55.40	55.65	55.88	56.16	56.14	56.46	56.38	56.73	56.69	57.07	56.84	57.26	57.78
28938.5	55.38	55.62	55.86	56.13	56.12	56.43	56.35	56.71	56.66	57.04	56.81	57.23	57.75
28944.4	55.36	55.60	55.83	56.11	56.09	56.41	56.33	56.68	56.63	57.01	56.79	57.21	57.73
28950.3	55.34	55.58	55.81	56.09	56.07	56.38	56.30	56.65	56.61	56.99	56.76	57.18	57.70
28956.2	55.31	55.55	55.79	56.06	56.04	56.36	56.27	56.63	56.58	56.96	56.73	57.15	57.67
28962.1	55.29	55.53	55.76	56.03	56.02	56.33	56.25	56.60	56.55	56.93	56.71	57.13	57.65
28968.0	55.26	55.51	55.74	56.01	55.99	56.30	56.22	56.57	56.53	56.91	56.68	57.10	57.63
28974.0	55.24	55.48	55.71	55.98	55.97	56.28	56.20	56.55	56.50	56.88	56.66	57.08	57.61
28979.9	55.21	55.46	55.68	55.96	55.94	56.25	56.17	56.52	56.48	56.86	56.63	57.05	57.58
28985.8	55.19	55.43	55.66	55.93	55.91	56.22	56.14	56.50	56.45	56.83	56.60	57.03	57.56
28991.7	55.16	55.40	55.63	55.90	55.89	56.20	56.12	56.47	56.42	56.80	56.57	57.00	57.53
28997.6	55.13	55.37	55.60	55.88	55.86	56.17	56.09	56.44	56.39	56.78	56.55	56.98	57.51
29003.5	55.11	55.35	55.58	55.85	55.83	56.14	56.06	56.41	56.37	56.75	56.52	56.95	57.48
29009.4	55.08	55.32	55.55	55.82	55.80	56.11	56.03	56.39	56.34	56.73	56.49	56.93	57.46
29015.3	55.05	55.29	55.52	55.79	55.77	56.08	56.00	56.36	56.31	56.70	56.47	56.90	57.44
29021.2	55.02	55.26	55.49	55.76	55.74	56.05	55.97	56.33	56.28	56.67	56.44	56.88	57.42
29027.1	54.98	55.22	55.46	55.73	55.71	56.02	55.94	56.30	56.25	56.64	56.41	56.85	57.39
29033.0	54.95	55.19	55.42	55.69	55.68	55.99	55.91	56.26	56.22	56.61	56.38	56.82	57.36
29039.0	54.93	55.17	55.40	55.67	55.66	55.97	55.89	56.24	56.20	56.59	56.36	56.80	57.34
29045.0	54.90	55.14	55.38	55.65	55.64	55.95	55.87	56.22	56.18	56.57	56.33	56.78	57.32
29051.0	54.88	55.12	55.35	55.63	55.61	55.93	55.85	56.20	56.16	56.55	56.31	56.75	57.30
29057.0	54.85	55.10	55.33	55.61	55.59	55.91	55.83	56.18	56.14	56.53	56.29	56.74	57.28
29063.0	54.83	55.07	55.31	55.59	55.57	55.89	55.81	56.16	56.12	56.51	56.28	56.72	57.26
29069.0	54.80	55.05	55.29	55.57	55.55	55.87	55.79	56.14	56.10	56.49	56.26	56.69	57.25
29075.0	54.78	55.03	55.26	55.54	55.53	55.85	55.76	56.12	56.08	56.47	56.24	56.68	57.23
29081.0	54.75	55.00	55.24	55.52	55.50	55.83	55.74	56.10	56.06	56.45	56.21	56.65	57.21
29087.0	54.73	54.98	55.22	55.50	55.48	55.81	55.72	56.08	56.04	56.43	56.20	56.64	57.19
29093.0	54.71	54.95	55.19	55.48	55.46	55.79	55.70	56.07	56.02	56.41	56.18	56.62	57.17
29099.0	54.68	54.93	55.17	55.46	55.44	55.77	55.68	56.05	56.00	56.39	56.16	56.60	57.15
29105.0	54.66	54.91	55.15	55.44	55.42	55.75	55.66	56.03	55.98	56.37	56.14	56.59	57.13
29111.0	54.64	54.89	55.13	55.42	55.40	55.73	55.64	56.01	55.96	56.36	56.13	56.57	57.12
29117.0	54.61	54.86	55.11	55.40	55.38	55.71	55.62	55.99	55.95	56.34	56.11	56.55	57.12
29123.0	54.59	54.84	55.08	55.38	55.36	55.69	55.60	55.98	55.93	56.33	56.09	56.54	57.10
29129.0	54.57	54.82	55.06	55.36	55.34	55.67	55.58	55.96	55.91	56.31	56.08	56.53	57.08
29135.0	54.55	54.80	55.04	55.33	55.32	55.65	55.56	55.94	55.89	56.30	56.06	56.51	57.06

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29141.0	54.52	54.77	55.02	55.31	55.29	55.63	55.54	55.92	55.87	56.28	56.04	56.49	57.05
29147.0	54.50	54.75	55.00	55.29	55.27	55.61	55.52	55.90	55.85	56.26	56.02	56.48	57.04
29153.0	54.48	54.73	54.97	55.27	55.25	55.59	55.50	55.88	55.83	56.24	56.00	56.46	57.02
29159.0	54.46	54.71	54.95	55.25	55.23	55.57	55.48	55.86	55.81	56.22	55.98	56.44	57.01
29165.0	54.44	54.69	54.94	55.24	55.22	55.56	55.47	55.85	55.80	56.22	55.97	56.44	57.01
29170.9	54.42	54.67	54.92	55.22	55.20	55.54	55.46	55.84	55.79	56.21	55.96	56.43	57.00
29176.9	54.39	54.65	54.90	55.21	55.19	55.53	55.44	55.83	55.78	56.20	55.95	56.43	57.00
29182.8	54.37	54.63	54.88	55.19	55.17	55.52	55.43	55.82	55.77	56.19	55.94	56.42	57.00
29188.8	54.35	54.61	54.86	55.17	55.15	55.50	55.41	55.80	55.75	56.18	55.93	56.41	56.99
29194.7	54.33	54.58	54.84	55.15	55.13	55.49	55.40	55.79	55.74	56.17	55.92	56.40	56.99
29200.7	54.31	54.56	54.82	55.13	55.11	55.47	55.38	55.78	55.72	56.16	55.90	56.39	56.98
29206.6	54.28	54.54	54.80	55.11	55.09	55.45	55.36	55.76	55.71	56.15	55.89	56.38	56.97
29212.6	54.26	54.51	54.78	55.09	55.07	55.43	55.34	55.74	55.69	56.13	55.87	56.37	56.97
29218.5	54.24	54.49	54.75	55.07	55.05	55.41	55.32	55.73	55.67	56.12	55.86	56.36	56.96
29224.5	54.21	54.47	54.72	55.05	55.03	55.39	55.30	55.71	55.65	56.10	55.84	56.34	56.95
29230.4	54.19	54.44	54.70	55.02	55.00	55.37	55.27	55.69	55.63	56.09	55.82	56.33	56.94
29236.4	54.16	54.42	54.67	54.99	54.97	55.34	55.25	55.67	55.61	56.07	55.80	56.31	56.93
29242.3	54.13	54.39	54.65	54.97	54.94	55.32	55.22	55.65	55.59	56.05	55.78	56.30	56.92
29248.3	54.11	54.36	54.62	54.94	54.92	55.29	55.20	55.62	55.57	56.03	55.76	56.28	56.91
29254.2	54.08	54.34	54.60	54.91	54.89	55.27	55.17	55.60	55.55	56.02	55.74	56.27	56.89
29260.2	54.05	54.31	54.57	54.89	54.87	55.25	55.15	55.58	55.52	56.00	55.72	56.25	56.88
29266.1	54.02	54.28	54.54	54.86	54.84	55.22	55.12	55.56	55.50	55.98	55.70	56.23	56.87
29272.1	53.98	54.25	54.51	54.84	54.82	55.20	55.10	55.54	55.48	55.96	55.68	56.22	56.85
29278.0	53.95	54.22	54.48	54.81	54.79	55.17	55.07	55.52	55.46	55.94	55.66	56.20	56.84
29284.0	53.91	54.18	54.46	54.79	54.76	55.15	55.05	55.49	55.43	55.92	55.64	56.18	56.83
29289.9	53.88	54.16	54.43	54.76	54.74	55.13	55.03	55.48	55.42	55.91	55.62	56.17	56.82
29295.7	53.85	54.13	54.41	54.74	54.72	55.11	55.01	55.46	55.40	55.90	55.61	56.16	56.81
29301.6	53.82	54.11	54.38	54.72	54.70	55.10	54.99	55.45	55.39	55.89	55.60	56.15	56.80
29307.5	53.80	54.08	54.36	54.70	54.68	55.08	54.97	55.44	55.38	55.88	55.59	56.14	56.80
29313.3	53.77	54.06	54.34	54.68	54.66	55.06	54.96	55.42	55.36	55.87	55.57	56.13	56.80
29319.2	53.74	54.03	54.32	54.66	54.64	55.05	54.94	55.41	55.35	55.85	55.56	56.12	56.79
29325.0	53.72	54.01	54.29	54.64	54.62	55.03	54.92	55.40	55.33	55.84	55.55	56.11	56.78
29330.9	53.69	53.98	54.27	54.62	54.60	55.02	54.91	55.38	55.32	55.83	55.54	56.10	56.77
29336.8	53.66	53.96	54.25	54.60	54.58	55.00	54.89	55.37	55.31	55.82	55.53	56.09	56.76
29342.6	53.64	53.93	54.23	54.59	54.56	54.99	54.88	55.36	55.29	55.81	55.51	56.08	56.76
29348.5	53.61	53.91	54.20	54.57	54.54	54.97	54.86	55.34	55.28	55.80	55.50	56.07	56.76
29354.4	53.58	53.88	54.18	54.55	54.52	54.95	54.84	55.33	55.26	55.78	55.49	56.06	56.75
29360.2	53.56	53.86	54.16	54.53	54.50	54.94	54.82	55.31	55.25	55.77	55.47	56.05	56.74
29366.1	53.53	53.83	54.14	54.51	54.49	54.92	54.81	55.30	55.23	55.76	55.46	56.04	56.73
29372.0	53.50	53.81	54.11	54.49	54.46	54.90	54.79	55.29	55.22	55.75	55.45	56.03	56.73
29377.8	53.47	53.78	54.09	54.47	54.44	54.89	54.77	55.27	55.21	55.74	55.43	56.02	56.72
29383.7	53.45	53.76	54.07	54.45	54.42	54.87	54.75	55.26	55.19	55.73	55.42	56.01	56.71
29389.5	53.42	53.73	54.04	54.43	54.40	54.85	54.73	55.24	55.18	55.72	55.41	56.01	56.71
29395.4	53.39	53.70	54.02	54.40	54.38	54.83	54.72	55.23	55.16	55.71	55.40	56.00	56.70
29401.3	53.36	53.68	53.99	54.38	54.36	54.82	54.70	55.22	55.15	55.71	55.39	55.99	56.70
29407.1	53.33	53.65	53.96	54.36	54.33	54.80	54.68	55.21	55.14	55.70	55.38	55.98	56.69

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29413.0	53.29	53.62	53.93	54.34	54.31	54.79	54.66	55.20	55.13	55.69	55.37	55.98	56.69
29419.0	53.27	53.59	53.92	54.32	54.30	54.78	54.65	55.19	55.12	55.68	55.36	55.97	56.68
29425.0	53.25	53.57	53.90	54.31	54.29	54.77	54.64	55.18	55.11	55.67	55.35	55.96	56.66
29431.0	53.22	53.56	53.89	54.30	54.27	54.76	54.63	55.17	55.10	55.66	55.34	55.95	56.65
29437.0	53.20	53.54	53.87	54.29	54.26	54.75	54.62	55.16	55.09	55.65	55.33	55.93	56.64
29443.0	53.18	53.52	53.86	54.28	54.25	54.74	54.61	55.15	55.08	55.64	55.32	55.92	56.63
29449.0	53.15	53.50	53.84	54.27	54.24	54.72	54.60	55.14	55.07	55.63	55.31	55.91	56.62
29455.0	53.13	53.49	53.83	54.25	54.23	54.71	54.59	55.13	55.06	55.61	55.30	55.90	56.61
29461.0	53.11	53.47	53.82	54.24	54.22	54.70	54.58	55.12	55.05	55.60	55.29	55.89	56.60
29467.0	53.09	53.45	53.80	54.23	54.20	54.69	54.57	55.10	55.04	55.59	55.28	55.88	56.59
29473.0	53.07	53.44	53.79	54.22	54.19	54.68	54.56	55.10	55.03	55.58	55.27	55.87	56.59
29479.0	53.06	53.43	53.78	54.21	54.18	54.67	54.55	55.08	55.01	55.57	55.26	55.86	56.58
29485.0	53.04	53.41	53.77	54.20	54.17	54.66	54.54	55.07	55.00	55.56	55.24	55.85	56.56
29491.0	53.02	53.40	53.76	54.19	54.16	54.65	54.53	55.06	54.99	55.54	55.23	55.84	56.55
29497.0	53.00	53.39	53.75	54.18	54.16	54.64	54.52	55.05	54.98	55.53	55.22	55.83	56.54
29503.0	52.99	53.37	53.74	54.17	54.15	54.63	54.51	55.04	54.97	55.52	55.21	55.82	56.53
29509.0	52.97	53.36	53.73	54.17	54.14	54.62	54.50	55.03	54.96	55.51	55.20	55.81	56.53
29515.0	52.96	53.35	53.72	54.16	54.13	54.62	54.49	55.02	54.95	55.50	55.20	55.80	56.52
29521.0	52.95	53.34	53.71	54.15	54.12	54.61	54.48	55.01	54.95	55.49	55.19	55.79	56.51
29527.0	52.93	53.33	53.70	54.14	54.11	54.60	54.48	55.01	54.94	55.48	55.18	55.78	56.51
29533.0	52.92	53.32	53.69	54.13	54.11	54.59	54.47	55.00	54.93	55.47	55.17	55.77	56.50
29539.0	52.91	53.31	53.69	54.13	54.10	54.59	54.46	54.99	54.92	55.47	55.16	55.77	56.48
29545.0	52.90	53.30	53.68	54.12	54.10	54.58	54.46	55.00	54.92	55.46	55.15	55.77	56.48
29551.0	52.89	53.30	53.68	54.12	54.09	54.58	54.46	54.97	54.91	55.49	55.18	55.74	56.51
29556.9	52.82	53.23	53.61	54.06	54.03	54.52	54.40	54.93	54.86	55.42	55.11	55.72	56.44
29562.7	52.75	53.16	53.55	54.00	53.97	54.46	54.34	54.88	54.80	55.36	55.05	55.66	56.37
29568.6	52.68	53.09	53.48	53.93	53.91	54.40	54.27	54.81	54.74	55.29	54.99	55.60	56.36
29574.5	52.63	53.03	53.42	53.87	53.85	54.34	54.21	54.75	54.68	55.23	54.93	55.54	56.29
29580.3	52.59	52.98	53.36	53.82	53.79	54.28	54.16	54.69	54.62	55.17	54.88	55.48	56.22
29586.2	52.56	52.94	53.31	53.76	53.74	54.22	54.10	54.64	54.56	55.11	54.82	55.42	56.17
29592.1	52.53	52.91	53.27	53.71	53.69	54.16	54.05	54.58	54.52	55.04	54.76	55.34	56.06
29597.9	52.51	52.88	53.24	53.67	53.65	54.12	54.00	54.52	54.46	55.00	54.70	55.31	56.01
29603.8	52.50	52.87	53.22	53.65	53.62	54.09	53.97	54.49	54.43	54.98	54.68	55.29	56.01
29609.7	52.49	52.85	53.20	53.62	53.59	54.06	53.94	54.49	54.38	54.92	54.62	55.24	55.99
29615.5	52.48	52.84	53.18	53.60	53.58	54.04	53.92	54.44	54.37	54.91	54.61	55.23	56.01
29621.4	52.47	52.83	53.17	53.58	53.56	54.02	53.90	54.41	54.35	54.88	54.59	55.21	55.98
29627.3	52.47	52.82	53.16	53.57	53.54	54.00	53.88	54.39	54.33	54.85	54.56	55.18	55.94
29633.1	52.46	52.81	53.15	53.55	53.53	53.98	53.87	54.37	54.30	54.83	54.54	55.15	55.84
29639.0	52.44	52.80	53.14	53.54	53.52	53.96	53.85	54.35	54.29	54.81	54.53	55.13	55.79
29639.0	52.44	52.80	53.14	53.54	53.52	53.96	53.85	54.35	54.29	54.81	54.53	55.13	55.79
29644.8	52.43	52.79	53.12	53.53	53.50	53.95	53.83	54.34	54.27	54.80	54.51	55.12	55.76
29650.6	52.41	52.77	53.11	53.51	53.49	53.93	53.82	54.32	54.25	54.78	54.49	55.09	55.78
29656.4	52.39	52.75	53.09	53.50	53.47	53.91	53.80	54.30	54.23	54.75	54.47	55.05	55.80
29662.2	52.37	52.73	53.08	53.48	53.45	53.89	53.78	54.29	54.19	54.71	54.46	55.03	55.80
29668.0	52.35	52.71	53.06	53.46	53.44	53.88	53.77	54.28	54.17	54.67	54.45	55.03	55.65
29673.9	52.34	52.70	53.05	53.45	53.42	53.86	53.75	54.23	54.16	54.67	54.40	54.97	55.62

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29679.8	52.34	52.69	53.03	53.43	53.41	53.84	53.73	54.21	54.14	54.64	54.37	54.93	55.59
29685.8	52.33	52.68	53.02	53.41	53.39	53.81	53.70	54.16	54.10	54.59	54.33	54.88	55.53
29691.7	52.32	52.67	53.00	53.39	53.36	53.78	53.67	54.13	54.07	54.55	54.29	54.83	55.48
29697.6	52.31	52.66	52.99	53.37	53.35	53.76	53.65	54.11	54.05	54.53	54.26	54.80	55.44
29703.5	52.29	52.64	52.97	53.35	53.33	53.74	53.63	54.08	54.02	54.50	54.24	54.78	55.42
29709.4	52.28	52.63	52.95	53.33	53.31	53.71	53.61	54.05	54.00	54.47	54.21	54.76	55.39
29715.3	52.27	52.61	52.93	53.31	53.28	53.69	53.58	54.03	53.97	54.45	54.18	54.73	55.37
29721.3	52.25	52.59	52.91	53.28	53.26	53.66	53.56	54.00	53.94	54.42	54.16	54.71	55.35
29727.2	52.23	52.57	52.88	53.25	53.23	53.63	53.53	53.97	53.91	54.40	54.13	54.68	55.33
29733.1	52.21	52.55	52.86	53.22	53.20	53.60	53.50	53.95	53.89	54.37	54.11	54.67	55.32
29739.0	52.19	52.52	52.83	53.20	53.17	53.58	53.47	53.92	53.86	54.34	54.08	54.64	55.27
29744.9	52.16	52.49	52.79	53.17	53.15	53.55	53.45	53.90	53.84	54.32	54.05	54.60	55.22
29750.8	52.13	52.45	52.77	53.14	53.12	53.53	53.42	53.86	53.81	54.28	54.01	54.57	55.19
29756.8	52.10	52.42	52.74	53.11	53.09	53.49	53.39	53.82	53.77	54.24	53.97	54.52	55.15
29762.7	52.07	52.39	52.71	53.08	53.05	53.45	53.35	53.79	53.73	54.21	53.94	54.48	55.11
29768.6	52.04	52.37	52.69	53.05	53.03	53.42	53.32	53.76	53.70	54.18	53.91	54.45	55.08
29774.5	52.02	52.35	52.66	53.03	53.01	53.40	53.30	53.74	53.68	54.15	53.89	54.43	55.05
29780.4	52.00	52.34	52.65	53.01	52.99	53.39	53.29	53.73	53.67	54.13	53.88	54.41	55.04
29786.3	51.99	52.32	52.63	53.00	52.98	53.38	53.28	53.72	53.66	54.13	53.87	54.41	55.05
29792.3	51.97	52.31	52.62	53.00	52.97	53.37	53.27	53.71	53.65	54.12	53.87	54.40	55.05
29798.2	51.96	52.30	52.62	52.99	52.97	53.37	53.27	53.71	53.65	54.12	53.86	54.40	55.05
29804.1	51.95	52.29	52.61	52.99	52.96	53.36	53.26	53.71	53.65	54.12	53.86	54.40	55.06
29810.0	51.95	52.29	52.61	52.99	52.96	53.37	53.26	53.71	53.65	54.12	53.87	54.41	55.09
29815.9	51.93	52.28	52.59	52.97	52.95	53.35	53.25	53.69	53.63	54.11	53.85	54.39	55.08
29821.8	51.91	52.26	52.58	52.95	52.93	53.33	53.23	53.68	53.62	54.10	53.84	54.38	55.06
29827.7	51.90	52.24	52.56	52.93	52.91	53.31	53.21	53.66	53.60	54.08	53.82	54.36	55.05
29833.6	51.88	52.22	52.54	52.92	52.89	53.30	53.19	53.64	53.58	54.06	53.80	54.35	55.03
29839.5	51.86	52.21	52.52	52.90	52.87	53.28	53.18	53.63	53.57	54.05	53.79	54.33	55.02
29845.5	51.85	52.19	52.51	52.88	52.86	53.26	53.16	53.61	53.55	54.04	53.77	54.32	54.99
29851.4	51.83	52.17	52.49	52.87	52.84	53.25	53.14	53.60	53.54	54.02	53.76	54.31	54.99
29857.3	51.81	52.16	52.47	52.85	52.83	53.23	53.13	53.58	53.52	54.01	53.75	54.30	54.99
29863.2	51.80	52.14	52.46	52.84	52.81	53.22	53.12	53.57	53.51	54.00	53.73	54.29	54.98
29869.1	51.78	52.12	52.44	52.82	52.80	53.21	53.10	53.56	53.50	53.99	53.72	54.28	54.97
29875.0	51.77	52.11	52.43	52.81	52.78	53.19	53.09	53.55	53.49	53.98	53.71	54.27	54.96
29880.9	51.75	52.09	52.41	52.79	52.77	53.18	53.07	53.53	53.47	53.96	53.70	54.25	54.93
29886.8	51.74	52.08	52.40	52.78	52.75	53.16	53.06	53.51	53.45	53.95	53.68	54.23	54.92
29892.7	51.72	52.07	52.39	52.77	52.74	53.15	53.05	53.50	53.44	53.93	53.66	54.22	54.92
29898.6	51.71	52.06	52.38	52.76	52.73	53.14	53.04	53.49	53.43	53.92	53.65	54.21	54.91
29904.5	51.70	52.05	52.37	52.75	52.72	53.13	53.03	53.48	53.42	53.92	53.65	54.21	54.91
29910.5	51.69	52.04	52.36	52.74	52.71	53.12	53.02	53.48	53.42	53.92	53.65	54.21	54.92
29916.4	51.68	52.03	52.35	52.73	52.71	53.12	53.02	53.48	53.42	53.92	53.65	54.21	54.92
29922.3	51.67	52.02	52.35	52.73	52.71	53.12	53.02	53.49	53.42	53.92	53.65	54.21	54.93
29928.2	51.67	52.02	52.34	52.73	52.71	53.13	53.02	53.49	53.43	53.93	53.66	54.22	54.95
29934.1	51.66	52.02	52.35	52.74	52.71	53.13	53.02	53.50	53.43	53.93	53.66	54.23	54.94
29940.0	51.66	52.02	52.35	52.74	52.72	53.14	53.03	53.51	53.44	53.95	53.67	54.24	54.94
29945.9	51.64	52.00	52.33	52.72	52.70	53.12	53.02	53.49	53.43	53.94	53.66	54.22	54.94

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29951.8	51.63	51.99	52.32	52.71	52.68	53.11	53.00	53.48	53.41	53.92	53.65	54.21	54.93
29957.6	51.61	51.97	52.30	52.69	52.67	53.09	52.98	53.46	53.40	53.91	53.63	54.19	54.91
29963.5	51.59	51.95	52.28	52.68	52.65	53.08	52.97	53.45	53.38	53.89	53.62	54.18	54.90
29969.4	51.57	51.94	52.27	52.66	52.63	53.06	52.95	53.43	53.37	53.88	53.60	54.17	54.88
29975.3	51.55	51.92	52.25	52.64	52.62	53.04	52.94	53.42	53.35	53.87	53.59	54.16	54.87
29981.2	51.54	51.90	52.23	52.63	52.60	53.03	52.92	53.40	53.34	53.85	53.57	54.15	54.86
29987.1	51.52	51.88	52.21	52.61	52.58	53.01	52.90	53.39	53.32	53.84	53.56	54.14	54.85
29992.9	51.50	51.86	52.20	52.59	52.57	53.00	52.89	53.37	53.31	53.83	53.54	54.13	54.84
29998.8	51.48	51.85	52.18	52.58	52.55	52.98	52.87	53.36	53.29	53.81	53.53	54.12	54.83
30004.7	51.46	51.83	52.16	52.56	52.53	52.96	52.85	53.34	53.28	53.80	53.51	54.11	54.81
30010.6	51.44	51.81	52.14	52.54	52.52	52.95	52.84	53.33	53.26	53.78	53.50	54.09	54.81
30016.5	51.42	51.79	52.12	52.52	52.50	52.93	52.82	53.31	53.24	53.77	53.48	54.08	54.80
30022.4	51.40	51.77	52.10	52.50	52.48	52.91	52.80	53.30	53.23	53.76	53.47	54.07	54.79
30028.2	51.38	51.75	52.08	52.49	52.46	52.90	52.79	53.28	53.21	53.74	53.45	54.06	54.78
30034.1	51.35	51.73	52.07	52.47	52.44	52.88	52.77	53.26	53.20	53.73	53.44	54.04	54.76
30040.0	51.33	51.70	52.04	52.45	52.42	52.86	52.75	53.25	53.18	53.71	53.42	54.04	54.74
30045.8	51.31	51.68	52.02	52.43	52.40	52.84	52.73	53.23	53.16	53.69	53.40	54.01	54.71
30051.6	51.29	51.66	52.00	52.40	52.38	52.82	52.70	53.20	53.14	53.67	53.38	53.99	54.70
30057.5	51.26	51.63	51.97	52.38	52.35	52.79	52.68	53.18	53.11	53.65	53.36	53.97	54.69
30063.3	51.24	51.61	51.95	52.35	52.33	52.77	52.65	53.16	53.09	53.63	53.33	53.95	54.68
30069.1	51.21	51.58	51.92	52.33	52.30	52.74	52.63	53.13	53.06	53.60	53.31	53.93	54.66
30074.9	51.18	51.55	51.90	52.30	52.27	52.71	52.60	53.10	53.03	53.58	53.28	53.90	54.65
30080.8	51.16	51.53	51.87	52.27	52.24	52.68	52.57	53.08	53.01	53.55	53.25	53.88	54.62
30086.6	51.13	51.50	51.84	52.24	52.22	52.65	52.54	53.05	52.98	53.53	53.23	53.85	54.60
30092.4	51.10	51.47	51.81	52.21	52.19	52.63	52.51	53.02	52.95	53.50	53.20	53.83	54.58
30098.2	51.07	51.44	51.78	52.18	52.16	52.59	52.48	52.99	52.92	53.47	53.17	53.80	54.54
30104.1	51.04	51.41	51.75	52.15	52.13	52.56	52.45	52.96	52.89	53.44	53.14	53.77	54.51
30109.9	51.01	51.38	51.72	52.12	52.10	52.53	52.42	52.93	52.86	53.42	53.11	53.75	54.49
30115.7	50.98	51.35	51.69	52.09	52.07	52.50	52.39	52.90	52.83	53.39	53.08	53.72	54.45
30121.5	50.94	51.31	51.66	52.06	52.03	52.47	52.36	52.87	52.80	53.36	53.05	53.69	54.42
30127.4	50.91	51.28	51.63	52.03	52.00	52.44	52.33	52.84	52.77	53.33	53.02	53.67	54.40
30133.2	50.87	51.25	51.59	51.99	51.97	52.41	52.29	52.81	52.74	53.30	52.99	53.64	54.37
30139.0	50.83	51.21	51.56	51.96	51.93	52.37	52.26	52.78	52.71	53.27	52.96	53.60	54.34
30144.8	50.82	51.19	51.54	51.94	51.92	52.36	52.24	52.77	52.70	53.26	52.95	53.60	54.34
30150.6	50.80	51.17	51.52	51.93	51.90	52.35	52.23	52.76	52.68	53.25	52.94	53.59	54.33
30156.3	50.78	51.16	51.51	51.92	51.89	52.33	52.22	52.75	52.67	53.24	52.93	53.58	54.32
30162.1	50.76	51.14	51.49	51.90	51.88	52.32	52.21	52.74	52.67	53.23	52.92	53.58	54.32
30167.9	50.75	51.13	51.48	51.89	51.87	52.31	52.20	52.73	52.66	53.23	52.91	53.57	54.32
30173.7	50.74	51.11	51.47	51.88	51.86	52.30	52.19	52.72	52.65	53.22	52.91	53.57	54.32
30179.4	50.72	51.10	51.46	51.87	51.85	52.30	52.18	52.71	52.64	53.22	52.90	53.56	54.34
30185.2	50.71	51.09	51.45	51.87	51.84	52.29	52.17	52.71	52.64	53.20	52.89	53.54	54.34
30191.0	50.70	51.08	51.44	51.86	51.83	52.28	52.16	52.70	52.63	53.20	52.89	53.55	54.30
30196.8	50.69	51.07	51.43	51.85	51.82	52.27	52.16	52.69	52.62	53.22	52.88	53.58	54.23
30202.6	50.68	51.06	51.42	51.84	51.81	52.27	52.15	52.69	52.62	53.18	52.87	53.55	54.23
30208.3	50.67	51.05	51.41	51.84	51.81	52.26	52.14	52.68	52.61	53.17	52.87	53.55	54.25
30214.1	50.66	51.05	51.41	51.83	51.80	52.26	52.14	52.69	52.62	53.18	52.88	53.51	54.24

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
30219.9	50.66	51.04	51.40	51.82	51.80	52.25	52.13	52.68	52.61	53.17	52.87	53.48	54.21
30225.7	50.65	51.04	51.40	51.82	51.79	52.25	52.13	52.67	52.60	53.15	52.85	53.49	54.22
30231.4	50.65	51.03	51.39	51.82	51.79	52.24	52.13	52.66	52.59	53.15	52.85	53.49	54.23
30237.2	50.64	51.03	51.39	51.81	51.79	52.24	52.12	52.66	52.59	53.15	52.85	53.49	54.23
30243.0	50.64	51.02	51.39	51.81	51.78	52.24	52.12	52.66	52.59	53.15	52.84	53.48	54.23
30248.7	50.63	51.01	51.38	51.80	51.78	52.23	52.12	52.65	52.58	53.15	52.84	53.48	54.23
30254.4	50.61	51.00	51.37	51.80	51.77	52.23	52.11	52.65	52.58	53.14	52.84	53.48	54.23
30260.2	50.60	50.99	51.36	51.79	51.76	52.22	52.11	52.65	52.58	53.14	52.84	53.48	54.25
30265.9	50.59	50.98	51.35	51.79	51.76	52.22	52.10	52.64	52.57	53.14	52.83	53.48	54.27
30271.6	50.58	50.97	51.34	51.78	51.75	52.22	52.10	52.64	52.57	53.14	52.83	53.48	54.25
30277.3	50.56	50.96	51.34	51.78	51.75	52.21	52.09	52.64	52.57	53.14	52.83	53.48	54.26
30283.1	50.55	50.95	51.33	51.77	51.74	52.21	52.09	52.64	52.57	53.14	52.83	53.48	54.26
30288.8	50.54	50.94	51.32	51.76	51.73	52.20	52.08	52.63	52.56	53.14	52.82	53.48	54.26
30294.5	50.53	50.93	51.31	51.76	51.73	52.20	52.08	52.63	52.56	53.14	52.82	53.48	54.26
30300.2	50.51	50.92	51.30	51.75	51.72	52.20	52.08	52.63	52.56	53.14	52.82	53.48	54.24
30305.9	50.50	50.91	51.30	51.75	51.72	52.19	52.07	52.63	52.56	53.14	52.82	53.48	54.26
30311.7	50.49	50.90	51.29	51.75	51.72	52.19	52.07	52.63	52.56	53.14	52.82	53.48	54.28
30317.4	50.47	50.89	51.28	51.74	51.71	52.19	52.07	52.62	52.55	53.14	52.82	53.48	54.29
30323.1	50.46	50.88	51.28	51.74	51.71	52.18	52.06	52.62	52.55	53.14	52.82	53.48	54.30
30328.8	50.45	50.87	51.27	51.73	51.70	52.18	52.06	52.62	52.55	53.14	52.82	53.49	54.30
30334.6	50.44	50.86	51.26	51.73	51.70	52.18	52.06	52.62	52.55	53.14	52.81	53.49	54.30
30340.3	50.42	50.85	51.26	51.72	51.69	52.18	52.05	52.62	52.54	53.14	52.81	53.49	54.31
30346.0	50.41	50.84	51.25	51.72	51.69	52.17	52.05	52.61	52.54	53.14	52.81	53.50	54.30
30352.0	50.44	50.86	51.26	51.72	51.69	52.14	52.02	52.59	52.51	53.11	52.78	53.55	54.21
30358.0	50.46	50.88	51.27	51.73	51.70	52.17	52.05	52.61	52.54	53.14	52.81	53.52	54.28
30364.0	50.46	50.88	51.28	51.74	51.71	52.18	52.06	52.63	52.56	53.14	52.82	53.51	54.35
30370.0	50.46	50.88	51.28	51.74	51.71	52.18	52.06	52.63	52.58	53.15	52.81	53.50	54.33
30376.0	50.45	50.87	51.27	51.74	51.71	52.18	52.06	52.61	52.56	53.15	52.81	53.47	54.27
30382.0	50.45	50.87	51.27	51.73	51.70	52.17	52.05	52.63	52.55	53.14	52.79	53.44	54.26
30388.0	50.45	50.87	51.27	51.72	51.69	52.16	52.05	52.60	52.52	53.10	52.78	53.44	54.23
30394.0	50.44	50.86	51.26	51.72	51.69	52.16	52.04	52.59	52.51	53.09	52.78	53.43	54.21
30400.0	50.43	50.85	51.25	51.71	51.68	52.16	52.04	52.58	52.51	53.08	52.77	53.42	54.20
30406.0	50.42	50.84	51.24	51.71	51.68	52.15	52.03	52.57	52.50	53.08	52.76	53.42	54.19
30412.0	50.40	50.83	51.23	51.70	51.67	52.14	52.02	52.56	52.49	53.07	52.75	53.41	54.18
30418.0	50.38	50.81	51.22	51.68	51.65	52.13	52.01	52.55	52.48	53.06	52.74	53.40	54.17
30424.0	50.36	50.79	51.20	51.67	51.64	52.12	52.00	52.54	52.47	53.05	52.73	53.39	54.17
30430.0	50.34	50.77	51.18	51.65	51.62	52.10	51.98	52.53	52.45	53.03	52.72	53.37	54.16
30436.0	50.31	50.74	51.16	51.64	51.60	52.08	51.96	52.51	52.44	53.01	52.70	53.37	54.15
30442.0	50.27	50.71	51.13	51.61	51.58	52.06	51.94	52.49	52.42	52.99	52.68	53.37	54.12
30448.0	50.23	50.68	51.11	51.59	51.56	52.04	51.92	52.47	52.40	52.97	52.66	53.35	54.09
30453.8	50.23	50.67	51.10	51.58	51.55	52.04	51.91	52.46	52.39	52.97	52.66	53.33	54.09
30459.7	50.22	50.66	51.09	51.58	51.54	52.03	51.91	52.45	52.38	52.98	52.65	53.31	54.10
30465.6	50.21	50.66	51.08	51.57	51.54	52.02	51.90	52.45	52.38	52.97	52.64	53.31	54.11
30471.4	50.21	50.65	51.08	51.56	51.53	52.01	51.89	52.44	52.37	52.95	52.63	53.31	54.09
30477.3	50.20	50.64	51.07	51.55	51.52	52.00	51.88	52.43	52.36	52.94	52.62	53.32	54.08
30483.1	50.19	50.63	51.06	51.54	51.51	51.99	51.87	52.42	52.34	52.94	52.61	53.31	54.09

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
30488.9	50.18	50.62	51.05	51.53	51.50	51.98	51.86	52.41	52.33	52.92	52.60	53.28	54.08
30494.8	50.17	50.61	51.03	51.51	51.48	51.96	51.84	52.39	52.32	52.91	52.59	53.26	54.05
30500.7	50.16	50.60	51.02	51.50	51.47	51.95	51.83	52.38	52.31	52.90	52.57	53.26	54.03
30506.5	50.14	50.58	51.01	51.49	51.45	51.94	51.81	52.37	52.29	52.89	52.56	53.25	54.03
30512.3	50.13	50.56	50.99	51.47	51.44	51.92	51.80	52.36	52.28	52.88	52.55	53.24	54.02
30518.2	50.11	50.55	50.97	51.46	51.42	51.91	51.79	52.34	52.27	52.86	52.54	53.23	54.01
30524.1	50.09	50.53	50.95	51.44	51.41	51.90	51.78	52.33	52.26	52.85	52.53	53.21	53.99
30529.9	50.07	50.50	50.93	51.43	51.40	51.89	51.76	52.32	52.24	52.84	52.51	53.20	53.98
30535.8	50.04	50.48	50.92	51.41	51.38	51.87	51.75	52.30	52.23	52.82	52.50	53.19	53.96
30541.6	50.01	50.46	50.90	51.40	51.37	51.86	51.73	52.29	52.21	52.81	52.48	53.17	53.96
30547.4	49.98	50.44	50.89	51.38	51.35	51.84	51.72	52.27	52.20	52.79	52.46	53.15	53.97
30553.3	49.95	50.42	50.87	51.37	51.33	51.82	51.70	52.25	52.18	52.77	52.45	53.13	53.97
30559.2	49.93	50.40	50.85	51.35	51.32	51.81	51.68	52.23	52.16	52.76	52.43	53.12	53.95
30565.0	49.90	50.37	50.83	51.33	51.29	51.79	51.66	52.21	52.14	52.74	52.41	53.11	53.94
30570.9	49.88	50.36	50.81	51.31	51.28	51.77	51.65	52.20	52.13	52.73	52.40	53.11	53.92
30576.8	49.86	50.34	50.79	51.30	51.26	51.76	51.63	52.19	52.12	52.72	52.39	53.11	53.92
30582.7	49.84	50.32	50.78	51.28	51.25	51.74	51.62	52.18	52.10	52.73	52.37	53.10	53.92
30588.6	49.83	50.30	50.76	51.27	51.23	51.73	51.60	52.16	52.09	52.70	52.36	53.08	53.88
30594.5	49.81	50.29	50.74	51.25	51.22	51.71	51.59	52.16	52.08	52.67	52.36	53.03	53.83
30600.4	49.79	50.27	50.73	51.24	51.20	51.70	51.57	52.15	52.07	52.67	52.34	53.03	53.83
30606.3	49.78	50.25	50.71	51.22	51.19	51.68	51.56	52.14	52.05	52.66	52.34	53.04	53.83
30612.2	49.76	50.24	50.70	51.20	51.17	51.67	51.54	52.13	52.04	52.66	52.33	53.04	53.83
30618.1	49.74	50.22	50.67	51.19	51.15	51.65	51.52	52.11	52.02	52.65	52.31	53.03	53.84
30624.0	49.73	50.20	50.65	51.17	51.13	51.64	51.51	52.08	52.00	52.63	52.30	53.01	53.82
30629.9	49.71	50.18	50.63	51.15	51.11	51.62	51.49	52.07	51.99	52.62	52.27	53.00	53.81
30635.8	49.70	50.16	50.61	51.13	51.09	51.60	51.47	52.05	51.97	52.60	52.26	52.98	53.79
30641.7	49.69	50.15	50.59	51.11	51.07	51.59	51.46	52.03	51.96	52.58	52.24	52.96	53.78
30647.6	49.67	50.13	50.57	51.09	51.06	51.58	51.44	52.02	51.94	52.56	52.22	52.95	53.76
30653.5	49.66	50.12	50.56	51.08	51.04	51.56	51.43	52.02	51.91	52.55	52.22	52.93	53.77
30659.4	49.65	50.10	50.54	51.06	51.03	51.55	51.41	52.02	51.90	52.51	52.22	52.90	53.80
30665.3	49.63	50.09	50.53	51.05	51.01	51.53	51.40	52.00	51.89	52.50	52.20	52.88	53.77
30671.2	49.62	50.08	50.51	51.03	51.00	51.52	51.39	51.98	51.87	52.49	52.18	52.87	53.76
30677.1	49.61	50.06	50.50	51.02	50.98	51.50	51.37	51.98	51.86	52.46	52.18	52.84	53.74
30683.0	49.60	50.05	50.49	51.00	50.97	51.49	51.36	51.97	51.85	52.48	52.15	52.85	53.68
30688.8	49.58	50.03	50.46	50.98	50.95	51.47	51.33	51.92	51.85	52.49	52.12	52.87	53.64
30694.6	49.56	50.01	50.44	50.96	50.92	51.45	51.31	51.90	51.83	52.47	52.11	52.86	53.63
30700.3	49.54	49.99	50.42	50.94	50.90	51.43	51.29	51.89	51.81	52.45	52.10	52.85	53.62
30706.1	49.53	49.97	50.40	50.93	50.89	51.43	51.28	51.89	51.81	52.44	52.10	52.83	53.65
30711.9	49.51	49.96	50.37	50.89	50.85	51.46	51.24	51.85	51.86	52.42	52.09	52.79	53.74
30717.7	49.50	49.94	50.34	50.86	50.82	51.47	51.21	51.82	51.87	52.38	52.09	52.76	53.77
30723.4	49.48	49.92	50.31	50.83	50.79	51.46	51.18	51.80	51.85	52.36	52.08	52.73	53.76
30729.2	49.46	49.91	50.29	50.80	50.77	51.43	51.16	51.78	51.83	52.34	52.06	52.71	53.73
30735.0	49.44	49.88	50.26	50.77	50.74	51.41	51.14	51.75	51.81	52.33	52.04	52.69	53.70
30740.8	49.42	49.86	50.24	50.78	50.71	51.38	51.12	51.72	51.79	52.29	51.97	52.67	53.60
30746.6	49.40	49.84	50.25	50.79	50.73	51.30	51.14	51.76	51.71	52.34	51.97	52.72	53.57
30752.3	49.38	49.82	50.23	50.71	50.76	51.26	51.14	51.81	51.68	52.34	52.04	52.74	53.65

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
30758.1	49.36	49.79	50.15	50.72	50.68	51.29	51.10	51.72	51.66	52.31	51.95	52.72	53.62
30763.9	49.34	49.77	50.14	50.70	50.60	51.20	51.08	51.67	51.61	52.30	51.89	52.71	53.49
30769.7	49.31	49.74	50.14	50.67	50.60	51.17	51.05	51.63	51.56	52.27	51.84	52.68	53.47
30775.4	49.29	49.71	50.11	50.65	50.57	51.17	51.04	51.55	51.46	52.28	51.75	52.68	53.50
30781.2	49.26	49.65	50.04	50.59	50.53	51.11	50.98	51.50	51.40	52.22	51.71	52.61	53.44
30787.0	49.21	49.62	50.00	50.49	50.46	51.01	50.87	51.50	51.41	52.09	51.72	52.48	53.30
30793.0	49.19	49.60	49.99	50.48	50.44	50.99	50.85	51.49	51.41	52.08	51.71	52.47	53.29
30799.0	49.18	49.58	49.98	50.46	50.43	50.98	50.84	51.48	51.40	52.07	51.71	52.46	53.32
30805.0	49.16	49.57	49.96	50.45	50.42	50.97	50.83	51.47	51.39	52.06	51.70	52.45	53.36
30811.0	49.15	49.56	49.95	50.44	50.40	50.96	50.82	51.47	51.38	52.06	51.69	52.45	53.38
30817.0	49.13	49.54	49.94	50.43	50.39	50.95	50.81	51.46	51.37	52.06	51.69	52.45	53.41
30823.0	49.12	49.53	49.92	50.41	50.38	50.94	50.80	51.45	51.37	52.05	51.68	52.45	53.31
30829.0	49.10	49.52	49.91	50.40	50.36	50.93	50.79	51.44	51.36	52.05	51.67	52.45	53.31
30835.0	49.09	49.50	49.90	50.39	50.35	50.92	50.77	51.43	51.34	52.03	51.66	52.44	53.38
30841.0	49.08	49.49	49.88	50.37	50.34	50.91	50.76	51.42	51.33	52.03	51.65	52.43	53.37
30847.0	49.06	49.48	49.87	50.36	50.33	50.90	50.75	51.41	51.33	52.03	51.65	52.43	53.31
30853.0	49.05	49.46	49.86	50.35	50.32	50.89	50.75	51.41	51.32	52.02	51.64	52.43	53.28
30859.0	49.04	49.45	49.85	50.34	50.31	50.88	50.74	51.40	51.32	52.02	51.64	52.43	53.25
30865.0	49.03	49.44	49.83	50.33	50.30	50.88	50.73	51.40	51.31	52.02	51.64	52.43	53.25
30871.0	49.02	49.43	49.82	50.33	50.29	50.87	50.72	51.40	51.31	52.02	51.63	52.43	53.31
30877.0	49.00	49.42	49.81	50.32	50.28	50.86	50.72	51.39	51.30	52.01	51.63	52.42	53.38
30883.0	48.99	49.41	49.81	50.31	50.27	50.86	50.71	51.38	51.29	52.00	51.62	52.41	53.28
30889.0	48.98	49.40	49.80	50.31	50.27	50.85	50.71	51.38	51.29	52.00	51.62	52.42	53.23
30895.0	48.97	49.39	49.79	50.30	50.27	50.85	50.70	51.38	51.29	52.01	51.62	52.42	53.26
30900.9	48.96	49.38	49.78	50.29	50.26	50.85	50.70	51.38	51.29	52.00	51.62	52.42	53.26
30906.8	48.95	49.36	49.77	50.29	50.25	50.84	50.69	51.37	51.28	52.00	51.61	52.42	53.27
30912.6	48.93	49.35	49.76	50.28	50.24	50.83	50.68	51.36	51.27	51.99	51.60	52.41	53.25
30918.5	48.92	49.34	49.74	50.26	50.22	50.82	50.67	51.34	51.26	51.97	51.58	52.39	53.23
30924.4	48.90	49.32	49.73	50.25	50.21	50.81	50.66	51.34	51.25	51.97	51.58	52.38	53.22
30930.3	48.89	49.31	49.72	50.24	50.20	50.80	50.65	51.33	51.24	51.96	51.57	52.38	53.21
30936.1	48.87	49.29	49.70	50.23	50.19	50.79	50.64	51.32	51.23	51.96	51.56	52.38	53.21
30942.0	48.85	49.28	49.69	50.22	50.18	50.78	50.63	51.32	51.23	51.95	51.56	52.37	53.22
30947.9	48.84	49.26	49.67	50.20	50.16	50.77	50.62	51.31	51.22	51.95	51.55	52.37	53.23
30953.8	48.82	49.24	49.66	50.19	50.15	50.76	50.61	51.30	51.21	51.94	51.54	52.36	53.23
30959.6	48.81	49.23	49.64	50.18	50.14	50.75	50.60	51.29	51.20	51.93	51.54	52.35	53.20
30965.5	48.79	49.21	49.62	50.16	50.12	50.73	50.58	51.27	51.18	51.91	51.51	52.33	53.16
30971.4	48.77	49.19	49.61	50.15	50.10	50.72	50.56	51.25	51.16	51.89	51.49	52.31	53.15
30977.3	48.76	49.17	49.59	50.13	50.09	50.70	50.55	51.23	51.14	51.87	51.47	52.30	53.14
30983.1	48.74	49.16	49.57	50.11	50.07	50.69	50.54	51.22	51.13	51.86	51.46	52.28	53.13
30989.0	48.73	49.14	49.55	50.10	50.05	50.67	50.52	51.20	51.11	51.84	51.43	52.26	53.11
30994.7	48.71	49.12	49.53	50.08	50.04	50.64	50.49	51.18	51.09	51.81	51.41	52.23	53.10
31000.4	48.70	49.11	49.51	50.06	50.02	50.62	50.47	51.15	51.07	51.79	51.38	52.21	53.09
31006.1	48.68	49.10	49.50	50.04	50.00	50.60	50.45	51.13	51.04	51.76	51.36	52.17	53.07
31011.8	48.67	49.08	49.48	50.02	49.98	50.58	50.43	51.10	51.01	51.72	51.34	52.14	53.02
31017.4	48.65	49.07	49.47	50.00	49.96	50.56	50.41	51.07	50.99	51.69	51.31	52.10	52.99
31023.1	48.64	49.05	49.45	49.98	49.94	50.53	50.39	51.04	50.96	51.66	51.28	52.07	52.97

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
31028.8	48.63	49.04	49.44	49.96	49.92	50.51	50.36	51.01	50.92	51.62	51.24	52.03	52.93
31034.5	48.61	49.02	49.42	49.94	49.90	50.48	50.33	50.97	50.89	51.58	51.20	51.99	52.89
31040.2	48.60	49.01	49.41	49.92	49.88	50.44	50.30	50.93	50.85	51.54	51.16	51.94	52.84
31045.9	48.59	48.99	49.39	49.90	49.86	50.42	50.28	50.89	50.81	51.48	51.12	51.88	52.78
31051.6	48.57	48.98	49.38	49.88	49.85	50.39	50.25	50.85	50.77	51.43	51.07	51.82	52.72
31057.3	48.56	48.96	49.36	49.86	49.83	50.36	50.23	50.81	50.73	51.37	51.02	51.75	52.65
31062.9	48.55	48.95	49.35	49.84	49.81	50.33	50.20	50.77	50.69	51.32	50.97	51.69	52.58
31068.6	48.54	48.94	49.33	49.83	49.79	50.30	50.17	50.74	50.66	51.28	50.94	51.65	52.51
31074.3	48.52	48.92	49.32	49.81	49.77	50.28	50.16	50.72	50.64	51.26	50.92	51.63	52.47
31080.0	48.51	48.91	49.30	49.79	49.76	50.27	50.14	50.70	50.63	51.24	50.90	51.61	52.45
31080.0	48.51	48.91	49.30	49.79	49.76	50.27	50.14	50.70	50.63	51.24	50.90	51.61	52.45
31096.7	48.48	48.88	49.27	49.76	49.72	50.23	50.10	50.66	50.58	51.20	50.85	51.57	52.41
31113.3	48.45	48.84	49.23	49.72	49.69	50.19	50.07	50.61	50.54	51.15	50.81	51.52	52.36
31130.0	48.42	48.81	49.20	49.69	49.65	50.15	50.03	50.57	50.50	51.11	50.77	51.48	52.32
31150.0	47.89	48.23	48.55	48.93	48.91	49.31	49.21	49.64	49.59	50.00	49.78	50.24	50.75
31167.0	47.84	48.18	48.50	48.90	48.87	49.27	49.18	49.59	49.54	49.95	49.73	50.18	50.68
31184.0	47.80	48.14	48.47	48.87	48.84	49.24	49.14	49.56	49.51	49.91	49.70	50.14	50.63
31201.0	47.77	48.12	48.45	48.84	48.81	49.21	49.12	49.53	49.48	49.88	49.67	50.11	50.58
31218.0	47.75	48.09	48.42	48.81	48.78	49.17	49.08	49.48	49.43	49.82	49.62	50.05	50.50
31218.0	47.75	48.09	48.42	48.81	48.78	49.17	49.08	49.48	49.43	49.82	49.62	50.05	50.50
31224.0	47.72	48.07	48.40	48.79	48.76	49.15	49.06	49.46	49.41	49.81	49.60	50.04	50.50
31230.0	47.70	48.05	48.38	48.77	48.74	49.13	49.03	49.44	49.39	49.79	49.58	50.02	50.48
31236.0	47.68	48.03	48.35	48.74	48.71	49.10	49.01	49.42	49.37	49.77	49.56	50.00	50.46
31242.0	47.66	48.00	48.33	48.72	48.69	49.08	48.98	49.39	49.34	49.75	49.53	49.97	50.44
31248.0	47.64	47.98	48.31	48.69	48.66	49.05	48.96	49.37	49.32	49.72	49.51	49.94	50.41
31254.0	47.62	47.96	48.28	48.66	48.64	49.02	48.93	49.34	49.29	49.69	49.48	49.92	50.38
31260.0	47.60	47.94	48.26	48.64	48.61	49.00	48.90	49.32	49.26	49.67	49.45	49.89	50.35
31266.0	47.58	47.91	48.23	48.61	48.58	48.97	48.88	49.29	49.24	49.64	49.43	49.86	50.32
31272.0	47.56	47.89	48.21	48.58	48.56	48.94	48.85	49.27	49.21	49.61	49.40	49.84	50.29
31278.0	47.54	47.87	48.18	48.56	48.53	48.92	48.83	49.24	49.19	49.59	49.38	49.82	50.26
31284.0	47.51	47.85	48.16	48.53	48.51	48.89	48.80	49.21	49.16	49.56	49.35	49.79	50.23
31290.0	47.49	47.82	48.13	48.51	48.48	48.87	48.77	49.19	49.13	49.53	49.32	49.76	50.20
31296.0	47.47	47.80	48.11	48.48	48.45	48.84	48.75	49.16	49.10	49.50	49.30	49.73	50.17
31302.0	47.44	47.77	48.08	48.45	48.43	48.82	48.72	49.13	49.08	49.47	49.27	49.70	50.14
31307.8	47.43	47.75	48.06	48.43	48.41	48.80	48.70	49.11	49.06	49.46	49.25	49.68	50.12
31313.5	47.41	47.73	48.04	48.41	48.39	48.77	48.68	49.09	49.04	49.43	49.23	49.66	50.11
31319.3	47.39	47.71	48.02	48.39	48.36	48.75	48.66	49.07	49.02	49.41	49.21	49.64	50.09
31325.0	47.37	47.69	48.00	48.37	48.34	48.73	48.64	49.05	49.00	49.39	49.18	49.61	50.06
31330.8	47.35	47.67	47.98	48.35	48.32	48.71	48.62	49.03	48.98	49.37	49.16	49.59	50.04
31336.5	47.33	47.66	47.96	48.33	48.30	48.69	48.59	49.01	48.96	49.35	49.14	49.57	50.02
31342.3	47.31	47.64	47.94	48.31	48.28	48.67	48.57	48.99	48.93	49.33	49.12	49.55	50.00
31348.0	47.29	47.62	47.92	48.28	48.26	48.65	48.55	48.97	48.91	49.31	49.10	49.53	49.97
31353.8	47.27	47.60	47.90	48.26	48.24	48.62	48.53	48.94	48.89	49.29	49.08	49.50	49.95
31359.5	47.25	47.58	47.88	48.24	48.21	48.60	48.51	48.92	48.87	49.26	49.06	49.48	49.93
31365.3	47.24	47.56	47.86	48.22	48.19	48.58	48.49	48.90	48.85	49.24	49.03	49.46	49.91
31371.0	47.22	47.54	47.84	48.20	48.17	48.56	48.46	48.88	48.82	49.22	49.01	49.44	49.89

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
31376.8	47.20	47.52	47.82	48.18	48.15	48.54	48.44	48.85	48.80	49.20	48.99	49.42	49.87
31382.5	47.18	47.50	47.80	48.15	48.13	48.51	48.42	48.83	48.78	49.18	48.97	49.40	49.85
31388.3	47.16	47.48	47.77	48.13	48.11	48.49	48.40	48.81	48.76	49.16	48.95	49.38	49.83
31394.0	47.14	47.46	47.75	48.11	48.08	48.47	48.37	48.80	48.74	49.14	48.93	49.36	49.81
31399.8	47.12	47.43	47.73	48.09	48.06	48.45	48.35	48.78	48.72	49.12	48.91	49.35	49.79
31405.5	47.10	47.41	47.71	48.06	48.04	48.43	48.33	48.76	48.71	49.11	48.90	49.33	49.77
31411.3	47.08	47.39	47.69	48.04	48.02	48.41	48.31	48.74	48.69	49.09	48.88	49.31	49.75
31417.0	47.06	47.37	47.66	48.02	48.00	48.39	48.30	48.72	48.67	49.07	48.86	49.29	49.74
31422.8	47.04	47.35	47.64	48.00	47.97	48.37	48.28	48.70	48.65	49.05	48.84	49.27	49.72
31428.7	47.02	47.33	47.62	47.98	47.95	48.35	48.25	48.68	48.63	49.03	48.82	49.25	49.70
31434.5	47.00	47.31	47.60	47.96	47.93	48.33	48.23	48.66	48.61	49.01	48.80	49.23	49.68
31440.3	46.98	47.29	47.58	47.94	47.91	48.31	48.21	48.64	48.59	48.99	48.78	49.21	49.66
31446.2	46.96	47.27	47.56	47.92	47.89	48.29	48.19	48.62	48.57	48.97	48.76	49.19	49.64
31452.0	46.94	47.25	47.54	47.90	47.87	48.27	48.17	48.61	48.55	48.95	48.74	49.17	49.62
31457.8	46.92	47.23	47.52	47.88	47.85	48.25	48.15	48.59	48.53	48.94	48.72	49.15	49.60
31463.7	46.90	47.21	47.50	47.85	47.83	48.23	48.13	48.57	48.51	48.92	48.70	49.13	49.58
31469.5	46.88	47.19	47.48	47.83	47.81	48.21	48.11	48.55	48.49	48.90	48.68	49.12	49.56
31475.3	46.86	47.17	47.46	47.81	47.79	48.19	48.09	48.53	48.47	48.88	48.67	49.10	49.54
31481.2	46.85	47.15	47.44	47.79	47.77	48.17	48.07	48.51	48.45	48.86	48.65	49.08	49.52
31487.0	46.83	47.13	47.42	47.77	47.75	48.15	48.05	48.49	48.43	48.84	48.63	49.06	49.50
31492.8	46.81	47.11	47.40	47.75	47.73	48.13	48.03	48.47	48.42	48.82	48.61	49.04	49.48
31498.7	46.79	47.09	47.38	47.73	47.71	48.11	48.01	48.45	48.40	48.80	48.59	49.02	49.46
31504.5	46.77	47.07	47.36	47.71	47.69	48.09	47.99	48.43	48.38	48.78	48.57	49.00	49.44
31510.3	46.75	47.05	47.34	47.69	47.67	48.07	47.97	48.41	48.36	48.76	48.55	48.98	49.42
31516.2	46.73	47.03	47.32	47.68	47.65	48.05	47.95	48.39	48.33	48.74	48.53	48.96	49.40
31522.0	46.71	47.02	47.30	47.66	47.63	48.02	47.92	48.37	48.31	48.72	48.50	48.94	49.38
31528.0	46.70	47.00	47.28	47.64	47.61	48.00	47.90	48.34	48.29	48.70	48.48	48.91	49.36
31534.0	46.68	46.98	47.27	47.62	47.59	47.98	47.88	48.32	48.27	48.67	48.46	48.89	49.34
31540.0	46.66	46.96	47.25	47.60	47.57	47.96	47.86	48.30	48.24	48.65	48.44	48.87	49.31
31546.0	46.64	46.94	47.23	47.58	47.55	47.94	47.84	48.28	48.22	48.63	48.41	48.85	49.29
31552.0	46.62	46.92	47.21	47.56	47.53	47.92	47.82	48.25	48.20	48.60	48.39	48.82	49.27
31558.0	46.61	46.91	47.19	47.54	47.51	47.90	47.80	48.23	48.17	48.58	48.36	48.80	49.25
31564.0	46.59	46.89	47.17	47.52	47.49	47.87	47.78	48.20	48.15	48.56	48.34	48.77	49.22
31570.0	46.57	46.87	47.15	47.50	47.47	47.85	47.76	48.18	48.13	48.53	48.31	48.75	49.20
31576.0	46.55	46.85	47.13	47.48	47.45	47.83	47.74	48.15	48.10	48.50	48.29	48.72	49.17
31582.0	46.54	46.83	47.11	47.46	47.43	47.81	47.72	48.13	48.08	48.48	48.27	48.70	49.14
31588.0	46.52	46.81	47.09	47.44	47.41	47.79	47.70	48.11	48.06	48.46	48.25	48.68	49.12
31594.0	46.50	46.80	47.08	47.42	47.39	47.77	47.67	48.09	48.04	48.43	48.22	48.65	49.10
31600.0	46.48	46.78	47.06	47.40	47.37	47.74	47.65	48.07	48.01	48.41	48.20	48.63	49.08
31606.0	46.46	46.76	47.04	47.38	47.35	47.72	47.63	48.04	47.99	48.39	48.18	48.61	49.06
31612.0	46.45	46.74	47.02	47.35	47.33	47.70	47.60	48.02	47.97	48.36	48.15	48.58	49.03
31618.0	46.43	46.72	47.00	47.33	47.31	47.68	47.58	47.99	47.94	48.34	48.13	48.56	49.01
31624.0	46.41	46.70	46.98	47.31	47.29	47.66	47.56	47.97	47.92	48.32	48.10	48.54	48.99
31630.0	46.39	46.69	46.96	47.29	47.27	47.63	47.54	47.95	47.90	48.29	48.08	48.51	48.97
31636.0	46.37	46.67	46.94	47.27	47.25	47.61	47.52	47.93	47.88	48.27	48.06	48.49	48.95
31642.0	46.36	46.65	46.92	47.25	47.23	47.59	47.50	47.91	47.86	48.25	48.04	48.47	48.93

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
31647.8	46.34	46.63	46.90	47.23	47.21	47.57	47.47	47.88	47.83	48.23	48.02	48.45	48.91
31653.7	46.32	46.61	46.88	47.21	47.18	47.55	47.45	47.86	47.81	48.21	47.99	48.43	48.89
31659.5	46.29	46.59	46.86	47.18	47.16	47.52	47.43	47.83	47.78	48.18	47.97	48.41	48.87
31665.3	46.27	46.56	46.83	47.16	47.14	47.49	47.40	47.80	47.75	48.16	47.94	48.38	48.85
31671.2	46.25	46.54	46.81	47.14	47.11	47.47	47.38	47.78	47.73	48.13	47.92	48.36	48.82
31677.0	46.23	46.52	46.79	47.11	47.09	47.45	47.35	47.75	47.70	48.11	47.89	48.33	48.80
31682.8	46.21	46.50	46.76	47.09	47.06	47.42	47.33	47.73	47.68	48.08	47.87	48.31	48.78
31688.7	46.19	46.48	46.74	47.06	47.04	47.40	47.31	47.71	47.66	48.06	47.84	48.29	48.76
31694.5	46.17	46.45	46.72	47.04	47.02	47.37	47.28	47.68	47.63	48.03	47.82	48.26	48.73
31700.3	46.15	46.43	46.70	47.02	46.99	47.35	47.26	47.66	47.61	48.01	47.80	48.24	48.71
31706.2	46.12	46.41	46.67	46.99	46.97	47.32	47.23	47.64	47.58	47.99	47.77	48.22	48.69
31712.0	46.10	46.38	46.65	46.97	46.95	47.30	47.21	47.61	47.56	47.97	47.75	48.20	48.67
31717.8	46.08	46.36	46.62	46.95	46.92	47.28	47.18	47.59	47.54	47.94	47.72	48.18	48.65
31723.7	46.06	46.34	46.60	46.92	46.90	47.25	47.16	47.56	47.51	47.92	47.70	48.15	48.63
31729.5	46.03	46.31	46.58	46.90	46.87	47.23	47.14	47.54	47.49	47.90	47.68	48.13	48.61
31735.3	46.01	46.29	46.55	46.87	46.85	47.20	47.11	47.52	47.46	47.87	47.65	48.11	48.59
31741.2	45.99	46.27	46.53	46.85	46.82	47.18	47.09	47.49	47.44	47.85	47.63	48.08	48.56
31747.0	45.96	46.24	46.50	46.82	46.80	47.15	47.06	47.47	47.41	47.82	47.60	48.06	48.54
31752.8	45.94	46.22	46.48	46.80	46.77	47.13	47.04	47.44	47.39	47.80	47.58	48.03	48.51
31758.7	45.92	46.19	46.45	46.77	46.75	47.10	47.01	47.42	47.36	47.77	47.55	48.01	48.49
31764.5	45.89	46.17	46.43	46.75	46.72	47.08	46.99	47.39	47.34	47.75	47.53	47.98	48.46
31770.3	45.87	46.14	46.40	46.72	46.70	47.05	46.96	47.37	47.31	47.72	47.50	47.96	48.44
31776.2	45.84	46.12	46.38	46.70	46.67	47.03	46.93	47.34	47.29	47.70	47.48	47.93	48.41
31782.0	45.82	46.09	46.35	46.67	46.65	47.00	46.91	47.32	47.26	47.67	47.45	47.91	48.39
31788.0	45.80	46.07	46.33	46.65	46.63	46.98	46.89	47.30	47.24	47.65	47.43	47.89	48.38
31794.0	45.78	46.05	46.31	46.63	46.60	46.96	46.86	47.28	47.22	47.64	47.41	47.87	48.36
31800.0	45.75	46.03	46.29	46.60	46.58	46.94	46.84	47.25	47.20	47.62	47.39	47.86	48.35
31806.0	45.73	46.01	46.27	46.58	46.56	46.92	46.82	47.23	47.18	47.60	47.37	47.84	48.33
31812.0	45.71	45.98	46.24	46.56	46.54	46.90	46.80	47.21	47.16	47.57	47.35	47.81	48.30
31818.0	45.69	45.96	46.22	46.54	46.52	46.87	46.78	47.19	47.14	47.55	47.33	47.79	48.28
31824.0	45.67	45.94	46.20	46.52	46.50	46.85	46.76	47.17	47.12	47.53	47.31	47.77	48.26
31830.0	45.65	45.92	46.18	46.50	46.48	46.83	46.74	47.15	47.10	47.51	47.29	47.74	48.23
31836.0	45.63	45.90	46.16	46.48	46.46	46.81	46.72	47.13	47.08	47.49	47.27	47.72	48.21
31842.0	45.61	45.88	46.14	46.46	46.44	46.80	46.70	47.11	47.06	47.47	47.25	47.71	48.19
31848.0	45.59	45.86	46.12	46.44	46.42	46.78	46.68	47.10	47.04	47.45	47.23	47.69	48.17
31854.0	45.57	45.84	46.10	46.42	46.40	46.76	46.67	47.08	47.03	47.44	47.22	47.68	48.16
31860.0	45.55	45.82	46.08	46.40	46.38	46.74	46.65	47.06	47.01	47.43	47.20	47.66	48.15
31866.0	45.53	45.80	46.06	46.39	46.36	46.72	46.63	47.05	46.99	47.41	47.19	47.65	48.13
31872.0	45.51	45.78	46.04	46.37	46.34	46.71	46.61	47.03	46.98	47.40	47.17	47.64	48.12
31878.0	45.49	45.77	46.03	46.35	46.33	46.69	46.60	47.02	46.96	47.38	47.16	47.62	48.11
31884.0	45.47	45.75	46.01	46.33	46.31	46.68	46.58	47.00	46.95	47.37	47.15	47.61	48.10
31890.0	45.46	45.73	45.99	46.32	46.29	46.66	46.57	46.99	46.94	47.36	47.13	47.60	48.09
31896.0	45.44	45.71	45.97	46.30	46.28	46.65	46.55	46.98	46.92	47.35	47.12	47.59	48.08
31902.0	45.42	45.69	45.96	46.28	46.26	46.63	46.54	46.96	46.91	47.34	47.11	47.58	48.07
31908.0	45.40	45.68	45.94	46.27	46.24	46.62	46.52	46.95	46.90	47.33	47.10	47.57	48.06
31913.9	45.38	45.66	45.92	46.25	46.23	46.60	46.51	46.94	46.88	47.31	47.08	47.56	48.05

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
31919.8	45.37	45.64	45.90	46.24	46.21	46.59	46.49	46.92	46.87	47.30	47.07	47.55	48.04
31925.7	45.35	45.62	45.89	46.22	46.20	46.57	46.48	46.91	46.85	47.29	47.06	47.53	48.03
31931.6	45.33	45.61	45.87	46.20	46.18	46.56	46.46	46.90	46.84	47.28	47.04	47.52	48.02
31937.5	45.31	45.59	45.85	46.19	46.16	46.54	46.45	46.88	46.83	47.26	47.03	47.51	48.00
31943.4	45.29	45.57	45.84	46.17	46.15	46.53	46.43	46.87	46.81	47.25	47.02	47.50	47.99
31949.3	45.27	45.55	45.82	46.16	46.13	46.52	46.42	46.86	46.80	47.24	47.00	47.48	47.98
31955.2	45.25	45.53	45.80	46.14	46.12	46.50	46.40	46.84	46.79	47.22	46.99	47.47	47.97
31961.1	45.23	45.51	45.78	46.13	46.10	46.49	46.39	46.83	46.77	47.21	46.98	47.46	47.96
31967.0	45.21	45.49	45.77	46.11	46.08	46.47	46.37	46.82	46.76	47.20	46.97	47.45	47.94
31973.0	45.19	45.47	45.75	46.09	46.07	46.46	46.36	46.80	46.75	47.19	46.95	47.43	47.93
31978.9	45.17	45.46	45.73	46.08	46.05	46.44	46.34	46.79	46.73	47.18	46.94	47.42	47.92
31984.8	45.15	45.44	45.71	46.06	46.04	46.43	46.33	46.78	46.72	47.16	46.93	47.41	47.91
31990.7	45.13	45.42	45.70	46.05	46.02	46.42	46.31	46.77	46.71	47.15	46.92	47.40	47.90
31996.6	45.11	45.40	45.68	46.03	46.01	46.40	46.30	46.75	46.70	47.14	46.91	47.39	47.90
32002.5	45.09	45.38	45.66	46.02	45.99	46.39	46.29	46.74	46.68	47.13	46.89	47.38	47.89
32008.4	45.06	45.36	45.64	46.00	45.97	46.38	46.27	46.73	46.67	47.12	46.88	47.37	47.88
32014.3	45.04	45.34	45.62	45.99	45.96	46.36	46.26	46.72	46.66	47.11	46.87	47.36	47.87
32020.2	45.02	45.32	45.61	45.97	45.94	46.35	46.24	46.71	46.65	47.10	46.86	47.35	47.86
32026.1	45.00	45.30	45.59	45.95	45.93	46.34	46.23	46.69	46.63	47.09	46.85	47.34	47.85
32032.0	44.98	45.27	45.57	45.94	45.91	46.32	46.22	46.68	46.62	47.07	46.84	47.33	47.84
32037.9	44.96	45.26	45.55	45.92	45.89	46.31	46.20	46.67	46.61	47.06	46.82	47.31	47.82
32043.8	44.95	45.25	45.54	45.91	45.88	46.29	46.19	46.65	46.59	47.05	46.81	47.30	47.81
32049.7	44.94	45.23	45.52	45.89	45.86	46.28	46.17	46.64	46.58	47.03	46.79	47.28	47.79
32055.7	44.92	45.22	45.51	45.87	45.85	46.26	46.16	46.62	46.56	47.02	46.78	47.27	47.77
32061.6	44.91	45.21	45.49	45.86	45.83	46.25	46.14	46.61	46.55	47.00	46.76	47.25	47.76
32067.5	44.89	45.19	45.48	45.85	45.82	46.23	46.13	46.60	46.54	46.99	46.75	47.24	47.75
32073.4	44.88	45.18	45.47	45.83	45.80	46.22	46.11	46.58	46.52	46.98	46.74	47.23	47.73
32079.3	44.86	45.17	45.46	45.82	45.79	46.21	46.10	46.57	46.51	46.96	46.72	47.21	47.72
32085.2	44.84	45.15	45.44	45.81	45.78	46.19	46.08	46.56	46.50	46.95	46.71	47.20	47.70
32091.1	44.83	45.14	45.43	45.79	45.76	46.18	46.07	46.54	46.48	46.94	46.70	47.19	47.69
32097.0	44.81	45.12	45.42	45.78	45.75	46.17	46.06	46.53	46.47	46.92	46.68	47.17	47.67
32103.0	44.79	45.11	45.40	45.77	45.74	46.15	46.05	46.52	46.46	46.91	46.67	47.15	47.65
32108.9	44.77	45.09	45.39	45.76	45.73	46.14	46.03	46.50	46.44	46.89	46.66	47.14	47.64
32114.8	44.76	45.08	45.38	45.74	45.72	46.13	46.02	46.49	46.43	46.88	46.65	47.13	47.62
32120.7	44.74	45.06	45.36	45.73	45.70	46.12	46.01	46.48	46.42	46.87	46.63	47.12	47.61
32126.6	44.72	45.04	45.35	45.72	45.69	46.11	46.00	46.47	46.41	46.86	46.62	47.11	47.60
32132.5	44.70	45.03	45.33	45.71	45.68	46.09	45.99	46.46	46.40	46.85	46.61	47.09	47.59
32138.4	44.69	45.01	45.32	45.69	45.66	46.08	45.98	46.45	46.39	46.84	46.60	47.08	47.58
32144.3	44.67	44.99	45.30	45.68	45.65	46.07	45.96	46.43	46.37	46.82	46.59	47.07	47.57
32150.3	44.65	44.97	45.28	45.66	45.64	46.06	45.95	46.42	46.36	46.81	46.58	47.06	47.55
32156.2	44.64	44.96	45.26	45.65	45.62	46.05	45.94	46.41	46.35	46.80	46.57	47.05	47.54
32162.1	44.62	44.94	45.25	45.63	45.61	46.03	45.92	46.40	46.34	46.79	46.55	47.04	47.53
32168.0	44.60	44.92	45.23	45.62	45.59	46.02	45.91	46.39	46.33	46.78	46.54	47.03	47.52
32173.8	44.59	44.91	45.22	45.61	45.58	46.01	45.90	46.37	46.32	46.77	46.53	47.01	47.51
32179.6	44.58	44.90	45.21	45.60	45.57	46.00	45.89	46.36	46.30	46.75	46.51	47.00	47.49
32185.3	44.56	44.88	45.19	45.58	45.55	45.98	45.87	46.35	46.29	46.73	46.50	46.98	47.47

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
32191.1	44.55	44.87	45.18	45.57	45.54	45.97	45.86	46.33	46.27	46.72	46.48	46.96	47.46
32196.9	44.54	44.86	45.17	45.56	45.53	45.95	45.84	46.32	46.26	46.70	46.47	46.95	47.44
32202.7	44.52	44.85	45.16	45.54	45.51	45.94	45.83	46.30	46.24	46.69	46.45	46.93	47.42
32208.4	44.51	44.83	45.14	45.53	45.50	45.92	45.81	46.28	46.22	46.67	46.44	46.92	47.41
32214.2	44.50	44.82	45.13	45.51	45.48	45.91	45.80	46.27	46.21	46.65	46.42	46.90	47.39
32220.0	44.48	44.80	45.11	45.50	45.47	45.89	45.78	46.25	46.19	46.64	46.40	46.88	47.37
32225.8	44.46	44.79	45.10	45.48	45.45	45.87	45.76	46.23	46.17	46.62	46.39	46.87	47.36
32231.6	44.45	44.77	45.08	45.46	45.43	45.85	45.75	46.22	46.16	46.60	46.37	46.85	47.34
32237.3	44.43	44.76	45.07	45.44	45.42	45.84	45.73	46.20	46.14	46.58	46.35	46.83	47.32
32243.1	44.41	44.74	45.05	45.43	45.40	45.82	45.71	46.18	46.12	46.57	46.33	46.81	47.30
32248.9	44.40	44.72	45.03	45.41	45.38	45.80	45.69	46.16	46.10	46.55	46.31	46.79	47.28
32254.7	44.38	44.70	45.01	45.39	45.36	45.78	45.67	46.14	46.08	46.53	46.29	46.78	47.26
32260.4	44.36	44.68	44.99	45.37	45.34	45.76	45.65	46.12	46.06	46.51	46.27	46.76	47.25
32266.2	44.34	44.66	44.97	45.35	45.32	45.74	45.63	46.10	46.04	46.49	46.25	46.74	47.23
32272.0	44.32	44.64	44.95	45.32	45.30	45.72	45.61	46.08	46.02	46.47	46.23	46.72	47.21
32278.0	44.29	44.62	44.93	45.30	45.27	45.70	45.59	46.06	46.00	46.45	46.21	46.70	47.19
32284.0	44.27	44.60	44.90	45.28	45.25	45.67	45.57	46.04	45.98	46.43	46.19	46.68	47.16
32290.0	44.25	44.57	44.88	45.26	45.23	45.65	45.54	46.02	45.96	46.41	46.17	46.65	47.14
32296.0	44.22	44.55	44.86	45.23	45.21	45.63	45.52	46.00	45.94	46.39	46.15	46.63	47.12
32302.0	44.20	44.53	44.83	45.21	45.18	45.61	45.50	45.97	45.91	46.37	46.13	46.61	47.10
32308.0	44.17	44.50	44.81	45.19	45.16	45.58	45.47	45.95	45.89	46.34	46.11	46.59	47.08
32314.0	44.15	44.48	44.79	45.16	45.13	45.56	45.45	45.93	45.87	46.32	46.08	46.56	47.05
32320.0	44.12	44.45	44.76	45.14	45.11	45.53	45.42	45.90	45.84	46.30	46.06	46.54	47.03
32326.0	44.10	44.43	44.73	45.11	45.08	45.51	45.40	45.88	45.82	46.27	46.03	46.52	47.00
32332.0	44.07	44.40	44.71	45.09	45.06	45.48	45.37	45.85	45.79	46.25	46.01	46.49	46.98
32338.0	44.04	44.37	44.68	45.06	45.03	45.46	45.35	45.83	45.77	46.22	45.98	46.47	46.95
32344.0	44.02	44.35	44.65	45.03	45.00	45.43	45.32	45.80	45.74	46.20	45.96	46.44	46.93
32350.0	43.99	44.32	44.63	45.00	44.98	45.40	45.29	45.77	45.71	46.17	45.93	46.42	46.90
32356.0	43.96	44.29	44.60	44.97	44.95	45.37	45.26	45.75	45.68	46.14	45.90	46.39	46.88
32362.0	43.93	44.26	44.57	44.94	44.92	45.34	45.23	45.72	45.65	46.12	45.87	46.36	46.85
32368.0	43.90	44.23	44.54	44.91	44.89	45.31	45.20	45.69	45.62	46.09	45.85	46.33	46.82
32374.0	43.87	44.20	44.51	44.88	44.86	45.28	45.17	45.65	45.59	46.06	45.82	46.31	46.79
32380.0	43.84	44.17	44.48	44.85	44.82	45.25	45.14	45.62	45.56	46.03	45.78	46.28	46.76
32386.0	43.81	44.14	44.44	44.82	44.79	45.22	45.10	45.59	45.53	46.00	45.75	46.24	46.73
32392.0	43.78	44.10	44.41	44.78	44.76	45.18	45.07	45.56	45.49	45.96	45.72	46.21	46.70
32398.0	43.75	44.07	44.37	44.75	44.72	45.15	45.04	45.52	45.46	45.93	45.68	46.18	46.67
32404.0	43.71	44.04	44.34	44.71	44.69	45.11	45.00	45.48	45.42	45.90	45.65	46.15	46.64
32409.9	43.69	44.01	44.32	44.69	44.66	45.09	44.98	45.46	45.40	45.87	45.62	46.12	46.61
32415.8	43.67	43.99	44.29	44.67	44.64	45.06	44.95	45.44	45.37	45.85	45.60	46.10	46.59
32421.7	43.64	43.97	44.27	44.64	44.62	45.04	44.93	45.41	45.35	45.82	45.57	46.08	46.56
32427.6	43.62	43.94	44.25	44.62	44.59	45.02	44.91	45.39	45.33	45.80	45.55	46.05	46.54
32433.5	43.60	43.92	44.23	44.60	44.57	44.99	44.88	45.36	45.30	45.78	45.53	46.03	46.52
32439.4	43.58	43.90	44.20	44.58	44.55	44.97	44.86	45.34	45.28	45.75	45.50	46.00	46.49
32445.3	43.56	43.88	44.18	44.56	44.53	44.95	44.84	45.32	45.26	45.73	45.48	45.98	46.47
32451.2	43.53	43.86	44.16	44.54	44.51	44.93	44.82	45.30	45.24	45.71	45.46	45.96	46.45
32457.1	43.51	43.84	44.14	44.52	44.49	44.91	44.80	45.27	45.21	45.68	45.43	45.93	46.42

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
32463.0	43.49	43.82	44.12	44.50	44.47	44.89	44.78	45.25	45.19	45.66	45.41	45.91	46.40
32469.0	43.47	43.80	44.10	44.48	44.45	44.87	44.76	45.23	45.17	45.64	45.39	45.89	46.38
32474.9	43.45	43.78	44.08	44.46	44.43	44.85	44.74	45.21	45.15	45.61	45.36	45.87	46.35
32480.8	43.44	43.76	44.06	44.44	44.41	44.83	44.72	45.19	45.13	45.59	45.34	45.84	46.33
32486.7	43.42	43.74	44.04	44.42	44.39	44.81	44.70	45.16	45.11	45.57	45.32	45.82	46.31
32492.6	43.40	43.72	44.03	44.40	44.37	44.79	44.68	45.14	45.08	45.54	45.30	45.80	46.28
32498.5	43.38	43.70	44.01	44.38	44.36	44.77	44.66	45.12	45.06	45.52	45.28	45.77	46.26
32504.4	43.36	43.69	43.99	44.37	44.34	44.75	44.65	45.10	45.05	45.50	45.25	45.75	46.24
32510.3	43.35	43.67	43.97	44.35	44.32	44.73	44.63	45.08	45.03	45.48	45.23	45.73	46.21
32516.2	43.33	43.65	43.96	44.33	44.30	44.72	44.61	45.06	45.01	45.46	45.21	45.71	46.19
32522.1	43.31	43.64	43.94	44.32	44.29	44.70	44.59	45.04	44.99	45.44	45.19	45.69	46.17
32528.0	43.30	43.62	43.93	44.30	44.27	44.68	44.58	45.03	44.97	45.41	45.17	45.66	46.15
32533.8	43.28	43.61	43.91	44.28	44.26	44.66	44.56	45.01	44.95	45.40	45.16	45.65	46.13
32539.6	43.27	43.59	43.89	44.27	44.24	44.65	44.54	44.99	44.94	45.38	45.14	45.63	46.11
32545.4	43.25	43.57	43.88	44.25	44.22	44.63	44.53	44.98	44.92	45.37	45.13	45.61	46.09
32551.2	43.24	43.56	43.86	44.23	44.21	44.61	44.51	44.96	44.90	45.35	45.11	45.59	46.07
32557.0	43.22	43.54	43.85	44.22	44.19	44.60	44.50	44.94	44.89	45.33	45.10	45.57	46.05
32562.8	43.21	43.53	43.83	44.20	44.17	44.58	44.48	44.93	44.87	45.31	45.08	45.55	46.03
32568.6	43.19	43.51	43.81	44.19	44.16	44.57	44.46	44.91	44.86	45.29	45.06	45.53	46.00
32574.4	43.18	43.50	43.80	44.17	44.14	44.55	44.45	44.90	44.84	45.28	45.05	45.51	45.98
32580.2	43.16	43.48	43.78	44.15	44.13	44.53	44.43	44.88	44.83	45.26	45.03	45.49	45.96
32586.0	43.15	43.47	43.77	44.14	44.11	44.52	44.41	44.87	44.81	45.24	45.01	45.47	45.94
32591.8	43.13	43.45	43.75	44.12	44.10	44.50	44.40	44.85	44.79	45.22	44.99	45.45	45.92
32597.6	43.12	43.44	43.74	44.11	44.08	44.49	44.38	44.83	44.78	45.20	44.98	45.43	45.89
32603.4	43.10	43.42	43.72	44.09	44.06	44.47	44.37	44.81	44.76	45.18	44.96	45.41	45.87
32609.2	43.09	43.41	43.71	44.08	44.05	44.45	44.35	44.79	44.74	45.16	44.94	45.39	45.85
32615.0	43.07	43.39	43.69	44.06	44.03	44.44	44.34	44.78	44.72	45.14	44.92	45.37	45.83
32620.8	43.06	43.38	43.68	44.05	44.02	44.42	44.32	44.76	44.70	45.12	44.90	45.35	45.81
32626.6	43.04	43.36	43.66	44.03	44.00	44.41	44.30	44.74	44.68	45.10	44.88	45.33	45.78
32632.4	43.03	43.35	43.65	44.01	43.99	44.39	44.29	44.72	44.67	45.08	44.86	45.31	45.76
32638.2	43.02	43.34	43.63	44.00	43.97	44.37	44.27	44.70	44.65	45.06	44.84	45.29	45.74
32644.0	43.00	43.32	43.62	43.98	43.96	44.35	44.25	44.68	44.63	45.04	44.82	45.27	45.71
32650.0	42.99	43.30	43.60	43.96	43.94	44.33	44.23	44.66	44.61	45.02	44.80	45.25	45.69
32656.0	42.97	43.29	43.58	43.95	43.92	44.31	44.22	44.64	44.59	45.01	44.78	45.23	45.67
32662.0	42.95	43.27	43.57	43.93	43.90	44.30	44.20	44.63	44.57	44.99	44.77	45.21	45.65
32668.0	42.94	43.25	43.55	43.91	43.88	44.28	44.18	44.61	44.55	44.97	44.75	45.19	45.62
32674.0	42.92	43.24	43.53	43.89	43.86	44.26	44.16	44.59	44.54	44.95	44.73	45.17	45.60
32680.0	42.90	43.22	43.51	43.87	43.84	44.24	44.14	44.57	44.52	44.93	44.72	45.15	45.58
32686.0	42.89	43.20	43.49	43.85	43.83	44.22	44.12	44.56	44.50	44.91	44.70	45.13	45.55
32692.0	42.87	43.18	43.47	43.83	43.81	44.20	44.10	44.54	44.48	44.89	44.68	45.11	45.53
32698.0	42.85	43.16	43.46	43.81	43.79	44.18	44.08	44.52	44.46	44.87	44.66	45.09	45.50
32704.0	42.83	43.14	43.44	43.79	43.77	44.16	44.06	44.50	44.45	44.85	44.64	45.06	45.48
32710.0	42.81	43.13	43.42	43.77	43.75	44.14	44.04	44.48	44.43	44.83	44.62	45.04	45.46
32716.0	42.80	43.11	43.40	43.75	43.73	44.12	44.02	44.46	44.40	44.81	44.60	45.02	45.43
32722.0	42.78	43.09	43.38	43.73	43.71	44.10	44.00	44.44	44.38	44.79	44.57	45.00	45.41
32728.0	42.76	43.07	43.36	43.71	43.68	44.08	43.98	44.41	44.36	44.77	44.55	44.98	45.38

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
32734.0	42.74	43.05	43.34	43.69	43.66	44.06	43.96	44.39	44.34	44.74	44.53	44.95	45.36
32740.0	42.72	43.03	43.32	43.67	43.64	44.04	43.94	44.37	44.32	44.72	44.51	44.93	45.33
32746.0	42.70	43.01	43.30	43.65	43.62	44.02	43.92	44.35	44.29	44.70	44.49	44.91	45.31
32752.0	42.68	42.99	43.27	43.62	43.60	43.99	43.89	44.33	44.27	44.68	44.47	44.89	45.29
32758.0	42.66	42.97	43.25	43.60	43.57	43.97	43.87	44.31	44.25	44.66	44.45	44.87	45.27
32764.0	42.64	42.95	43.23	43.58	43.55	43.94	43.84	44.28	44.23	44.64	44.43	44.84	45.24
32770.0	42.62	42.93	43.21	43.56	43.53	43.92	43.82	44.26	44.21	44.62	44.41	44.82	45.22
32776.0	42.60	42.91	43.19	43.54	43.51	43.90	43.80	44.24	44.18	44.59	44.38	44.80	45.20
32782.0	42.58	42.88	43.17	43.51	43.49	43.88	43.78	44.22	44.16	44.57	44.36	44.77	45.17
32788.0	42.56	42.86	43.15	43.49	43.47	43.86	43.76	44.19	44.14	44.55	44.34	44.75	45.15
32794.0	42.54	42.84	43.12	43.47	43.44	43.83	43.73	44.17	44.11	44.52	44.31	44.72	45.12
32800.0	42.52	42.82	43.10	43.45	43.42	43.81	43.71	44.14	44.08	44.50	44.28	44.70	45.10
32806.0	42.50	42.80	43.08	43.42	43.40	43.78	43.68	44.11	44.06	44.47	44.26	44.68	45.08
32812.0	42.48	42.78	43.06	43.40	43.38	43.76	43.66	44.08	44.03	44.44	44.23	44.66	45.05
32818.0	42.46	42.76	43.04	43.38	43.35	43.73	43.64	44.06	44.00	44.41	44.20	44.63	45.03
32824.0	42.44	42.74	43.02	43.35	43.33	43.71	43.61	44.03	43.98	44.38	44.17	44.60	45.00
32830.0	42.42	42.72	42.99	43.33	43.30	43.68	43.58	44.00	43.95	44.35	44.14	44.57	44.97
32836.0	42.40	42.70	42.97	43.31	43.28	43.65	43.55	43.97	43.92	44.32	44.11	44.53	44.94
32842.0	42.38	42.68	42.95	43.28	43.26	43.62	43.53	43.94	43.89	44.29	44.08	44.50	44.91
32848.0	42.36	42.65	42.93	43.26	43.23	43.60	43.50	43.91	43.86	44.26	44.05	44.47	44.87
32854.0	42.34	42.63	42.90	43.23	43.21	43.57	43.48	43.88	43.83	44.23	44.02	44.44	44.84
32860.0	42.32	42.61	42.88	43.21	43.19	43.55	43.46	43.86	43.81	44.19	43.99	44.41	44.80
32866.0	42.30	42.59	42.86	43.19	43.16	43.52	43.43	43.83	43.78	44.16	43.95	44.37	44.77
32872.0	42.28	42.57	42.84	43.16	43.14	43.50	43.41	43.80	43.75	44.12	43.92	44.33	44.73
32878.0	42.26	42.55	42.82	43.14	43.12	43.48	43.39	43.77	43.72	44.09	43.90	44.31	44.70
32884.0	42.24	42.53	42.80	43.12	43.10	43.45	43.36	43.75	43.70	44.07	43.87	44.28	44.67
32890.0	42.22	42.51	42.78	43.10	43.08	43.43	43.34	43.73	43.68	44.05	43.85	44.25	44.65
32896.0	42.20	42.49	42.76	43.08	43.06	43.41	43.32	43.71	43.66	44.02	43.83	44.23	44.62
32902.0	42.18	42.47	42.74	43.06	43.04	43.39	43.30	43.68	43.64	44.00	43.81	44.21	44.60
32908.0	42.16	42.45	42.72	43.04	43.02	43.37	43.28	43.66	43.61	43.98	43.78	44.18	44.57
32914.0	42.15	42.43	42.70	43.02	43.00	43.35	43.26	43.64	43.59	43.96	43.76	44.16	44.55
32920.0	42.13	42.42	42.68	43.00	42.98	43.33	43.24	43.62	43.57	43.94	43.74	44.14	44.53
32926.0	42.11	42.40	42.66	42.98	42.96	43.31	43.22	43.60	43.55	43.91	43.72	44.12	44.51
32932.0	42.09	42.38	42.64	42.96	42.94	43.28	43.20	43.57	43.53	43.89	43.70	44.09	44.48
32938.0	42.07	42.36	42.62	42.94	42.92	43.26	43.18	43.55	43.50	43.87	43.67	44.07	44.46
32944.0	42.05	42.34	42.60	42.92	42.90	43.24	43.16	43.53	43.48	43.84	43.65	44.05	44.44
32950.0	42.04	42.32	42.59	42.90	42.88	43.22	43.14	43.51	43.46	43.82	43.63	44.02	44.41
32956.0	42.02	42.30	42.57	42.88	42.86	43.20	43.12	43.49	43.44	43.80	43.61	44.00	44.39
32962.0	42.00	42.29	42.55	42.86	42.84	43.18	43.09	43.46	43.42	43.78	43.58	43.97	44.36
32968.0	41.98	42.27	42.53	42.84	42.82	43.16	43.07	43.44	43.40	43.75	43.56	43.95	44.34
32974.0	41.96	42.25	42.51	42.82	42.80	43.14	43.05	43.42	43.37	43.73	43.54	43.93	44.31
32980.0	41.95	42.23	42.49	42.80	42.78	43.12	43.03	43.40	43.35	43.71	43.52	43.90	44.28
32986.0	41.93	42.21	42.47	42.79	42.76	43.10	43.01	43.38	43.33	43.68	43.49	43.88	44.26
32991.8	41.91	42.20	42.46	42.77	42.74	43.08	43.00	43.36	43.31	43.66	43.47	43.86	44.24
32997.6	41.89	42.18	42.44	42.75	42.73	43.06	42.98	43.34	43.29	43.64	43.45	43.84	44.22
33003.4	41.87	42.16	42.42	42.73	42.71	43.04	42.96	43.32	43.27	43.62	43.44	43.82	44.19

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33009.2	41.85	42.14	42.40	42.71	42.69	43.03	42.94	43.30	43.26	43.60	43.42	43.80	44.17
33015.0	41.84	42.12	42.38	42.69	42.67	43.01	42.92	43.28	43.24	43.58	43.40	43.78	44.15
33020.9	41.82	42.10	42.36	42.68	42.65	42.99	42.90	43.26	43.22	43.56	43.38	43.75	44.13
33026.7	41.80	42.08	42.34	42.66	42.63	42.97	42.89	43.24	43.20	43.54	43.36	43.73	44.11
33032.5	41.78	42.06	42.32	42.64	42.62	42.95	42.87	43.22	43.18	43.52	43.34	43.71	44.09
33038.3	41.76	42.05	42.31	42.62	42.60	42.93	42.85	43.20	43.16	43.50	43.32	43.69	44.06
33044.1	41.74	42.03	42.29	42.60	42.58	42.91	42.83	43.18	43.14	43.48	43.30	43.67	44.04
33049.9	41.72	42.01	42.27	42.58	42.56	42.89	42.81	43.17	43.12	43.46	43.28	43.65	44.02
33055.7	41.70	41.99	42.25	42.56	42.54	42.88	42.79	43.15	43.10	43.44	43.26	43.63	44.00
33061.5	41.68	41.97	42.23	42.54	42.52	42.86	42.77	43.13	43.08	43.42	43.24	43.61	43.98
33067.3	41.66	41.95	42.21	42.53	42.50	42.84	42.75	43.11	43.06	43.40	43.22	43.59	43.96
33073.1	41.64	41.93	42.19	42.51	42.48	42.82	42.73	43.09	43.04	43.38	43.20	43.56	43.94
33079.0	41.62	41.91	42.17	42.49	42.46	42.80	42.72	43.07	43.02	43.36	43.18	43.54	43.91
33084.8	41.60	41.89	42.15	42.47	42.44	42.78	42.70	43.05	43.00	43.34	43.16	43.52	43.89
33090.6	41.57	41.87	42.13	42.45	42.43	42.76	42.68	43.03	42.98	43.31	43.14	43.50	43.87
33096.4	41.55	41.85	42.11	42.43	42.41	42.74	42.66	43.01	42.96	43.29	43.12	43.48	43.85
33102.2	41.53	41.83	42.09	42.41	42.39	42.72	42.64	42.99	42.94	43.27	43.10	43.46	43.83
33108.0	41.51	41.80	42.07	42.39	42.37	42.70	42.62	42.97	42.92	43.25	43.08	43.44	43.81
33113.9	41.49	41.79	42.05	42.37	42.35	42.68	42.60	42.94	42.90	43.23	43.05	43.41	43.78
33119.8	41.47	41.77	42.03	42.35	42.33	42.66	42.58	42.92	42.88	43.21	43.03	43.39	43.76
33125.7	41.45	41.75	42.01	42.33	42.31	42.64	42.56	42.91	42.87	43.19	43.01	43.37	43.74
33131.6	41.44	41.73	42.00	42.32	42.29	42.63	42.54	42.89	42.85	43.17	43.00	43.35	43.72
33137.5	41.42	41.72	41.98	42.30	42.28	42.61	42.53	42.87	42.83	43.16	42.98	43.34	43.70
33143.4	41.40	41.70	41.96	42.28	42.26	42.59	42.51	42.86	42.81	43.14	42.97	43.32	43.68
33149.3	41.38	41.68	41.95	42.27	42.24	42.58	42.50	42.84	42.80	43.12	42.95	43.30	43.66
33155.2	41.37	41.66	41.93	42.25	42.23	42.56	42.48	42.82	42.78	43.10	42.93	43.28	43.64
33161.1	41.35	41.65	41.92	42.24	42.22	42.55	42.47	42.81	42.77	43.09	42.91	43.27	43.62
33166.9	41.33	41.63	41.90	42.23	42.20	42.54	42.45	42.79	42.75	43.08	42.90	43.25	43.61
33172.8	41.32	41.62	41.89	42.22	42.19	42.52	42.44	42.78	42.74	43.06	42.89	43.24	43.59
33178.7	41.30	41.60	41.88	42.20	42.18	42.51	42.43	42.77	42.73	43.04	42.87	43.22	43.57
33184.6	41.29	41.59	41.86	42.18	42.16	42.49	42.41	42.75	42.71	43.03	42.86	43.20	43.55
33190.5	41.27	41.57	41.85	42.17	42.15	42.48	42.40	42.74	42.69	43.01	42.84	43.19	43.54
33196.4	41.26	41.56	41.83	42.16	42.13	42.47	42.38	42.72	42.68	43.00	42.83	43.17	43.52
33202.3	41.24	41.54	41.82	42.14	42.12	42.45	42.37	42.71	42.67	42.98	42.82	43.16	43.51
33208.2	41.23	41.53	41.81	42.13	42.11	42.44	42.36	42.70	42.66	42.97	42.80	43.15	43.50
33214.1	41.21	41.52	41.79	42.12	42.09	42.42	42.34	42.68	42.64	42.96	42.79	43.13	43.48
33220.0	41.20	41.50	41.78	42.10	42.08	42.41	42.33	42.67	42.63	42.94	42.77	43.12	43.46
33225.9	41.19	41.49	41.76	42.09	42.06	42.39	42.31	42.65	42.61	42.93	42.76	43.10	43.44
33231.8	41.17	41.47	41.75	42.07	42.05	42.38	42.30	42.64	42.60	42.91	42.74	43.08	43.43
33237.7	41.15	41.46	41.73	42.06	42.03	42.36	42.28	42.62	42.58	42.89	42.73	43.07	43.41
33243.6	41.14	41.44	41.72	42.04	42.02	42.35	42.27	42.60	42.56	42.88	42.71	43.05	43.39
33249.5	41.12	41.43	41.70	42.02	42.00	42.33	42.25	42.59	42.55	42.86	42.69	43.03	43.38
33255.4	41.10	41.41	41.69	42.01	41.99	42.31	42.24	42.57	42.53	42.84	42.68	43.01	43.36
33261.3	41.09	41.39	41.67	41.99	41.97	42.30	42.22	42.55	42.52	42.83	42.66	43.00	43.34
33267.2	41.07	41.38	41.65	41.98	41.96	42.28	42.20	42.54	42.50	42.81	42.65	42.98	43.33
33273.1	41.06	41.36	41.64	41.96	41.94	42.27	42.19	42.53	42.49	42.80	42.63	42.97	43.31

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33279.0	41.04	41.35	41.62	41.95	41.92	42.25	42.17	42.51	42.47	42.79	42.62	42.96	43.30
33284.9	41.02	41.33	41.61	41.93	41.91	42.24	42.16	42.50	42.46	42.77	42.61	42.94	43.28
33290.8	41.00	41.31	41.59	41.92	41.89	42.22	42.14	42.49	42.44	42.76	42.60	42.93	43.27
33296.7	40.99	41.30	41.58	41.90	41.88	42.21	42.13	42.47	42.43	42.75	42.58	42.92	43.26
33302.6	40.97	41.28	41.56	41.89	41.87	42.20	42.12	42.46	42.42	42.74	42.57	42.91	43.25
33308.5	40.95	41.26	41.55	41.88	41.85	42.19	42.11	42.45	42.41	42.73	42.56	42.90	43.23
33314.4	40.93	41.24	41.53	41.86	41.84	42.18	42.09	42.44	42.40	42.72	42.55	42.89	43.22
33320.3	40.92	41.23	41.51	41.85	41.82	42.16	42.08	42.43	42.39	42.70	42.54	42.87	43.21
33326.2	40.90	41.21	41.50	41.83	41.81	42.15	42.06	42.41	42.37	42.69	42.52	42.86	43.20
33332.1	40.88	41.19	41.48	41.82	41.79	42.13	42.05	42.40	42.36	42.68	42.51	42.85	43.18
33338.0	40.86	41.18	41.47	41.80	41.78	42.12	42.04	42.39	42.35	42.67	42.50	42.84	43.17
33344.0	40.84	41.16	41.45	41.79	41.76	42.11	42.02	42.38	42.34	42.66	42.49	42.83	43.16
33350.0	40.82	41.14	41.43	41.77	41.75	42.09	42.01	42.37	42.32	42.65	42.48	42.81	43.14
33356.0	40.80	41.12	41.41	41.76	41.73	42.08	41.99	42.35	42.31	42.63	42.46	42.80	43.12
33362.0	40.78	41.10	41.40	41.74	41.71	42.06	41.98	42.34	42.29	42.62	42.45	42.79	43.11
33368.0	40.76	41.08	41.38	41.72	41.70	42.05	41.96	42.32	42.28	42.61	42.43	42.77	43.10
33374.0	40.74	41.06	41.36	41.71	41.68	42.03	41.95	42.31	42.27	42.59	42.42	42.76	43.09
33380.0	40.72	41.04	41.34	41.69	41.66	42.02	41.93	42.30	42.25	42.58	42.41	42.75	43.07
33386.0	40.70	41.03	41.32	41.67	41.65	42.01	41.92	42.29	42.24	42.57	42.40	42.74	43.06
33392.0	40.68	41.01	41.30	41.66	41.63	41.99	41.90	42.27	42.23	42.56	42.38	42.73	43.05
33398.0	40.66	40.99	41.29	41.64	41.61	41.98	41.89	42.26	42.22	42.55	42.37	42.72	43.04
33404.0	40.64	40.97	41.27	41.62	41.60	41.96	41.87	42.25	42.20	42.54	42.36	42.71	43.03
33410.0	40.62	40.95	41.25	41.60	41.58	41.95	41.86	42.24	42.19	42.52	42.35	42.69	43.01
33416.0	40.60	40.93	41.23	41.59	41.56	41.93	41.84	42.22	42.18	42.51	42.34	42.68	43.00
33422.0	40.58	40.91	41.21	41.57	41.54	41.92	41.83	42.21	42.16	42.50	42.32	42.66	42.98
33428.0	40.56	40.89	41.19	41.55	41.53	41.90	41.81	42.19	42.15	42.48	42.31	42.65	42.97
33434.0	40.54	40.87	41.17	41.54	41.51	41.89	41.79	42.18	42.13	42.47	42.29	42.64	42.96
33440.0	40.52	40.85	41.16	41.52	41.49	41.87	41.78	42.16	42.12	42.46	42.28	42.63	42.95
33446.0	40.50	40.83	41.14	41.50	41.48	41.85	41.76	42.15	42.10	42.45	42.27	42.62	42.94
33452.0	40.48	40.81	41.12	41.49	41.46	41.84	41.75	42.13	42.09	42.43	42.25	42.61	42.92
33458.0	40.46	40.79	41.10	41.47	41.44	41.82	41.73	42.12	42.07	42.42	42.23	42.59	42.91
33464.0	40.43	40.77	41.08	41.45	41.42	41.81	41.71	42.10	42.06	42.40	42.22	42.58	42.90
33470.0	40.41	40.75	41.06	41.43	41.41	41.79	41.70	42.09	42.04	42.39	42.20	42.56	42.88
33475.9	40.39	40.73	41.04	41.42	41.39	41.77	41.68	42.07	42.02	42.37	42.19	42.55	42.87
33481.8	40.37	40.71	41.03	41.40	41.37	41.76	41.66	42.06	42.01	42.35	42.17	42.53	42.85
33487.7	40.35	40.69	41.01	41.38	41.36	41.74	41.65	42.04	41.99	42.34	42.16	42.51	42.84
33493.6	40.33	40.67	40.99	41.37	41.34	41.73	41.63	42.02	41.98	42.32	42.14	42.50	42.82
33499.5	40.31	40.65	40.97	41.35	41.32	41.71	41.62	42.01	41.96	42.31	42.13	42.48	42.80
33505.5	40.29	40.64	40.96	41.34	41.31	41.70	41.60	41.99	41.95	42.29	42.11	42.47	42.79
33511.4	40.28	40.62	40.94	41.32	41.29	41.68	41.59	41.98	41.93	42.28	42.10	42.45	42.77
33517.3	40.26	40.60	40.92	41.30	41.28	41.67	41.57	41.96	41.92	42.26	42.08	42.44	42.76
33523.2	40.24	40.58	40.91	41.29	41.26	41.65	41.56	41.95	41.90	42.25	42.07	42.42	42.74
33529.1	40.22	40.57	40.89	41.27	41.25	41.64	41.54	41.93	41.89	42.23	42.05	42.41	42.73
33535.0	40.20	40.55	40.87	41.26	41.23	41.62	41.53	41.92	41.87	42.22	42.04	42.39	42.72
33540.9	40.19	40.53	40.86	41.24	41.21	41.61	41.51	41.91	41.86	42.20	42.02	42.38	42.70
33546.8	40.17	40.52	40.84	41.23	41.20	41.59	41.50	41.89	41.84	42.19	42.01	42.37	42.69

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33552.7	40.15	40.50	40.83	41.21	41.18	41.58	41.48	41.88	41.83	42.18	42.00	42.35	42.68
33558.6	40.14	40.48	40.81	41.20	41.17	41.56	41.47	41.86	41.82	42.16	41.98	42.34	42.66
33564.5	40.12	40.47	40.80	41.18	41.16	41.55	41.45	41.85	41.80	42.15	41.97	42.32	42.65
33570.5	40.11	40.45	40.78	41.17	41.14	41.53	41.44	41.84	41.79	42.13	41.95	42.31	42.63
33576.4	40.09	40.44	40.77	41.16	41.13	41.52	41.43	41.82	41.77	42.12	41.94	42.29	42.62
33582.3	40.08	40.42	40.75	41.14	41.11	41.51	41.41	41.81	41.76	42.11	41.93	42.28	42.61
33588.2	40.06	40.41	40.74	41.13	41.10	41.49	41.40	41.79	41.75	42.09	41.91	42.27	42.60
33594.1	40.05	40.39	40.72	41.11	41.09	41.48	41.38	41.78	41.73	42.08	41.90	42.25	42.58
33600.0	40.03	40.38	40.71	41.10	41.07	41.47	41.37	41.77	41.72	42.06	41.89	42.24	42.57
33605.7	40.02	40.36	40.70	41.09	41.06	41.45	41.36	41.75	41.71	42.05	41.87	42.22	42.56
33611.4	40.00	40.35	40.68	41.07	41.04	41.44	41.34	41.74	41.69	42.03	41.86	42.21	42.54
33617.1	39.99	40.33	40.67	41.06	41.03	41.42	41.33	41.72	41.68	42.02	41.84	42.19	42.53
33622.8	39.97	40.32	40.65	41.04	41.02	41.41	41.31	41.71	41.66	42.01	41.83	42.18	42.51
33628.4	39.95	40.30	40.64	41.03	41.00	41.40	41.30	41.70	41.65	41.99	41.81	42.16	42.50
33634.1	39.94	40.29	40.62	41.02	40.99	41.38	41.29	41.68	41.63	41.98	41.80	42.15	42.48
33639.8	39.92	40.27	40.61	41.00	40.97	41.37	41.27	41.67	41.62	41.96	41.78	42.13	42.47
33645.5	39.90	40.25	40.59	40.99	40.96	41.35	41.26	41.65	41.61	41.95	41.77	42.12	42.45
33651.2	39.89	40.24	40.58	40.97	40.95	41.34	41.24	41.64	41.59	41.93	41.76	42.10	42.43
33656.9	39.87	40.22	40.56	40.96	40.93	41.33	41.23	41.62	41.58	41.92	41.74	42.09	42.42
33662.6	39.85	40.21	40.55	40.94	40.92	41.31	41.22	41.61	41.56	41.90	41.73	42.07	42.40
33668.3	39.84	40.19	40.53	40.93	40.90	41.30	41.20	41.60	41.55	41.89	41.71	42.06	42.39
33673.9	39.82	40.17	40.52	40.92	40.89	41.28	41.19	41.58	41.54	41.87	41.70	42.04	42.37
33679.6	39.80	40.16	40.50	40.90	40.87	41.27	41.17	41.57	41.52	41.86	41.68	42.03	42.36
33685.3	39.78	40.14	40.49	40.89	40.86	41.26	41.16	41.55	41.51	41.84	41.67	42.01	42.34
33691.0	39.76	40.12	40.47	40.87	40.84	41.24	41.15	41.54	41.49	41.83	41.65	42.00	42.32
33696.8	39.75	40.11	40.46	40.86	40.83	41.23	41.13	41.53	41.48	41.82	41.64	41.98	42.31
33702.6	39.73	40.10	40.44	40.85	40.82	41.22	41.12	41.51	41.47	41.80	41.63	41.97	42.30
33708.4	39.72	40.08	40.43	40.83	40.80	41.20	41.11	41.50	41.46	41.79	41.62	41.96	42.28
33714.2	39.71	40.07	40.42	40.82	40.79	41.19	41.10	41.49	41.44	41.78	41.61	41.95	42.27
33720.0	39.69	40.05	40.40	40.81	40.78	41.18	41.08	41.48	41.43	41.77	41.60	41.94	42.26
33725.8	39.68	40.04	40.39	40.80	40.77	41.17	41.07	41.47	41.42	41.76	41.58	41.93	42.25
33731.6	39.66	40.02	40.38	40.78	40.75	41.16	41.06	41.46	41.41	41.74	41.57	41.91	42.24
33737.4	39.65	40.01	40.36	40.77	40.74	41.14	41.05	41.44	41.40	41.73	41.56	41.90	42.23
33743.2	39.63	40.00	40.35	40.76	40.73	41.13	41.03	41.43	41.38	41.72	41.55	41.89	42.22
33749.0	39.62	39.98	40.33	40.74	40.72	41.12	41.02	41.42	41.37	41.71	41.53	41.88	42.21
33754.8	39.60	39.97	40.32	40.73	40.70	41.10	41.01	41.41	41.36	41.69	41.52	41.87	42.20
33760.6	39.59	39.95	40.31	40.72	40.69	41.09	41.00	41.39	41.35	41.68	41.51	41.85	42.18
33766.4	39.57	39.94	40.29	40.71	40.68	41.08	40.98	41.38	41.33	41.67	41.50	41.84	42.17
33772.2	39.56	39.93	40.28	40.69	40.66	41.07	40.97	41.37	41.32	41.66	41.49	41.83	42.16
33778.0	39.54	39.91	40.27	40.68	40.65	41.05	40.96	41.36	41.31	41.65	41.47	41.82	42.15
33783.8	39.53	39.90	40.25	40.67	40.64	41.04	40.94	41.34	41.30	41.64	41.46	41.81	42.14
33789.6	39.51	39.88	40.24	40.65	40.63	41.03	40.93	41.33	41.28	41.62	41.45	41.80	42.14
33795.4	39.50	39.87	40.23	40.64	40.61	41.02	40.92	41.32	41.27	41.61	41.44	41.79	42.13
33801.2	39.49	39.86	40.21	40.63	40.60	41.00	40.91	41.31	41.26	41.60	41.42	41.78	42.12
33807.0	39.47	39.84	40.20	40.62	40.59	40.99	40.89	41.29	41.25	41.59	41.41	41.76	42.12
33812.8	39.44	39.81	40.17	40.58	40.55	40.95	40.86	41.25	41.21	41.55	41.37	41.72	42.07

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33818.7	39.42	39.78	40.14	40.55	40.52	40.92	40.82	41.22	41.17	41.51	41.34	41.68	42.04
33824.5	39.40	39.75	40.11	40.51	40.49	40.88	40.79	41.18	41.13	41.47	41.30	41.65	42.00
33830.4	39.37	39.72	40.08	40.48	40.45	40.85	40.75	41.14	41.10	41.44	41.26	41.61	41.97
33836.2	39.35	39.70	40.05	40.45	40.42	40.81	40.72	41.11	41.06	41.40	41.23	41.58	41.93
33842.1	39.33	39.68	40.02	40.42	40.39	40.78	40.69	41.08	41.03	41.37	41.20	41.55	41.89
33847.9	39.31	39.66	40.00	40.40	40.37	40.76	40.66	41.05	41.00	41.34	41.17	41.52	41.87
33853.8	39.29	39.64	39.98	40.37	40.34	40.73	40.64	41.02	40.97	41.31	41.14	41.49	41.84
33859.6	39.27	39.61	39.96	40.35	40.32	40.70	40.61	40.99	40.95	41.29	41.11	41.46	41.82
33865.5	39.25	39.59	39.93	40.33	40.30	40.68	40.59	40.97	40.92	41.26	41.08	41.44	41.79
33871.3	39.23	39.57	39.91	40.30	40.28	40.65	40.56	40.94	40.89	41.23	41.05	41.41	41.76
33877.2	39.21	39.55	39.89	40.28	40.25	40.63	40.54	40.91	40.87	41.20	41.03	41.38	41.73
33883.0	39.19	39.53	39.87	40.26	40.23	40.61	40.52	40.89	40.84	41.18	41.00	41.35	41.70
33888.9	39.17	39.52	39.85	40.24	40.21	40.59	40.50	40.87	40.83	41.16	40.99	41.34	41.68
33894.8	39.16	39.50	39.84	40.22	40.20	40.57	40.48	40.85	40.81	41.14	40.97	41.32	41.67
33900.7	39.14	39.49	39.82	40.20	40.18	40.55	40.46	40.83	40.79	41.12	40.94	41.29	41.67
33906.6	39.13	39.47	39.81	40.18	40.16	40.53	40.44	40.81	40.77	41.10	40.92	41.27	41.65
33912.5	39.12	39.46	39.79	40.17	40.14	40.51	40.42	40.79	40.75	41.08	40.91	41.26	41.63
33918.5	39.11	39.45	39.77	40.15	40.13	40.50	40.41	40.78	40.74	41.07	40.89	41.25	41.62
33924.4	39.10	39.44	39.77	40.15	40.12	40.50	40.41	40.78	40.73	41.06	40.89	41.24	41.61
33930.3	39.09	39.43	39.76	40.14	40.12	40.50	40.41	40.78	40.73	41.07	40.89	41.24	41.61
33936.2	39.08	39.42	39.76	40.14	40.12	40.50	40.41	40.78	40.74	41.07	40.90	41.25	41.62
33942.1	39.07	39.42	39.76	40.15	40.12	40.51	40.41	40.79	40.75	41.08	40.91	41.26	41.63
33948.0	39.07	39.42	39.76	40.15	40.13	40.52	40.42	40.81	40.76	41.10	40.92	41.28	41.65
33953.9	39.06	39.41	39.75	40.14	40.11	40.50	40.41	40.79	40.74	41.08	40.91	41.26	41.63
33959.8	39.04	39.40	39.73	40.13	40.10	40.48	40.39	40.77	40.73	41.07	40.89	41.25	41.61
33965.7	39.03	39.38	39.72	40.11	40.08	40.47	40.38	40.76	40.71	41.05	40.87	41.23	41.59
33971.6	39.01	39.37	39.71	40.10	40.07	40.45	40.36	40.74	40.69	41.03	40.85	41.21	41.57
33977.5	39.00	39.35	39.69	40.08	40.05	40.44	40.35	40.72	40.68	41.01	40.84	41.19	41.56
33983.4	38.99	39.34	39.68	40.07	40.04	40.43	40.33	40.71	40.67	41.00	40.82	41.18	41.54
33989.3	38.97	39.33	39.66	40.06	40.03	40.41	40.32	40.70	40.65	40.98	40.81	41.16	41.52
33995.2	38.96	39.31	39.65	40.04	40.01	40.39	40.30	40.68	40.63	40.96	40.79	41.14	41.50
34001.1	38.94	39.30	39.64	40.03	40.00	40.38	40.29	40.66	40.62	40.94	40.77	41.12	41.47
34006.9	38.93	39.28	39.62	40.01	39.98	40.37	40.28	40.65	40.60	40.93	40.76	41.10	41.46
34012.8	38.91	39.27	39.61	40.00	39.97	40.35	40.26	40.63	40.59	40.92	40.74	41.09	41.44
34018.7	38.90	39.26	39.59	39.98	39.95	40.34	40.24	40.61	40.57	40.90	40.72	41.07	41.42
34024.6	38.88	39.24	39.58	39.97	39.94	40.32	40.23	40.60	40.55	40.88	40.71	41.04	41.40
34030.5	38.87	39.23	39.57	39.95	39.93	40.30	40.21	40.58	40.54	40.86	40.69	41.03	41.38
34036.4	38.85	39.21	39.55	39.94	39.91	40.29	40.20	40.56	40.52	40.84	40.67	41.01	41.37
34042.3	38.84	39.20	39.54	39.93	39.90	40.28	40.19	40.55	40.51	40.83	40.66	41.00	41.35
34048.2	38.82	39.18	39.52	39.91	39.89	40.26	40.18	40.54	40.50	40.81	40.65	40.98	41.34
34054.1	38.80	39.17	39.51	39.90	39.88	40.26	40.17	40.53	40.49	40.80	40.64	40.97	41.33
34060.0	38.79	39.15	39.50	39.89	39.87	40.25	40.16	40.52	40.48	40.80	40.63	40.97	41.33
34065.8	38.77	39.14	39.49	39.88	39.86	40.23	40.14	40.51	40.46	40.79	40.62	40.95	41.31
34071.6	38.76	39.12	39.47	39.87	39.84	40.22	40.13	40.50	40.45	40.77	40.60	40.93	41.30
34077.3	38.74	39.11	39.46	39.86	39.83	40.21	40.12	40.48	40.44	40.76	40.59	40.92	41.28
34083.1	38.72	39.09	39.45	39.85	39.82	40.20	40.11	40.47	40.43	40.75	40.58	40.91	41.27

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
34088.9	38.70	39.08	39.43	39.83	39.80	40.19	40.10	40.46	40.41	40.73	40.56	40.90	41.26
34094.7	38.69	39.06	39.42	39.82	39.79	40.17	40.08	40.44	40.40	40.72	40.55	40.89	41.24
34100.4	38.67	39.05	39.40	39.80	39.78	40.16	40.07	40.43	40.38	40.70	40.54	40.87	41.24
34106.2	38.65	39.03	39.39	39.79	39.76	40.14	40.06	40.41	40.37	40.69	40.52	40.85	41.22
34112.0	38.64	39.01	39.37	39.77	39.75	40.13	40.04	40.40	40.36	40.67	40.50	40.84	41.20
34117.8	38.62	39.00	39.35	39.76	39.73	40.11	40.02	40.38	40.34	40.66	40.49	40.83	41.18
34123.6	38.60	38.98	39.34	39.74	39.71	40.10	40.01	40.37	40.33	40.64	40.47	40.81	41.17
34129.3	38.58	38.96	39.32	39.73	39.70	40.08	39.99	40.35	40.31	40.63	40.46	40.79	41.16
34135.1	38.57	38.95	39.30	39.71	39.68	40.06	39.98	40.33	40.29	40.61	40.44	40.77	41.14
34140.9	38.55	38.93	39.29	39.69	39.67	40.05	39.96	40.32	40.28	40.60	40.42	40.76	41.13
34146.7	38.53	38.91	39.27	39.68	39.65	40.03	39.94	40.30	40.26	40.58	40.41	40.74	41.11
34152.4	38.52	38.89	39.25	39.66	39.63	40.01	39.92	40.28	40.24	40.56	40.39	40.73	41.09
34158.2	38.50	38.88	39.24	39.64	39.61	40.00	39.91	40.27	40.22	40.55	40.37	40.71	41.08
34164.0	38.48	38.86	39.22	39.63	39.60	39.98	39.89	40.25	40.20	40.53	40.35	40.70	41.07
34169.9	38.46	38.84	39.20	39.61	39.58	39.96	39.87	40.23	40.19	40.51	40.34	40.68	41.05
34175.8	38.44	38.82	39.19	39.59	39.56	39.95	39.86	40.21	40.17	40.49	40.32	40.66	41.04
34181.7	38.43	38.81	39.17	39.57	39.55	39.93	39.84	40.20	40.15	40.47	40.30	40.65	41.03
34187.6	38.41	38.79	39.15	39.56	39.53	39.91	39.82	40.18	40.14	40.46	40.28	40.63	41.02
34193.5	38.39	38.77	39.13	39.54	39.51	39.89	39.80	40.16	40.12	40.44	40.26	40.61	41.00
34199.4	38.37	38.75	39.11	39.52	39.49	39.87	39.78	40.14	40.10	40.42	40.24	40.59	40.98
34205.3	38.35	38.73	39.09	39.50	39.47	39.85	39.76	40.12	40.08	40.40	40.23	40.58	40.96
34211.2	38.33	38.71	39.07	39.48	39.45	39.83	39.75	40.10	40.06	40.39	40.21	40.56	40.95
34217.1	38.31	38.69	39.05	39.46	39.43	39.82	39.73	40.08	40.04	40.37	40.19	40.54	40.93
34222.9	38.30	38.67	39.02	39.43	39.40	39.79	39.71	40.06	40.02	40.35	40.17	40.52	40.91
34228.8	38.28	38.64	38.99	39.40	39.37	39.77	39.68	40.04	39.99	40.33	40.14	40.50	40.89
34234.7	38.26	38.62	38.97	39.38	39.35	39.74	39.65	40.01	39.97	40.30	40.12	40.48	40.87
34240.6	38.24	38.60	38.95	39.36	39.33	39.72	39.63	39.99	39.95	40.28	40.10	40.46	40.85
34246.5	38.22	38.58	38.93	39.33	39.30	39.69	39.60	39.97	39.92	40.26	40.08	40.44	40.84
34252.4	38.20	38.56	38.91	39.31	39.28	39.67	39.58	39.94	39.90	40.24	40.05	40.42	40.82
34258.3	38.18	38.54	38.89	39.29	39.26	39.65	39.56	39.92	39.88	40.22	40.03	40.40	40.80
34264.2	38.16	38.52	38.87	39.27	39.24	39.62	39.53	39.90	39.85	40.20	40.01	40.38	40.78
34270.1	38.14	38.50	38.85	39.25	39.22	39.60	39.51	39.87	39.83	40.18	39.99	40.36	40.77
34276.0	38.12	38.48	38.83	39.22	39.20	39.58	39.49	39.85	39.81	40.16	39.96	40.34	40.75
34282.0	38.10	38.46	38.81	39.21	39.18	39.56	39.47	39.83	39.79	40.14	39.95	40.33	40.74
34288.0	38.09	38.45	38.79	39.19	39.16	39.54	39.45	39.82	39.77	40.13	39.93	40.31	40.73
34294.0	38.07	38.43	38.78	39.18	39.15	39.53	39.44	39.80	39.76	40.12	39.92	40.30	40.72
34300.0	38.05	38.42	38.76	39.16	39.13	39.51	39.42	39.79	39.74	40.10	39.90	40.29	40.71
34306.0	38.04	38.40	38.75	39.14	39.12	39.50	39.41	39.77	39.73	40.09	39.89	40.27	40.70
34312.0	38.02	38.38	38.73	39.13	39.10	39.48	39.39	39.76	39.71	40.07	39.87	40.26	40.68
34318.0	38.01	38.37	38.71	39.11	39.08	39.46	39.37	39.74	39.70	40.06	39.86	40.25	40.67
34324.0	37.99	38.35	38.70	39.10	39.07	39.45	39.36	39.72	39.68	40.04	39.84	40.23	40.66
34330.0	37.98	38.34	38.68	39.08	39.05	39.43	39.34	39.71	39.66	40.03	39.82	40.22	40.65
34336.0	37.96	38.32	38.67	39.06	39.03	39.42	39.33	39.69	39.65	40.01	39.81	40.20	40.64
34342.0	37.94	38.30	38.65	39.05	39.02	39.40	39.31	39.68	39.63	40.00	39.79	40.19	40.62
34348.0	37.93	38.29	38.63	39.03	39.00	39.38	39.29	39.66	39.62	39.98	39.78	40.18	40.61
34354.0	37.91	38.27	38.62	39.01	38.99	39.37	39.28	39.64	39.60	39.97	39.76	40.16	40.60

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
34360.0	37.90	38.26	38.60	39.00	38.97	39.35	39.26	39.63	39.58	39.95	39.74	40.15	40.59
34366.0	37.88	38.24	38.58	38.98	38.95	39.33	39.25	39.61	39.57	39.94	39.73	40.13	40.58
34372.0	37.86	38.23	38.57	38.96	38.94	39.32	39.23	39.59	39.55	39.93	39.71	40.12	40.57
34378.0	37.85	38.21	38.55	38.95	38.92	39.30	39.21	39.58	39.53	39.91	39.70	40.11	40.56
34384.0	37.83	38.19	38.54	38.93	38.90	39.29	39.20	39.56	39.52	39.90	39.68	40.09	40.55
34389.8	37.82	38.18	38.52	38.92	38.89	39.27	39.18	39.55	39.50	39.88	39.67	40.08	40.54
34395.5	37.80	38.16	38.50	38.90	38.87	39.25	39.17	39.53	39.49	39.87	39.65	40.07	40.53
34401.3	37.79	38.15	38.49	38.89	38.86	39.24	39.15	39.52	39.47	39.86	39.64	40.06	40.52
34407.0	37.77	38.13	38.47	38.87	38.84	39.22	39.14	39.50	39.46	39.84	39.62	40.04	40.51
34412.8	37.76	38.12	38.46	38.86	38.83	39.21	39.12	39.49	39.44	39.83	39.61	40.03	40.50
34418.5	37.74	38.10	38.44	38.84	38.81	39.19	39.11	39.47	39.43	39.82	39.60	40.02	40.50
34424.3	37.73	38.09	38.43	38.83	38.80	39.18	39.09	39.46	39.41	39.81	39.58	40.01	40.49
34430.0	37.71	38.07	38.41	38.81	38.78	39.16	39.08	39.45	39.40	39.80	39.57	40.00	40.48
34435.8	37.70	38.06	38.40	38.80	38.77	39.15	39.06	39.43	39.39	39.78	39.56	39.99	40.47
34441.5	37.68	38.04	38.38	38.78	38.75	39.14	39.05	39.42	39.37	39.77	39.54	39.98	40.47
34447.3	37.66	38.03	38.37	38.77	38.74	39.12	39.03	39.41	39.36	39.76	39.53	39.97	40.46
34453.0	37.65	38.01	38.35	38.75	38.73	39.11	39.02	39.40	39.35	39.75	39.52	39.96	40.45
34458.8	37.63	38.00	38.34	38.74	38.71	39.10	39.00	39.38	39.34	39.74	39.51	39.95	40.45
34464.5	37.62	37.98	38.33	38.72	38.70	39.08	38.99	39.37	39.32	39.73	39.50	39.94	40.44
34470.3	37.61	37.97	38.31	38.71	38.68	39.07	38.98	39.36	39.31	39.72	39.49	39.93	40.44
34476.0	37.59	37.95	38.30	38.70	38.67	39.05	38.96	39.35	39.30	39.71	39.48	39.92	40.43
34481.9	37.57	37.94	38.28	38.68	38.65	39.04	38.95	39.33	39.29	39.70	39.46	39.91	40.42
34487.8	37.56	37.92	38.27	38.67	38.64	39.02	38.93	39.32	39.27	39.69	39.45	39.90	40.42
34493.6	37.54	37.90	38.25	38.65	38.62	39.01	38.92	39.31	39.26	39.68	39.44	39.89	40.41
34499.5	37.52	37.89	38.23	38.63	38.60	38.99	38.90	39.29	39.25	39.67	39.43	39.88	40.40
34505.4	37.51	37.87	38.22	38.62	38.59	38.98	38.88	39.28	39.23	39.65	39.42	39.87	40.40
34511.3	37.49	37.86	38.20	38.60	38.57	38.96	38.87	39.27	39.22	39.64	39.40	39.86	40.39
34517.2	37.48	37.84	38.18	38.58	38.56	38.95	38.85	39.25	39.20	39.63	39.39	39.85	40.38
34523.1	37.46	37.82	38.17	38.57	38.54	38.93	38.83	39.24	39.19	39.62	39.38	39.84	40.38
34528.9	37.44	37.81	38.15	38.55	38.52	38.91	38.82	39.22	39.17	39.61	39.36	39.83	40.37
34534.8	37.42	37.79	38.13	38.53	38.51	38.90	38.80	39.21	39.16	39.59	39.35	39.82	40.36
34540.7	37.41	37.77	38.12	38.52	38.49	38.88	38.79	39.19	39.14	39.58	39.33	39.81	40.36
34546.6	37.39	37.76	38.10	38.50	38.47	38.87	38.77	39.18	39.13	39.57	39.32	39.80	40.35
34552.5	37.37	37.74	38.08	38.48	38.46	38.85	38.75	39.16	39.11	39.56	39.31	39.79	40.34
34558.4	37.36	37.72	38.07	38.47	38.44	38.83	38.74	39.15	39.10	39.55	39.30	39.78	40.34
34564.2	37.34	37.70	38.05	38.45	38.42	38.82	38.72	39.13	39.08	39.54	39.28	39.77	40.33
34570.1	37.32	37.69	38.03	38.43	38.40	38.80	38.70	39.12	39.06	39.52	39.27	39.76	40.33
34576.0	37.30	37.67	38.01	38.42	38.39	38.78	38.69	39.10	39.05	39.51	39.25	39.75	40.32
34581.9	37.28	37.65	37.99	38.40	38.37	38.77	38.67	39.08	39.03	39.50	39.24	39.74	40.31
34587.9	37.27	37.63	37.97	38.38	38.35	38.75	38.65	39.07	39.01	39.48	39.22	39.73	40.31
34593.8	37.25	37.61	37.95	38.36	38.33	38.73	38.63	39.05	39.00	39.47	39.21	39.72	40.30
34599.8	37.23	37.59	37.93	38.34	38.31	38.71	38.61	39.03	38.98	39.46	39.19	39.71	40.29
34605.7	37.21	37.57	37.91	38.32	38.29	38.69	38.59	39.01	38.96	39.44	39.18	39.70	40.28
34611.7	37.19	37.55	37.89	38.30	38.27	38.67	38.57	38.99	38.94	39.43	39.16	39.68	40.27
34617.6	37.17	37.53	37.87	38.28	38.25	38.65	38.55	38.98	38.92	39.42	39.14	39.67	40.27
34623.6	37.15	37.51	37.85	38.26	38.23	38.63	38.53	38.96	38.91	39.40	39.13	39.66	40.26

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
34629.5	37.13	37.49	37.83	38.24	38.21	38.61	38.51	38.94	38.89	39.39	39.11	39.65	40.25
34635.4	37.11	37.47	37.81	38.22	38.19	38.59	38.49	38.92	38.87	39.38	39.10	39.64	40.24
34641.4	37.09	37.45	37.79	38.20	38.17	38.57	38.47	38.90	38.85	39.36	39.08	39.63	40.24
34647.3	37.07	37.43	37.77	38.18	38.15	38.56	38.45	38.88	38.83	39.35	39.06	39.62	40.23
34653.3	37.05	37.41	37.75	38.16	38.13	38.54	38.43	38.87	38.81	39.34	39.05	39.61	40.22
34659.2	37.03	37.39	37.73	38.14	38.11	38.52	38.41	38.85	38.79	39.32	39.03	39.60	40.21
34665.2	37.01	37.37	37.71	38.12	38.09	38.50	38.39	38.83	38.78	39.31	39.02	39.58	40.21
34671.1	36.99	37.35	37.69	38.10	38.07	38.48	38.37	38.81	38.76	39.30	39.00	39.57	40.20
34677.1	36.97	37.33	37.67	38.08	38.05	38.46	38.35	38.79	38.74	39.28	38.98	39.56	40.19
34683.0	36.95	37.31	37.65	38.06	38.03	38.44	38.33	38.78	38.72	39.27	38.97	39.55	40.18
34688.7	36.94	37.30	37.63	38.04	38.01	38.42	38.32	38.76	38.71	39.26	38.96	39.54	40.18
34694.5	36.92	37.28	37.62	38.02	37.99	38.41	38.30	38.75	38.69	39.25	38.95	39.53	40.17
34700.2	36.90	37.26	37.60	38.01	37.98	38.39	38.29	38.74	38.68	39.24	38.93	39.53	40.17
34705.9	36.89	37.25	37.58	37.99	37.96	38.38	38.27	38.72	38.67	39.23	38.92	39.52	40.17
34711.7	36.87	37.23	37.57	37.98	37.95	38.37	38.26	38.71	38.66	39.22	38.91	39.51	40.16
34717.4	36.86	37.21	37.55	37.96	37.93	38.35	38.25	38.70	38.64	39.22	38.90	39.51	40.16
34723.2	36.84	37.20	37.54	37.95	37.92	38.34	38.23	38.69	38.63	39.21	38.89	39.50	40.15
34728.9	36.82	37.18	37.52	37.93	37.90	38.33	38.22	38.67	38.62	39.20	38.88	39.49	40.15
34734.6	36.81	37.17	37.50	37.92	37.89	38.31	38.20	38.66	38.61	39.19	38.87	39.49	40.15
34740.4	36.79	37.15	37.49	37.90	37.87	38.30	38.19	38.65	38.60	39.18	38.86	39.48	40.14
34746.1	36.78	37.13	37.47	37.89	37.86	38.29	38.18	38.64	38.58	39.18	38.85	39.47	40.14
34751.8	36.76	37.12	37.46	37.88	37.85	38.27	38.16	38.63	38.57	39.17	38.84	39.47	40.13
34757.6	36.74	37.10	37.44	37.86	37.83	38.26	38.15	38.62	38.56	39.16	38.84	39.46	40.13
34763.3	36.73	37.09	37.43	37.85	37.82	38.25	38.14	38.61	38.55	39.16	38.83	39.46	40.13
34769.1	36.71	37.07	37.41	37.84	37.81	38.24	38.13	38.60	38.54	39.15	38.82	39.45	40.12
34774.8	36.70	37.06	37.40	37.82	37.79	38.23	38.12	38.59	38.53	39.14	38.81	39.44	40.12
34780.5	36.68	37.04	37.38	37.81	37.78	38.22	38.10	38.58	38.52	39.14	38.80	39.44	40.12
34786.3	36.67	37.03	37.37	37.80	37.77	38.20	38.09	38.57	38.51	39.13	38.79	39.43	40.11
34792.0	36.66	37.01	37.36	37.78	37.75	38.19	38.08	38.56	38.50	39.12	38.79	39.43	40.11
34797.8	36.64	37.00	37.34	37.77	37.74	38.18	38.07	38.55	38.49	39.12	38.78	39.42	40.11
34803.6	36.62	36.98	37.33	37.75	37.72	38.16	38.05	38.53	38.47	39.11	38.77	39.42	40.10
34809.4	36.61	36.97	37.31	37.74	37.70	38.15	38.03	38.52	38.46	39.10	38.76	39.41	40.10
34815.2	36.59	36.95	37.30	37.72	37.69	38.13	38.02	38.51	38.45	39.09	38.75	39.40	40.10
34821.0	36.57	36.94	37.28	37.70	37.67	38.12	38.00	38.49	38.43	39.09	38.74	39.40	40.10
34826.9	36.56	36.92	37.27	37.68	37.65	38.10	37.98	38.48	38.42	39.08	38.73	39.39	40.09
34832.7	36.54	36.90	37.25	37.67	37.64	38.08	37.96	38.46	38.40	39.07	38.72	39.39	40.09
34838.5	36.52	36.89	37.24	37.65	37.62	38.07	37.95	38.45	38.39	39.06	38.71	39.38	40.08
34844.3	36.51	36.87	37.22	37.64	37.61	38.05	37.93	38.44	38.37	39.06	38.70	39.37	40.07
34850.1	36.49	36.86	37.21	37.62	37.59	38.04	37.92	38.42	38.36	39.05	38.69	39.37	40.07
34855.9	36.47	36.84	37.19	37.61	37.58	38.02	37.90	38.41	38.35	39.04	38.68	39.36	40.06
34861.7	36.46	36.83	37.18	37.59	37.56	38.01	37.89	38.40	38.34	39.04	38.67	39.36	40.06
34867.5	36.44	36.81	37.17	37.58	37.55	37.99	37.87	38.39	38.32	39.03	38.67	39.35	40.05
34873.3	36.43	36.80	37.15	37.56	37.53	37.98	37.86	38.38	38.31	39.02	38.66	39.35	40.05
34879.1	36.41	36.79	37.14	37.55	37.52	37.97	37.85	38.36	38.30	39.02	38.65	39.34	40.04
34885.0	36.40	36.77	37.12	37.54	37.51	37.95	37.83	38.35	38.29	39.01	38.64	39.33	40.03
34890.8	36.38	36.76	37.11	37.52	37.49	37.94	37.82	38.34	38.28	39.00	38.63	39.33	40.03

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
34896.6	36.37	36.74	37.10	37.51	37.48	37.93	37.81	38.33	38.27	39.00	38.63	39.32	40.03
34902.4	36.35	36.73	37.08	37.49	37.46	37.92	37.79	38.32	38.25	38.99	38.62	39.32	40.02
34908.2	36.34	36.72	37.07	37.48	37.45	37.90	37.78	38.31	38.24	38.99	38.61	39.31	40.02
34914.0	36.32	36.70	37.05	37.47	37.44	37.89	37.77	38.30	38.23	38.98	38.60	39.31	40.02
34919.9	36.31	36.68	37.04	37.45	37.42	37.88	37.75	38.29	38.22	38.97	38.59	39.30	40.01
34925.9	36.29	36.67	37.02	37.43	37.40	37.86	37.74	38.28	38.21	38.97	38.59	39.30	40.01
34931.9	36.27	36.65	37.01	37.42	37.39	37.85	37.72	38.26	38.20	38.96	38.58	39.29	40.00
34937.8	36.26	36.63	36.99	37.40	37.37	37.83	37.71	38.25	38.18	38.95	38.57	39.29	40.00
34943.8	36.24	36.62	36.97	37.39	37.36	37.82	37.69	38.24	38.17	38.95	38.56	39.28	40.00
34949.7	36.22	36.60	36.96	37.37	37.34	37.80	37.67	38.23	38.16	38.94	38.55	39.28	39.99
34955.6	36.21	36.58	36.94	37.35	37.32	37.79	37.66	38.22	38.14	38.94	38.54	39.27	39.99
34961.6	36.19	36.57	36.92	37.34	37.31	37.77	37.64	38.20	38.13	38.93	38.54	39.27	39.99
34967.6	36.17	36.55	36.90	37.32	37.29	37.76	37.63	38.19	38.12	38.92	38.53	39.27	39.98
34973.5	36.16	36.53	36.89	37.30	37.27	37.74	37.61	38.18	38.11	38.92	38.52	39.26	39.98
34979.4	36.14	36.51	36.87	37.29	37.26	37.73	37.60	38.17	38.09	38.91	38.51	39.26	39.98
34985.4	36.12	36.50	36.85	37.27	37.24	37.71	37.58	38.16	38.08	38.91	38.50	39.25	39.97
34991.4	36.10	36.48	36.83	37.25	37.22	37.70	37.56	38.14	38.07	38.90	38.49	39.24	39.97
34997.3	36.09	36.46	36.82	37.23	37.20	37.68	37.55	38.13	38.05	38.89	38.48	39.23	39.96
35003.3	36.07	36.44	36.80	37.21	37.18	37.67	37.53	38.12	38.04	38.88	38.48	39.23	39.96
35009.2	36.05	36.43	36.78	37.20	37.17	37.65	37.51	38.10	38.03	38.88	38.47	39.22	39.96
35015.1	36.04	36.41	36.76	37.18	37.15	37.63	37.50	38.09	38.01	38.87	38.46	39.21	39.95
35021.1	36.02	36.39	36.74	37.16	37.13	37.62	37.48	38.07	37.99	38.85	38.45	39.21	39.94
35027.1	36.00	36.37	36.72	37.14	37.11	37.60	37.46	38.06	37.98	38.85	38.44	39.20	39.94
35033.0	35.98	36.35	36.70	37.12	37.09	37.58	37.44	38.04	37.97	38.84	38.43	39.20	39.93
35038.8	35.97	36.34	36.69	37.10	37.07	37.57	37.42	38.03	37.95	38.83	38.42	39.19	39.93
35044.5	35.95	36.32	36.67	37.09	37.06	37.55	37.41	38.01	37.93	38.83	38.41	39.18	39.92
35050.3	35.94	36.31	36.65	37.07	37.04	37.53	37.39	38.00	37.92	38.81	38.40	39.17	39.91
35056.1	35.92	36.29	36.64	37.05	37.02	37.51	37.37	37.98	37.90	38.80	38.38	39.16	39.89
35061.8	35.91	36.28	36.62	37.03	37.00	37.49	37.34	37.96	37.88	38.79	38.37	39.14	39.88
35067.6	35.89	36.26	36.61	37.02	36.99	37.47	37.33	37.94	37.86	38.78	38.35	39.13	39.87
35073.4	35.88	36.25	36.59	37.00	36.97	37.45	37.31	37.92	37.84	38.77	38.34	39.12	39.86
35079.2	35.86	36.23	36.57	36.98	36.95	37.43	37.29	37.90	37.82	38.76	38.33	39.11	39.85
35084.9	35.85	36.22	36.56	36.97	36.94	37.41	37.27	37.89	37.81	38.75	38.32	39.11	39.84
35090.7	35.84	36.20	36.54	36.95	36.92	37.39	37.25	37.87	37.79	38.74	38.31	39.10	39.84
35096.5	35.82	36.19	36.53	36.93	36.90	37.37	37.23	37.85	37.77	38.73	38.30	39.09	39.83
35102.2	35.81	36.17	36.51	36.91	36.89	37.35	37.21	37.83	37.75	38.72	38.28	39.08	39.82
35108.0	35.79	36.16	36.50	36.90	36.87	37.34	37.20	37.82	37.73	38.71	38.27	39.07	39.80
35114.0	35.78	36.14	36.48	36.88	36.85	37.32	37.18	37.80	37.72	38.70	38.26	39.06	39.79
35120.0	35.76	36.13	36.47	36.87	36.84	37.30	37.16	37.78	37.70	38.69	38.25	39.06	39.79
35126.0	35.75	36.11	36.45	36.85	36.82	37.29	37.15	37.77	37.68	38.68	38.24	39.05	39.77
35132.0	35.73	36.10	36.44	36.84	36.81	37.27	37.13	37.75	37.67	38.67	38.23	39.04	39.77
35138.0	35.72	36.08	36.42	36.82	36.79	37.26	37.12	37.73	37.65	38.66	38.22	39.03	39.76
35144.0	35.70	36.07	36.41	36.81	36.78	37.24	37.10	37.72	37.64	38.66	38.21	39.02	39.76
35150.0	35.69	36.05	36.40	36.79	36.76	37.23	37.09	37.70	37.62	38.65	38.20	39.02	39.76
35156.0	35.67	36.04	36.38	36.78	36.75	37.21	37.07	37.69	37.61	38.64	38.19	39.01	39.75
35162.0	35.66	36.02	36.37	36.76	36.73	37.20	37.06	37.67	37.59	38.63	38.18	39.00	39.74

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
35168.0	35.64	36.00	36.35	36.75	36.72	37.18	37.04	37.66	37.57	38.63	38.17	38.99	39.74
35174.0	35.63	35.99	36.34	36.73	36.71	37.16	37.03	37.64	37.56	38.61	38.15	38.98	39.72
35180.0	35.61	35.97	36.32	36.72	36.69	37.15	37.01	37.61	37.53	38.59	38.13	38.95	39.69
35186.0	35.60	35.96	36.30	36.71	36.68	37.13	37.00	37.59	37.51	38.57	38.11	38.94	39.67
35192.0	35.58	35.94	36.29	36.69	36.66	37.11	36.98	37.57	37.49	38.56	38.10	38.93	39.67
35198.0	35.57	35.93	36.27	36.68	36.65	37.10	36.97	37.55	37.48	38.55	38.09	38.92	39.66
35204.0	35.56	35.91	36.26	36.66	36.63	37.08	36.95	37.54	37.46	38.53	38.07	38.91	39.65
35210.0	35.54	35.89	36.24	36.65	36.62	37.07	36.94	37.52	37.44	38.52	38.06	38.89	39.63
35215.9	35.53	35.88	36.22	36.63	36.60	37.04	36.91	37.49	37.41	38.49	38.03	38.86	39.60
35221.9	35.51	35.86	36.20	36.60	36.58	37.02	36.89	37.46	37.39	38.47	38.01	38.84	39.58
35227.8	35.50	35.85	36.18	36.58	36.56	37.00	36.87	37.44	37.37	38.45	37.99	38.82	39.56
35233.8	35.49	35.83	36.17	36.56	36.53	36.98	36.85	37.42	37.34	38.43	37.97	38.80	39.55
35239.7	35.47	35.82	36.15	36.54	36.52	36.96	36.83	37.40	37.32	38.41	37.95	38.78	39.53
35245.7	35.46	35.81	36.13	36.52	36.50	36.94	36.81	37.37	37.30	38.39	37.93	38.76	39.51
35251.6	35.45	35.79	36.12	36.51	36.48	36.92	36.79	37.35	37.28	38.36	37.91	38.74	39.49
35257.6	35.43	35.78	36.10	36.49	36.46	36.90	36.77	37.33	37.25	38.34	37.89	38.71	39.46
35263.5	35.42	35.76	36.09	36.47	36.44	36.88	36.75	37.30	37.23	38.31	37.87	38.68	39.44
35269.5	35.40	35.75	36.07	36.45	36.42	36.86	36.73	37.28	37.21	38.29	37.85	38.66	39.41
35275.4	35.39	35.73	36.06	36.43	36.41	36.84	36.71	37.26	37.19	38.26	37.83	38.63	39.38
35281.4	35.37	35.72	36.04	36.42	36.39	36.82	36.69	37.24	37.17	38.24	37.81	38.60	39.35
35287.3	35.36	35.70	36.03	36.40	36.37	36.80	36.68	37.22	37.15	38.21	37.79	38.58	39.32
35293.3	35.34	35.69	36.01	36.38	36.36	36.78	36.66	37.20	37.13	38.18	37.77	38.55	39.29
35299.2	35.32	35.67	36.00	36.37	36.34	36.76	36.64	37.17	37.11	38.16	37.75	38.51	39.24
35305.2	35.31	35.66	35.98	36.35	36.32	36.74	36.62	37.16	37.09	38.14	37.73	38.48	39.21
35311.1	35.29	35.64	35.96	36.34	36.31	36.73	36.61	37.14	37.07	38.13	37.72	38.47	39.19
35317.1	35.27	35.62	35.95	36.32	36.29	36.71	36.59	37.12	37.05	38.12	37.71	38.45	39.17
35323.0	35.25	35.60	35.93	36.30	36.27	36.69	36.57	37.10	37.04	38.10	37.69	38.44	39.16
35323.0	35.25	35.60	35.93	36.30	36.27	36.69	36.57	37.10	37.04	38.10	37.69	38.44	39.16
35341.5	35.19	35.53	35.85	36.22	36.19	36.60	36.48	37.01	36.94	38.03	37.62	38.37	39.09
35360.0	35.11	35.45	35.77	36.13	36.10	36.51	36.39	36.91	36.84	37.95	37.54	38.29	39.00
35380.0	35.04	35.37	35.69	36.04	36.01	36.42	36.30	36.82	36.75	37.90	37.48	38.23	38.94
35392.5	34.87	35.20	35.52	35.87	35.85	36.25	36.14	36.66	36.59	37.72	37.31	38.05	38.75
35407.5	34.35	34.65	34.94	35.29	35.26	35.65	35.54	36.00	35.94	36.37	36.14	36.63	37.17
35419.0	34.34	34.63	34.90	35.23	35.21	35.58	35.47	35.92	35.86	36.29	36.05	36.55	37.11
35432.7	34.29	34.59	34.87	35.20	35.18	35.56	35.45	35.90	35.84	36.27	36.04	36.52	37.06
35446.3	34.29	34.59	34.87	35.21	35.19	35.57	35.46	35.91	35.85	36.28	36.05	36.52	37.04
35460.0	34.27	34.58	34.87	35.22	35.19	35.58	35.47	35.93	35.87	36.30	36.06	36.54	37.06
35480.0	34.21	34.51	34.80	35.15	35.12	35.51	35.40	35.86	35.80	36.23	35.99	36.47	36.99
35499.3	34.14	34.44	34.73	35.08	35.05	35.44	35.33	35.78	35.72	36.15	35.92	36.39	36.91
35518.7	34.06	34.36	34.65	35.00	34.98	35.36	35.25	35.71	35.65	36.07	35.84	36.31	36.84
35538.0	33.98	34.28	34.56	34.92	34.89	35.28	35.17	35.62	35.56	35.98	35.75	36.22	36.76
35538.0	33.98	34.28	34.56	34.92	34.89	35.28	35.17	35.62	35.56	35.98	35.75	36.22	36.76
35543.7	33.96	34.26	34.55	34.90	34.88	35.26	35.16	35.61	35.55	35.97	35.74	36.21	36.76
35549.4	33.95	34.25	34.54	34.89	34.87	35.25	35.14	35.60	35.54	35.96	35.73	36.20	36.76
35555.1	33.93	34.23	34.53	34.88	34.85	35.24	35.13	35.59	35.53	35.96	35.73	36.20	36.77
35560.8	33.92	34.22	34.52	34.87	34.84	35.23	35.12	35.58	35.52	35.95	35.72	36.19	36.77

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
35566.4	33.91	34.21	34.50	34.86	34.83	35.22	35.11	35.58	35.52	35.95	35.72	36.19	36.78
35572.1	33.89	34.20	34.49	34.85	34.82	35.22	35.11	35.57	35.51	35.95	35.71	36.19	36.79
35577.8	33.88	34.19	34.48	34.84	34.82	35.21	35.10	35.57	35.51	35.95	35.71	36.19	36.79
35583.5	33.87	34.18	34.48	34.84	34.81	35.21	35.10	35.58	35.51	35.95	35.72	36.20	36.79
35589.2	33.86	34.17	34.47	34.83	34.81	35.21	35.10	35.58	35.52	35.96	35.72	36.21	36.79
35594.9	33.85	34.16	34.46	34.83	34.80	35.22	35.10	35.58	35.52	35.96	35.73	36.22	36.79
35600.6	33.84	34.16	34.46	34.83	34.81	35.22	35.11	35.59	35.53	35.97	35.73	36.23	36.81
35606.3	33.84	34.15	34.46	34.84	34.81	35.23	35.11	35.60	35.54	35.98	35.74	36.24	36.83
35611.9	33.83	34.15	34.46	34.85	34.82	35.24	35.12	35.61	35.55	35.99	35.75	36.26	36.85
35617.6	33.83	34.15	34.47	34.85	34.83	35.24	35.13	35.62	35.56	36.01	35.76	36.28	36.87
35623.3	33.82	34.16	34.48	34.86	34.83	35.25	35.14	35.63	35.57	36.03	35.78	36.30	36.89
35629.0	33.83	34.16	34.48	34.87	34.84	35.26	35.15	35.64	35.58	36.04	35.79	36.31	36.91
35634.9	33.81	34.14	34.46	34.85	34.82	35.24	35.13	35.62	35.56	36.02	35.77	36.30	36.90
35640.7	33.79	34.13	34.44	34.83	34.80	35.22	35.11	35.60	35.54	36.00	35.75	36.28	36.88
35646.6	33.77	34.11	34.43	34.81	34.78	35.20	35.09	35.58	35.52	35.99	35.73	36.26	36.87
35652.5	33.76	34.09	34.41	34.79	34.76	35.18	35.07	35.56	35.50	35.97	35.71	36.25	36.86
35658.3	33.74	34.07	34.39	34.77	34.74	35.16	35.05	35.54	35.48	35.95	35.69	36.23	36.85
35664.2	33.72	34.05	34.37	34.75	34.73	35.14	35.03	35.52	35.46	35.93	35.67	36.21	36.83
35670.1	33.71	34.04	34.35	34.73	34.71	35.12	35.01	35.50	35.44	35.91	35.65	36.19	36.82
35675.9	33.69	34.02	34.34	34.72	34.69	35.10	34.99	35.48	35.42	35.89	35.63	36.18	36.80
35681.8	33.67	34.00	34.32	34.70	34.67	35.09	34.97	35.46	35.40	35.87	35.61	36.16	36.79
35687.7	33.65	33.98	34.30	34.68	34.65	35.07	34.95	35.44	35.38	35.84	35.59	36.14	36.77
35693.5	33.64	33.97	34.28	34.66	34.64	35.05	34.94	35.42	35.36	35.82	35.57	36.12	36.76
35699.4	33.62	33.95	34.27	34.64	34.62	35.03	34.92	35.40	35.34	35.80	35.55	36.10	36.74
35705.3	33.60	33.93	34.25	34.63	34.60	35.01	34.90	35.38	35.32	35.78	35.53	36.08	36.72
35711.1	33.58	33.92	34.23	34.61	34.58	34.99	34.88	35.36	35.30	35.76	35.51	36.06	36.71
35717.0	33.57	33.90	34.22	34.59	34.57	34.98	34.87	35.34	35.28	35.74	35.49	36.04	36.69
35722.8	33.55	33.89	34.20	34.58	34.55	34.96	34.85	35.33	35.27	35.73	35.47	36.02	36.68
35728.7	33.54	33.87	34.19	34.57	34.54	34.95	34.84	35.32	35.25	35.71	35.46	36.00	36.67
35734.5	33.53	33.86	34.18	34.55	34.53	34.94	34.82	35.30	35.24	35.70	35.45	35.99	36.66
35740.4	33.52	33.85	34.16	34.54	34.51	34.92	34.81	35.29	35.23	35.68	35.43	35.97	36.66
35746.2	33.51	33.84	34.15	34.53	34.50	34.91	34.80	35.28	35.22	35.67	35.42	35.96	36.65
35752.1	33.50	33.83	34.14	34.52	34.49	34.90	34.79	35.26	35.20	35.66	35.41	35.95	36.63
35757.9	33.49	33.82	34.13	34.51	34.48	34.89	34.78	35.25	35.19	35.64	35.39	35.93	36.61
35763.8	33.48	33.81	34.12	34.49	34.47	34.88	34.76	35.24	35.18	35.63	35.38	35.92	36.61
35769.6	33.47	33.80	34.11	34.48	34.46	34.86	34.75	35.23	35.17	35.62	35.37	35.91	36.60
35775.5	33.46	33.79	34.10	34.47	34.45	34.85	34.74	35.22	35.16	35.61	35.36	35.90	36.59
35781.3	33.45	33.78	34.09	34.46	34.44	34.84	34.73	35.20	35.14	35.60	35.35	35.88	36.58
35787.2	33.44	33.77	34.08	34.45	34.43	34.83	34.72	35.19	35.13	35.59	35.34	35.87	36.57
35793.0	33.44	33.76	34.07	34.44	34.42	34.82	34.71	35.19	35.12	35.58	35.33	35.86	36.59
35797.0	32.86	33.24	33.59	34.04	34.01	34.51	34.36	34.97	34.89	35.44	35.14	35.79	36.49
35803.0	32.86	33.23	33.59	34.03	34.00	34.50	34.36	34.96	34.88	35.43	35.14	35.77	36.44
35809.0	32.85	33.22	33.58	34.03	33.99	34.49	34.35	34.95	34.87	35.42	35.13	35.76	36.43
35814.9	32.84	33.21	33.57	34.01	33.98	34.48	34.34	34.94	34.86	35.41	35.12	35.75	36.42
35820.9	32.83	33.20	33.56	34.00	33.97	34.47	34.33	34.92	34.85	35.39	35.10	35.73	36.40
35826.8	32.82	33.19	33.55	33.99	33.96	34.45	34.31	34.91	34.83	35.38	35.09	35.72	36.37

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
35832.8	32.81	33.18	33.53	33.98	33.94	34.44	34.30	34.89	34.82	35.36	35.07	35.70	36.35
35838.7	32.80	33.16	33.52	33.96	33.93	34.42	34.28	34.88	34.80	35.34	35.05	35.68	36.33
35844.6	32.78	33.15	33.51	33.95	33.91	34.41	34.27	34.86	34.78	35.33	35.04	35.67	36.31
35850.6	32.77	33.14	33.49	33.93	33.90	34.39	34.25	34.84	34.77	35.31	35.02	35.65	36.29
35856.5	32.75	33.12	33.47	33.91	33.88	34.37	34.23	34.83	34.75	35.29	35.00	35.63	36.27
35862.5	32.74	33.10	33.46	33.89	33.86	34.36	34.22	34.81	34.73	35.27	34.98	35.60	36.24
35868.4	32.72	33.09	33.44	33.88	33.84	34.34	34.20	34.79	34.71	35.25	34.96	35.58	36.21
35874.4	32.70	33.07	33.42	33.86	33.82	34.32	34.18	34.76	34.69	35.22	34.94	35.56	36.18
35880.3	32.68	33.05	33.40	33.83	33.80	34.29	34.15	34.74	34.67	35.20	34.92	35.53	36.15
35886.2	32.66	33.02	33.38	33.81	33.78	34.27	34.13	34.72	34.64	35.17	34.89	35.50	36.12
35892.2	32.64	33.00	33.35	33.79	33.76	34.25	34.11	34.69	34.62	35.15	34.87	35.47	36.09
35898.1	32.61	32.97	33.33	33.76	33.73	34.22	34.08	34.67	34.59	35.12	34.84	35.44	36.05
35904.1	32.58	32.95	33.30	33.74	33.70	34.19	34.05	34.64	34.56	35.09	34.81	35.41	36.02
35910.0	32.55	32.92	33.27	33.71	33.67	34.16	34.03	34.61	34.53	35.06	34.78	35.37	35.98
35915.9	32.53	32.90	33.25	33.68	33.65	34.14	34.00	34.59	34.51	35.04	34.76	35.35	35.95
35921.9	32.51	32.87	33.23	33.66	33.63	34.12	33.98	34.56	34.49	35.01	34.73	35.32	35.92
35927.8	32.49	32.85	33.21	33.64	33.61	34.10	33.96	34.54	34.46	34.99	34.71	35.29	35.89
35933.8	32.46	32.83	33.18	33.62	33.58	34.07	33.93	34.52	34.44	34.96	34.69	35.27	35.86
35939.7	32.44	32.81	33.16	33.59	33.56	34.05	33.91	34.49	34.42	34.94	34.66	35.24	35.83
35945.6	32.42	32.79	33.14	33.57	33.54	34.03	33.89	34.47	34.39	34.91	34.64	35.22	35.80
35951.6	32.40	32.77	33.12	33.55	33.52	34.00	33.86	34.44	34.37	34.89	34.61	35.19	35.76
35957.5	32.38	32.74	33.09	33.52	33.49	33.98	33.84	34.42	34.34	34.86	34.59	35.16	35.73
35963.5	32.36	32.72	33.07	33.50	33.47	33.95	33.82	34.39	34.32	34.84	34.56	35.14	35.70
35969.4	32.34	32.70	33.05	33.48	33.44	33.93	33.79	34.37	34.29	34.81	34.54	35.11	35.67
35975.4	32.32	32.68	33.02	33.45	33.42	33.90	33.77	34.34	34.27	34.78	34.51	35.08	35.64
35981.3	32.30	32.66	33.00	33.43	33.40	33.88	33.74	34.32	34.24	34.75	34.48	35.05	35.60
35987.2	32.28	32.64	32.98	33.40	33.37	33.85	33.72	34.29	34.22	34.73	34.46	35.02	35.57
35993.2	32.26	32.62	32.96	33.38	33.35	33.83	33.69	34.26	34.19	34.70	34.43	34.99	35.53
35999.1	32.24	32.59	32.93	33.36	33.32	33.80	33.67	34.24	34.16	34.67	34.40	34.96	35.50
36005.1	32.22	32.57	32.91	33.33	33.30	33.77	33.64	34.21	34.14	34.64	34.37	34.93	35.46
36011.0	32.20	32.55	32.89	33.31	33.28	33.75	33.61	34.18	34.11	34.61	34.35	34.90	35.43
36016.8	32.18	32.53	32.87	33.29	33.26	33.73	33.60	34.16	34.09	34.59	34.33	34.88	35.40
36022.7	32.17	32.51	32.85	33.27	33.24	33.71	33.58	34.14	34.07	34.57	34.31	34.86	35.38
36028.5	32.15	32.49	32.83	33.25	33.22	33.69	33.56	34.12	34.05	34.55	34.29	34.84	35.36
36034.4	32.13	32.47	32.81	33.23	33.20	33.67	33.54	34.10	34.03	34.53	34.27	34.82	35.34
36040.2	32.11	32.45	32.79	33.21	33.18	33.65	33.52	34.08	34.01	34.51	34.25	34.80	35.31
36046.1	32.09	32.43	32.77	33.19	33.15	33.63	33.49	34.06	33.99	34.49	34.23	34.77	35.29
36051.9	32.07	32.41	32.75	33.16	33.13	33.61	33.47	34.04	33.97	34.47	34.21	34.75	35.27
36057.7	32.04	32.39	32.72	33.14	33.11	33.59	33.45	34.02	33.95	34.45	34.19	34.73	35.25
36063.6	32.02	32.37	32.70	33.12	33.09	33.56	33.43	34.00	33.92	34.43	34.16	34.71	35.22
36069.4	32.00	32.34	32.68	33.10	33.06	33.54	33.41	33.98	33.90	34.40	34.14	34.68	35.20
36075.3	31.98	32.32	32.65	33.07	33.04	33.52	33.38	33.95	33.88	34.38	34.12	34.66	35.18
36081.1	31.95	32.30	32.63	33.05	33.02	33.49	33.36	33.93	33.86	34.35	34.09	34.63	35.15
36086.9	31.93	32.27	32.60	33.02	32.99	33.47	33.33	33.90	33.83	34.33	34.07	34.61	35.12
36092.8	31.91	32.24	32.58	33.00	32.97	33.44	33.31	33.88	33.81	34.30	34.04	34.58	35.09
36098.6	31.88	32.22	32.55	32.97	32.94	33.42	33.28	33.85	33.78	34.28	34.02	34.55	35.06

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36104.5	31.85	32.19	32.52	32.94	32.91	33.39	33.25	33.83	33.75	34.25	33.99	34.53	35.03
36110.3	31.83	32.16	32.50	32.91	32.88	33.36	33.23	33.80	33.73	34.22	33.97	34.50	35.00
36116.2	31.80	32.14	32.47	32.89	32.85	33.33	33.20	33.77	33.70	34.20	33.94	34.47	34.97
36122.0	31.77	32.11	32.44	32.86	32.83	33.31	33.17	33.74	33.67	34.17	33.91	34.44	34.94
36127.7	31.76	32.09	32.42	32.84	32.81	33.29	33.15	33.73	33.65	34.15	33.89	34.42	34.92
36133.5	31.74	32.08	32.41	32.83	32.79	33.27	33.14	33.71	33.64	34.13	33.87	34.41	34.90
36139.2	31.73	32.06	32.39	32.81	32.78	33.26	33.12	33.69	33.62	34.11	33.86	34.39	34.89
36144.9	31.71	32.05	32.38	32.79	32.76	33.24	33.11	33.68	33.61	34.10	33.84	34.37	34.87
36150.7	31.70	32.03	32.36	32.78	32.75	33.23	33.09	33.66	33.59	34.08	33.83	34.35	34.85
36156.4	31.68	32.02	32.35	32.76	32.73	33.21	33.08	33.65	33.57	34.06	33.81	34.34	34.83
36162.2	31.67	32.00	32.33	32.75	32.72	33.20	33.06	33.63	33.56	34.05	33.79	34.32	34.81
36167.9	31.65	31.99	32.32	32.73	32.70	33.18	33.05	33.62	33.55	34.03	33.78	34.30	34.80
36173.6	31.64	31.97	32.30	32.72	32.69	33.17	33.03	33.60	33.53	34.02	33.76	34.29	34.78
36179.4	31.62	31.96	32.29	32.70	32.67	33.15	33.02	33.59	33.52	34.00	33.75	34.27	34.76
36185.1	31.60	31.94	32.27	32.69	32.66	33.14	33.00	33.57	33.50	33.98	33.74	34.26	34.75
36190.8	31.59	31.92	32.26	32.67	32.64	33.12	32.99	33.56	33.49	33.97	33.72	34.24	34.74
36196.6	31.57	31.91	32.24	32.66	32.63	33.11	32.97	33.55	33.47	33.95	33.71	34.22	34.73
36202.3	31.55	31.89	32.22	32.64	32.61	33.09	32.96	33.53	33.46	33.94	33.69	34.21	34.71
36208.1	31.53	31.87	32.21	32.63	32.60	33.08	32.94	33.52	33.44	33.92	33.68	34.19	34.70
36213.8	31.51	31.86	32.19	32.61	32.58	33.06	32.93	33.50	33.43	33.91	33.66	34.18	34.69
36219.5	31.50	31.84	32.17	32.60	32.56	33.05	32.91	33.49	33.42	33.89	33.65	34.16	34.68
36225.3	31.48	31.82	32.16	32.58	32.55	33.03	32.90	33.47	33.40	33.88	33.63	34.14	34.66
36231.0	31.46	31.80	32.14	32.56	32.53	33.02	32.88	33.46	33.39	33.87	33.62	34.13	34.65
36236.7	31.44	31.78	32.12	32.54	32.51	33.00	32.86	33.44	33.37	33.85	33.60	34.11	34.63
36242.5	31.41	31.76	32.10	32.52	32.49	32.98	32.84	33.42	33.35	33.83	33.58	34.09	34.61
36248.2	31.39	31.74	32.08	32.50	32.47	32.96	32.82	33.41	33.33	33.81	33.57	34.07	34.59
36253.9	31.37	31.72	32.06	32.48	32.45	32.95	32.81	33.39	33.31	33.79	33.55	34.05	34.57
36259.7	31.35	31.70	32.04	32.46	32.43	32.93	32.79	33.37	33.30	33.77	33.53	34.03	34.55
36265.4	31.33	31.67	32.02	32.45	32.41	32.91	32.77	33.35	33.28	33.76	33.51	34.02	34.54
36271.2	31.31	31.65	31.99	32.43	32.39	32.89	32.75	33.34	33.26	33.74	33.50	34.00	34.52
36276.9	31.29	31.63	31.97	32.41	32.37	32.87	32.73	33.32	33.25	33.72	33.48	33.98	34.50
36282.6	31.26	31.61	31.95	32.39	32.36	32.86	32.71	33.30	33.23	33.70	33.46	33.96	34.48
36288.4	31.24	31.59	31.93	32.37	32.34	32.84	32.70	33.29	33.21	33.69	33.45	33.95	34.47
36294.1	31.22	31.57	31.91	32.35	32.32	32.82	32.68	33.27	33.20	33.67	33.43	33.93	34.45
36299.8	31.20	31.55	31.89	32.33	32.30	32.80	32.66	33.25	33.18	33.66	33.42	33.91	34.44
36305.6	31.18	31.53	31.87	32.31	32.28	32.79	32.64	33.24	33.16	33.64	33.40	33.90	34.42
36311.3	31.16	31.51	31.85	32.30	32.26	32.77	32.63	33.22	33.15	33.63	33.39	33.88	34.41
36317.1	31.14	31.49	31.84	32.28	32.24	32.75	32.61	33.21	33.13	33.61	33.37	33.87	34.40
36322.8	31.11	31.47	31.82	32.26	32.23	32.74	32.59	33.19	33.12	33.60	33.36	33.86	34.38
36328.5	31.09	31.45	31.80	32.24	32.21	32.72	32.58	33.18	33.10	33.58	33.34	33.85	34.37
36334.3	31.07	31.43	31.78	32.22	32.19	32.71	32.56	33.17	33.09	33.57	33.33	33.83	34.36
36340.0	31.05	31.40	31.76	32.20	32.17	32.69	32.54	33.15	33.08	33.56	33.32	33.82	34.35
36345.9	31.03	31.38	31.74	32.19	32.15	32.67	32.53	33.14	33.06	33.54	33.30	33.80	34.34
36351.8	31.00	31.36	31.72	32.17	32.14	32.66	32.51	33.12	33.05	33.53	33.29	33.79	34.33
36357.7	30.98	31.34	31.70	32.15	32.12	32.64	32.49	33.11	33.03	33.51	33.27	33.78	34.31
36363.6	30.96	31.32	31.68	32.13	32.10	32.62	32.48	33.09	33.02	33.50	33.26	33.76	34.30

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36369.5	30.94	31.30	31.66	32.12	32.08	32.61	32.46	33.08	33.00	33.49	33.24	33.75	34.29
36375.4	30.92	31.28	31.64	32.10	32.06	32.59	32.44	33.06	32.99	33.47	33.23	33.74	34.27
36381.3	30.89	31.26	31.62	32.08	32.04	32.57	32.42	33.05	32.97	33.46	33.21	33.72	34.26
36387.2	30.87	31.24	31.60	32.06	32.03	32.56	32.41	33.03	32.95	33.45	33.20	33.71	34.25
36393.1	30.85	31.22	31.58	32.04	32.01	32.54	32.39	33.02	32.94	33.43	33.19	33.70	34.23
36398.9	30.83	31.19	31.56	32.02	31.99	32.53	32.37	33.00	32.92	33.42	33.17	33.69	34.22
36404.8	30.80	31.17	31.54	32.01	31.97	32.51	32.36	32.99	32.91	33.41	33.16	33.67	34.21
36410.7	30.78	31.15	31.52	31.99	31.95	32.49	32.34	32.97	32.89	33.39	33.14	33.66	34.20
36416.6	30.76	31.13	31.50	31.97	31.93	32.47	32.32	32.96	32.88	33.38	33.13	33.65	34.18
36422.5	30.73	31.11	31.48	31.95	31.91	32.46	32.30	32.94	32.86	33.36	33.11	33.63	34.17
36428.4	30.71	31.08	31.46	31.93	31.90	32.44	32.29	32.93	32.85	33.35	33.10	33.62	34.16
36434.3	30.68	31.06	31.44	31.91	31.88	32.42	32.27	32.91	32.83	33.34	33.08	33.61	34.15
36440.2	30.66	31.04	31.41	31.89	31.86	32.41	32.25	32.90	32.82	33.33	33.07	33.60	34.13
36446.1	30.63	31.01	31.39	31.87	31.84	32.39	32.23	32.88	32.80	33.31	33.06	33.59	34.12
36452.0	30.61	30.99	31.37	31.85	31.82	32.37	32.22	32.87	32.79	33.30	33.04	33.58	34.11
36457.8	30.58	30.97	31.35	31.84	31.80	32.36	32.20	32.86	32.77	33.29	33.03	33.56	34.10
36463.5	30.56	30.95	31.33	31.82	31.78	32.34	32.18	32.84	32.76	33.27	33.02	33.55	34.09
36469.3	30.54	30.93	31.31	31.80	31.76	32.33	32.17	32.83	32.75	33.26	33.00	33.54	34.09
36475.0	30.52	30.91	31.29	31.79	31.75	32.31	32.15	32.81	32.73	33.25	32.99	33.53	34.07
36480.8	30.49	30.89	31.28	31.77	31.73	32.30	32.14	32.80	32.72	33.23	32.98	33.52	34.07
36486.5	30.47	30.87	31.26	31.75	31.72	32.29	32.12	32.79	32.71	33.22	32.97	33.51	34.06
36492.3	30.45	30.85	31.24	31.74	31.70	32.27	32.11	32.78	32.70	33.21	32.95	33.50	34.06
36498.0	30.43	30.83	31.22	31.72	31.69	32.26	32.10	32.77	32.69	33.20	32.95	33.50	34.05
36503.8	30.41	30.81	31.21	31.71	31.67	32.25	32.09	32.75	32.68	33.19	32.95	33.50	34.05
36509.5	30.39	30.79	31.19	31.70	31.66	32.24	32.07	32.75	32.67	33.18	32.93	33.49	34.04
36515.3	30.37	30.78	31.18	31.68	31.65	32.23	32.06	32.74	32.67	33.19	32.92	33.48	34.04
36521.0	30.35	30.76	31.16	31.67	31.63	32.22	32.05	32.73	32.67	33.19	32.91	33.48	34.03
36526.8	30.33	30.74	31.15	31.66	31.62	32.21	32.04	32.73	32.66	33.19	32.91	33.48	34.03
36532.5	30.31	30.73	31.13	31.65	31.61	32.21	32.04	32.72	32.66	33.19	32.90	33.48	34.03
36538.3	30.29	30.71	31.12	31.64	31.60	32.20	32.03	32.71	32.66	33.19	32.89	33.47	34.03
36544.0	30.27	30.69	31.11	31.63	31.59	32.19	32.02	32.70	32.65	33.18	32.88	33.47	34.02
36549.8	30.26	30.68	31.10	31.62	31.58	32.19	32.02	32.69	32.64	33.18	32.87	33.46	34.02
36555.5	30.24	30.67	31.08	31.61	31.57	32.19	32.00	32.69	32.63	33.17	32.87	33.45	34.00
36561.3	30.22	30.65	31.07	31.61	31.57	32.17	32.00	32.69	32.64	33.17	32.84	33.46	34.01
36567.0	30.21	30.64	31.06	31.61	31.57	32.14	32.01	32.70	32.62	33.15	32.83	33.43	33.98
36572.9	30.19	30.63	31.05	31.59	31.55	32.15	31.98	32.67	32.58	33.10	32.86	33.38	33.91
36578.7	30.17	30.61	31.04	31.58	31.54	32.15	31.98	32.66	32.57	33.10	32.86	33.37	33.91
36584.6	30.16	30.60	31.03	31.57	31.53	32.14	31.97	32.66	32.57	33.09	32.86	33.37	33.90
36590.4	30.14	30.59	31.02	31.57	31.52	32.13	31.96	32.65	32.56	33.08	32.85	33.36	33.89
36596.3	30.12	30.57	31.01	31.56	31.52	32.13	31.95	32.64	32.56	33.08	32.85	33.35	33.89
36602.1	30.11	30.56	31.00	31.55	31.51	32.12	31.95	32.63	32.55	33.07	32.84	33.35	33.88
36607.9	30.09	30.55	30.99	31.54	31.50	32.11	31.95	32.63	32.55	33.07	32.83	33.35	33.88
36613.8	30.08	30.53	30.98	31.53	31.49	32.10	31.94	32.63	32.55	33.07	32.82	33.35	33.89
36619.6	30.06	30.52	30.97	31.52	31.48	32.10	31.93	32.64	32.56	33.09	32.80	33.37	33.91
36625.5	30.05	30.51	30.96	31.51	31.47	32.09	31.92	32.64	32.55	33.09	32.79	33.37	33.92
36631.4	30.03	30.50	30.94	31.50	31.46	32.09	31.91	32.64	32.55	33.08	32.78	33.37	33.91

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36637.2	30.02	30.48	30.93	31.49	31.45	32.08	31.90	32.63	32.54	33.08	32.78	33.36	33.91
36643.1	30.00	30.47	30.92	31.49	31.44	32.07	31.89	32.62	32.54	33.07	32.77	33.36	33.90
36648.9	29.99	30.46	30.91	31.48	31.43	32.06	31.89	32.62	32.53	33.07	32.76	33.36	33.90
36654.8	29.98	30.45	30.90	31.47	31.43	32.06	31.88	32.61	32.52	33.06	32.76	33.35	33.89
36660.6	29.96	30.43	30.89	31.46	31.42	32.05	31.87	32.60	32.51	33.05	32.76	33.34	33.88
36666.4	29.95	30.42	30.88	31.45	31.41	32.04	31.86	32.60	32.51	33.05	32.75	33.34	33.88
36672.3	29.94	30.41	30.87	31.44	31.40	32.03	31.86	32.59	32.50	33.04	32.74	33.33	33.87
36678.1	29.92	30.40	30.86	31.43	31.39	32.03	31.85	32.58	32.49	33.03	32.74	33.32	33.86
36684.0	29.91	30.39	30.85	31.42	31.38	32.02	31.84	32.57	32.48	33.03	32.74	33.31	33.85
36689.7	29.89	30.37	30.83	31.41	31.36	32.00	31.82	32.55	32.46	33.00	32.72	33.29	33.83
36695.4	29.87	30.35	30.81	31.39	31.34	31.98	31.80	32.53	32.44	32.99	32.70	33.28	33.82
36701.2	29.85	30.33	30.79	31.37	31.32	31.96	31.78	32.51	32.42	32.97	32.68	33.25	33.79
36706.9	29.83	30.31	30.78	31.35	31.31	31.94	31.76	32.49	32.40	32.95	32.66	33.23	33.77
36712.6	29.81	30.29	30.76	31.33	31.29	31.92	31.74	32.47	32.38	32.93	32.65	33.22	33.75
36718.3	29.79	30.27	30.74	31.31	31.27	31.90	31.72	32.44	32.36	32.92	32.62	33.21	33.74
36724.1	29.77	30.25	30.72	31.29	31.25	31.88	31.70	32.42	32.34	32.89	32.60	33.18	33.71
36729.8	29.76	30.23	30.70	31.27	31.23	31.86	31.68	32.40	32.32	32.87	32.58	33.16	33.68
36735.5	29.74	30.21	30.68	31.25	31.21	31.84	31.66	32.38	32.29	32.85	32.56	33.14	33.65
36741.2	29.72	30.19	30.66	31.23	31.18	31.82	31.64	32.36	32.27	32.83	32.54	33.11	33.64
36746.9	29.70	30.18	30.64	31.21	31.16	31.79	31.62	32.33	32.25	32.80	32.51	33.09	33.63
36752.7	29.69	30.16	30.62	31.18	31.14	31.77	31.59	32.31	32.22	32.79	32.48	33.08	33.62
36758.4	29.67	30.14	30.59	31.16	31.12	31.74	31.57	32.29	32.20	32.76	32.44	33.06	33.58
36764.1	29.65	30.12	30.57	31.13	31.09	31.70	31.54	32.25	32.18	32.73	32.41	33.02	33.55
36769.8	29.64	30.10	30.55	31.09	31.05	31.66	31.51	32.23	32.15	32.70	32.37	33.00	33.53
36775.6	29.62	30.08	30.52	31.06	31.02	31.63	31.46	32.18	32.09	32.65	32.34	32.96	33.48
36781.3	29.60	30.06	30.50	31.02	30.98	31.61	31.41	32.11	32.03	32.58	32.29	32.93	33.39
36787.0	29.59	30.04	30.48	30.99	30.95	31.59	31.37	32.06	31.98	32.52	32.24	32.90	33.33
36792.8	29.57	30.02	30.46	30.98	30.94	31.53	31.36	32.05	31.96	32.51	32.24	32.80	33.33
36798.6	29.55	30.00	30.43	30.96	30.92	31.49	31.33	32.01	31.93	32.47	32.20	32.76	33.30
36804.3	29.52	29.98	30.41	30.93	30.89	31.47	31.30	31.98	31.89	32.44	32.16	32.73	33.26
36810.1	29.50	29.95	30.38	30.90	30.87	31.44	31.28	31.95	31.87	32.41	32.13	32.70	33.23
36815.9	29.48	29.93	30.36	30.88	30.84	31.41	31.25	31.92	31.84	32.38	32.10	32.67	33.20
36821.7	29.46	29.90	30.33	30.85	30.81	31.38	31.22	31.89	31.81	32.34	32.07	32.64	33.17
36827.4	29.43	29.88	30.31	30.82	30.78	31.35	31.19	31.86	31.78	32.31	32.04	32.61	33.14
36833.2	29.41	29.85	30.28	30.79	30.75	31.32	31.16	31.83	31.75	32.29	32.01	32.58	33.11
36839.0	29.38	29.83	30.25	30.76	30.72	31.29	31.13	31.80	31.72	32.25	31.98	32.55	33.08
36844.8	29.36	29.80	30.22	30.73	30.69	31.26	31.10	31.77	31.68	32.22	31.95	32.52	33.07
36850.6	29.33	29.77	30.19	30.70	30.66	31.22	31.07	31.74	31.65	32.19	31.92	32.49	33.03
36856.3	29.31	29.74	30.16	30.67	30.63	31.19	31.03	31.70	31.62	32.15	31.88	32.45	33.00
36862.1	29.28	29.72	30.13	30.64	30.60	31.16	31.00	31.67	31.58	32.12	31.85	32.42	32.97
36867.9	29.25	29.69	30.10	30.60	30.56	31.12	30.96	31.63	31.55	32.08	31.81	32.38	32.94
36873.7	29.22	29.66	30.07	30.57	30.53	31.09	30.93	31.59	31.51	32.04	31.77	32.35	32.90
36879.4	29.19	29.63	30.04	30.53	30.50	31.05	30.89	31.56	31.47	32.01	31.74	32.31	32.86
36885.2	29.17	29.59	30.00	30.50	30.46	31.01	30.85	31.52	31.43	31.97	31.70	32.27	32.82
36891.0	29.14	29.56	29.97	30.46	30.42	30.97	30.82	31.48	31.39	31.93	31.66	32.23	32.78
36896.8	29.12	29.54	29.95	30.44	30.40	30.95	30.80	31.46	31.38	31.91	31.64	32.21	32.76

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36902.5	29.10	29.53	29.93	30.42	30.39	30.94	30.78	31.44	31.36	31.88	31.62	32.19	32.75
36908.3	29.09	29.51	29.91	30.40	30.37	30.92	30.76	31.42	31.34	31.87	31.60	32.17	32.73
36914.1	29.07	29.49	29.90	30.39	30.35	30.90	30.74	31.40	31.32	31.85	31.58	32.16	32.72
36919.8	29.05	29.48	29.88	30.37	30.33	30.88	30.72	31.38	31.30	31.83	31.56	32.14	32.70
36925.6	29.04	29.46	29.86	30.35	30.31	30.86	30.71	31.37	31.28	31.81	31.54	32.13	32.68
36931.4	29.02	29.44	29.85	30.33	30.30	30.84	30.69	31.35	31.26	31.79	31.52	32.11	32.67
36937.1	29.01	29.43	29.83	30.32	30.28	30.82	30.67	31.32	31.24	31.78	31.50	32.08	32.65
36942.9	28.99	29.41	29.81	30.30	30.26	30.80	30.65	31.29	31.22	31.76	31.48	32.07	32.64
36948.6	28.98	29.40	29.80	30.28	30.25	30.78	30.63	31.27	31.19	31.73	31.45	32.05	32.62
36954.4	28.96	29.38	29.78	30.26	30.23	30.76	30.61	31.25	31.17	31.70	31.43	32.03	32.61
36960.2	28.94	29.36	29.76	30.25	30.21	30.75	30.60	31.23	31.15	31.68	31.40	32.01	32.59
36965.9	28.93	29.35	29.75	30.23	30.19	30.73	30.58	31.21	31.13	31.66	31.38	31.99	32.57
36971.7	28.91	29.33	29.73	30.21	30.18	30.71	30.56	31.19	31.11	31.64	31.36	31.97	32.56
36977.5	28.90	29.32	29.71	30.20	30.16	30.69	30.54	31.17	31.09	31.62	31.34	31.95	32.54
36983.2	28.88	29.30	29.70	30.18	30.14	30.68	30.53	31.15	31.07	31.60	31.32	31.94	32.53
36989.0	28.87	29.28	29.68	30.16	30.13	30.66	30.51	31.13	31.05	31.58	31.30	31.92	32.51
36994.8	28.85	29.27	29.66	30.14	30.11	30.64	30.49	31.11	31.03	31.57	31.29	31.90	32.50
37000.6	28.83	29.25	29.64	30.12	30.09	30.62	30.47	31.09	31.02	31.55	31.27	31.88	32.48
37006.5	28.81	29.23	29.62	30.11	30.07	30.60	30.45	31.08	31.00	31.53	31.25	31.87	32.47
37012.3	28.79	29.21	29.61	30.09	30.05	30.58	30.43	31.06	30.98	31.51	31.23	31.85	32.46
37018.1	28.78	29.19	29.59	30.07	30.03	30.57	30.41	31.04	30.96	31.50	31.21	31.84	32.44
37023.9	28.76	29.17	29.57	30.05	30.01	30.55	30.40	31.02	30.94	31.48	31.19	31.82	32.43
37029.8	28.74	29.15	29.55	30.03	29.99	30.53	30.38	31.00	30.92	31.46	31.17	31.80	32.42
37035.6	28.72	29.13	29.53	30.01	29.97	30.51	30.36	30.98	30.90	31.43	31.15	31.77	32.40
37041.4	28.70	29.11	29.51	29.99	29.95	30.49	30.34	30.96	30.88	31.41	31.13	31.75	32.38
37047.2	28.68	29.10	29.49	29.97	29.94	30.47	30.32	30.94	30.87	31.39	31.11	31.72	32.36
37053.1	28.66	29.08	29.47	29.95	29.92	30.45	30.30	30.92	30.85	31.36	31.09	31.70	32.34
37058.9	28.64	29.06	29.45	29.93	29.90	30.43	30.28	30.90	30.83	31.35	31.07	31.68	32.32
37064.7	28.62	29.04	29.43	29.91	29.88	30.41	30.26	30.89	30.81	31.32	31.05	31.65	32.30
37070.5	28.61	29.02	29.41	29.89	29.86	30.39	30.24	30.87	30.79	31.30	31.03	31.62	32.27
37076.4	28.59	29.00	29.39	29.87	29.84	30.37	30.22	30.85	30.77	31.28	31.01	31.60	32.24
37082.2	28.57	28.98	29.38	29.85	29.82	30.35	30.20	30.83	30.75	31.26	30.99	31.58	32.21
37088.0	28.55	28.96	29.36	29.83	29.80	30.33	30.18	30.81	30.73	31.24	30.97	31.56	32.20
37093.9	28.53	28.94	29.34	29.82	29.78	30.32	30.16	30.79	30.71	31.22	30.96	31.54	32.18
37099.8	28.51	28.93	29.32	29.80	29.77	30.30	30.15	30.77	30.70	31.21	30.94	31.52	32.16
37105.6	28.50	28.91	29.31	29.79	29.75	30.28	30.13	30.76	30.68	31.19	30.92	31.51	32.14
37111.5	28.48	28.90	29.29	29.77	29.73	30.27	30.12	30.74	30.66	31.17	30.90	31.49	32.12
37117.4	28.47	28.88	29.27	29.75	29.72	30.25	30.10	30.72	30.65	31.15	30.89	31.47	32.10
37123.3	28.45	28.86	29.26	29.74	29.70	30.23	30.08	30.71	30.63	31.13	30.87	31.46	32.08
37129.1	28.43	28.85	29.24	29.72	29.69	30.22	30.07	30.69	30.61	31.12	30.85	31.44	32.07
37135.0	28.42	28.83	29.23	29.70	29.67	30.20	30.05	30.67	30.60	31.10	30.83	31.42	32.05
37140.9	28.40	28.82	29.21	29.69	29.65	30.19	30.03	30.66	30.58	31.08	30.82	31.40	32.03
37146.8	28.39	28.80	29.19	29.67	29.64	30.17	30.02	30.64	30.56	31.07	30.80	31.39	32.01
37152.6	28.37	28.78	29.18	29.66	29.62	30.15	30.00	30.62	30.55	31.05	30.78	31.37	32.00
37158.5	28.36	28.77	29.16	29.64	29.61	30.14	29.99	30.61	30.53	31.03	30.77	31.35	31.98
37164.4	28.34	28.75	29.15	29.63	29.59	30.12	29.97	30.59	30.51	31.02	30.75	31.34	31.96

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
37170.3	28.32	28.74	29.13	29.61	29.57	30.11	29.96	30.57	30.50	31.00	30.73	31.32	31.94
37176.1	28.31	28.72	29.11	29.59	29.56	30.09	29.94	30.56	30.48	30.98	30.72	31.30	31.91
37182.0	28.29	28.71	29.10	29.58	29.54	30.07	29.92	30.54	30.47	30.96	30.70	31.28	31.89
37187.9	28.28	28.69	29.08	29.56	29.53	30.06	29.91	30.52	30.45	30.95	30.68	31.26	31.87
37193.9	28.26	28.67	29.06	29.54	29.51	30.04	29.89	30.51	30.43	30.93	30.67	31.24	31.82
37199.8	28.24	28.66	29.05	29.53	29.49	30.03	29.87	30.49	30.42	30.92	30.65	31.22	31.80
37205.8	28.23	28.64	29.03	29.51	29.48	30.01	29.86	30.48	30.40	30.90	30.64	31.20	31.78
37211.7	28.21	28.62	29.01	29.50	29.46	29.99	29.84	30.46	30.39	30.88	30.62	31.19	31.76
37217.6	28.20	28.60	29.00	29.48	29.44	29.98	29.83	30.45	30.37	30.87	30.61	31.17	31.74
37223.6	28.18	28.59	28.98	29.46	29.43	29.96	29.81	30.43	30.36	30.85	30.59	31.16	31.72
37229.5	28.16	28.57	28.97	29.45	29.41	29.95	29.80	30.42	30.34	30.84	30.58	31.15	31.71
37235.5	28.15	28.56	28.95	29.43	29.40	29.93	29.78	30.40	30.33	30.83	30.56	31.13	31.69
37241.4	28.13	28.54	28.93	29.42	29.38	29.92	29.77	30.39	30.31	30.81	30.55	31.12	31.68
37247.4	28.12	28.53	28.92	29.40	29.37	29.90	29.75	30.37	30.30	30.80	30.53	31.10	31.66
37253.3	28.10	28.51	28.90	29.39	29.35	29.89	29.74	30.36	30.28	30.78	30.52	31.09	31.64
37259.2	28.09	28.49	28.89	29.38	29.34	29.88	29.73	30.35	30.27	30.77	30.51	31.08	31.63
37265.2	28.07	28.48	28.87	29.36	29.33	29.86	29.71	30.33	30.26	30.76	30.49	31.06	31.61
37271.1	28.06	28.47	28.86	29.35	29.31	29.85	29.70	30.32	30.25	30.75	30.48	31.05	31.60
37277.1	28.04	28.45	28.85	29.34	29.30	29.84	29.69	30.31	30.23	30.73	30.47	31.04	31.58
37283.0	28.03	28.44	28.83	29.32	29.29	29.82	29.67	30.29	30.22	30.72	30.45	31.03	31.57
37288.9	28.01	28.42	28.82	29.30	29.27	29.81	29.65	30.28	30.20	30.70	30.43	31.01	31.55
37294.8	27.99	28.40	28.80	29.29	29.25	29.79	29.64	30.26	30.18	30.68	30.42	30.99	31.52
37300.6	27.97	28.38	28.78	29.27	29.23	29.77	29.62	30.24	30.16	30.67	30.40	30.97	31.50
37306.5	27.95	28.36	28.76	29.25	29.21	29.75	29.60	30.22	30.14	30.65	30.38	30.95	31.48
37312.4	27.94	28.35	28.74	29.23	29.20	29.73	29.58	30.20	30.12	30.63	30.36	30.93	31.46
37318.3	27.92	28.33	28.73	29.21	29.18	29.71	29.56	30.18	30.10	30.61	30.34	30.91	31.44
37324.2	27.90	28.31	28.71	29.19	29.16	29.69	29.54	30.16	30.08	30.59	30.32	30.88	31.41
37330.1	27.88	28.29	28.69	29.17	29.14	29.67	29.52	30.14	30.06	30.57	30.30	30.86	31.39
37335.9	27.86	28.27	28.67	29.15	29.12	29.65	29.50	30.12	30.04	30.54	30.28	30.84	31.37
37341.8	27.84	28.25	28.65	29.13	29.10	29.63	29.48	30.09	30.02	30.52	30.25	30.82	31.34
37347.7	27.82	28.23	28.63	29.11	29.07	29.61	29.46	30.07	30.00	30.50	30.23	30.79	31.32
37353.6	27.80	28.21	28.61	29.09	29.05	29.58	29.43	30.05	29.97	30.48	30.21	30.77	31.29
37359.5	27.78	28.19	28.58	29.07	29.03	29.56	29.41	30.02	29.95	30.45	30.18	30.74	31.27
37365.4	27.76	28.17	28.56	29.04	29.01	29.54	29.39	30.00	29.93	30.43	30.16	30.72	31.24
37371.2	27.74	28.15	28.54	29.02	28.99	29.51	29.37	29.98	29.90	30.40	30.13	30.69	31.21
37377.1	27.71	28.12	28.52	29.00	28.96	29.49	29.34	29.95	29.88	30.38	30.11	30.67	31.19
37383.0	27.69	28.10	28.49	28.97	28.94	29.46	29.32	29.92	29.85	30.35	30.08	30.64	31.16
37388.8	27.67	28.08	28.48	28.95	28.92	29.45	29.30	29.90	29.83	30.33	30.06	30.62	31.14
37394.5	27.66	28.07	28.46	28.94	28.90	29.43	29.28	29.88	29.81	30.31	30.04	30.60	31.12
37400.3	27.64	28.05	28.44	28.92	28.88	29.41	29.26	29.87	29.79	30.29	30.02	30.58	31.10
37406.1	27.62	28.03	28.42	28.90	28.86	29.39	29.24	29.85	29.77	30.27	30.00	30.56	31.08
37411.8	27.61	28.01	28.40	28.88	28.85	29.37	29.22	29.83	29.76	30.26	29.99	30.54	31.06
37417.6	27.59	28.00	28.39	28.86	28.83	29.35	29.21	29.81	29.74	30.24	29.97	30.53	31.04
37423.4	27.57	27.98	28.37	28.85	28.81	29.33	29.19	29.79	29.72	30.22	29.95	30.51	31.02
37429.1	27.56	27.96	28.35	28.83	28.79	29.32	29.17	29.77	29.70	30.20	29.93	30.49	31.00
37434.9	27.54	27.94	28.33	28.81	28.78	29.30	29.15	29.76	29.68	30.18	29.91	30.47	30.98

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
37440.6	27.52	27.93	28.31	28.79	28.76	29.28	29.13	29.74	29.67	30.17	29.89	30.46	30.96
37446.4	27.50	27.91	28.30	28.78	28.74	29.26	29.12	29.72	29.65	30.15	29.88	30.44	30.95
37452.2	27.49	27.89	28.28	28.76	28.72	29.25	29.10	29.70	29.63	30.13	29.86	30.42	30.93
37457.9	27.47	27.87	28.26	28.74	28.71	29.23	29.08	29.69	29.61	30.12	29.84	30.40	30.91
37463.7	27.45	27.86	28.25	28.73	28.69	29.22	29.07	29.67	29.60	30.10	29.82	30.39	30.90
37469.5	27.43	27.84	28.23	28.71	28.68	29.20	29.05	29.65	29.58	30.08	29.81	30.37	30.88
37475.2	27.42	27.82	28.21	28.69	28.66	29.18	29.04	29.64	29.57	30.07	29.79	30.36	30.87
37481.0	27.40	27.81	28.20	28.68	28.64	29.17	29.02	29.62	29.55	30.05	29.78	30.35	30.86
37486.7	27.38	27.79	28.18	28.66	28.62	29.15	29.00	29.60	29.53	30.04	29.76	30.33	30.84
37492.4	27.36	27.77	28.16	28.64	28.60	29.13	28.98	29.58	29.51	30.02	29.74	30.31	30.83
37498.2	27.35	27.75	28.14	28.62	28.58	29.11	28.96	29.56	29.49	30.00	29.72	30.29	30.81
37503.9	27.33	27.73	28.12	28.60	28.56	29.09	28.94	29.54	29.47	29.98	29.70	30.27	30.80
37509.6	27.31	27.71	28.10	28.57	28.54	29.06	28.92	29.52	29.45	29.96	29.68	30.25	30.78
37515.3	27.29	27.69	28.08	28.55	28.52	29.04	28.89	29.50	29.43	29.94	29.66	30.23	30.76
37521.1	27.27	27.67	28.06	28.53	28.50	29.02	28.87	29.48	29.41	29.91	29.63	30.21	30.74
37526.8	27.25	27.65	28.04	28.51	28.48	29.00	28.85	29.46	29.38	29.89	29.61	30.19	30.72
37532.5	27.23	27.63	28.01	28.49	28.45	28.97	28.83	29.43	29.36	29.87	29.59	30.17	30.70
37538.2	27.21	27.61	27.99	28.47	28.43	28.95	28.80	29.41	29.34	29.85	29.57	30.14	30.68
37543.9	27.20	27.59	27.97	28.44	28.41	28.93	28.78	29.39	29.31	29.82	29.54	30.12	30.67
37549.7	27.18	27.57	27.95	28.42	28.39	28.90	28.76	29.36	29.29	29.80	29.52	30.10	30.65
37555.4	27.16	27.55	27.93	28.40	28.37	28.88	28.73	29.34	29.26	29.78	29.49	30.08	30.63
37561.1	27.14	27.53	27.91	28.38	28.34	28.86	28.71	29.31	29.24	29.75	29.47	30.05	30.61
37566.8	27.12	27.51	27.89	28.35	28.32	28.83	28.69	29.29	29.21	29.73	29.44	30.03	30.59
37572.6	27.10	27.49	27.87	28.33	28.30	28.81	28.66	29.26	29.19	29.70	29.42	30.00	30.57
37578.3	27.08	27.47	27.84	28.31	28.28	28.78	28.64	29.23	29.16	29.67	29.39	29.98	30.55
37584.0	27.06	27.45	27.82	28.29	28.25	28.76	28.62	29.21	29.14	29.64	29.36	29.95	30.53
37589.8	27.04	27.43	27.80	28.26	28.23	28.73	28.59	29.18	29.11	29.61	29.33	29.91	30.50
37595.6	27.02	27.40	27.78	28.24	28.20	28.71	28.56	29.15	29.08	29.58	29.31	29.88	30.47
37601.3	27.00	27.38	27.75	28.21	28.18	28.68	28.54	29.13	29.06	29.56	29.28	29.85	30.44
37607.1	26.98	27.36	27.73	28.19	28.16	28.66	28.51	29.10	29.03	29.53	29.25	29.82	30.42
37612.9	26.96	27.34	27.71	28.16	28.13	28.63	28.49	29.07	29.00	29.50	29.22	29.79	30.39
37618.7	26.94	27.32	27.68	28.14	28.11	28.60	28.46	29.04	28.97	29.47	29.19	29.76	30.36
37624.4	26.91	27.29	27.66	28.11	28.08	28.57	28.43	29.01	28.94	29.44	29.16	29.73	30.33
37630.2	26.89	27.27	27.64	28.09	28.05	28.55	28.41	28.98	28.91	29.41	29.13	29.70	30.31
37636.0	26.87	27.25	27.61	28.06	28.03	28.52	28.38	28.96	28.89	29.38	29.11	29.68	30.28
37641.8	26.85	27.23	27.59	28.04	28.00	28.50	28.36	28.94	28.87	29.36	29.08	29.65	30.26
37647.6	26.83	27.20	27.56	28.01	27.98	28.47	28.33	28.91	28.84	29.34	29.06	29.63	30.23
37653.3	26.81	27.18	27.54	27.98	27.95	28.44	28.30	28.88	28.81	29.30	29.03	29.60	30.20
37659.1	26.79	27.16	27.51	27.96	27.92	28.41	28.28	28.85	28.78	29.27	29.00	29.56	30.17
37664.9	26.76	27.13	27.49	27.93	27.90	28.39	28.25	28.82	28.75	29.24	28.96	29.53	30.14
37670.7	26.74	27.11	27.46	27.90	27.87	28.36	28.22	28.79	28.72	29.21	28.93	29.50	30.11
37676.4	26.72	27.09	27.44	27.87	27.84	28.33	28.19	28.76	28.69	29.18	28.90	29.47	30.08
37682.2	26.70	27.06	27.41	27.85	27.82	28.30	28.16	28.72	28.66	29.15	28.87	29.44	30.04
37688.0	26.68	27.04	27.39	27.82	27.79	28.27	28.13	28.69	28.63	29.12	28.84	29.40	30.01
37693.7	26.66	27.02	27.37	27.80	27.77	28.25	28.11	28.67	28.60	29.10	28.82	29.38	29.99
37699.4	26.64	27.00	27.34	27.77	27.74	28.22	28.09	28.65	28.58	29.07	28.79	29.36	29.96

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
37705.2	26.62	26.98	27.32	27.75	27.72	28.20	28.06	28.62	28.56	29.05	28.77	29.33	29.94
37710.9	26.60	26.96	27.30	27.73	27.70	28.18	28.04	28.60	28.53	29.03	28.75	29.31	29.92
37716.6	26.58	26.93	27.28	27.71	27.68	28.15	28.02	28.58	28.51	29.01	28.73	29.29	29.90
37722.3	26.56	26.91	27.26	27.69	27.66	28.13	28.00	28.55	28.49	28.98	28.70	29.26	29.88
37728.1	26.54	26.89	27.24	27.66	27.63	28.11	27.97	28.53	28.46	28.96	28.68	29.24	29.86
37733.8	26.52	26.87	27.21	27.64	27.61	28.09	27.95	28.51	28.44	28.94	28.66	29.22	29.83
37739.5	26.49	26.85	27.19	27.62	27.59	28.06	27.93	28.48	28.42	28.91	28.63	29.19	29.81
37745.2	26.47	26.83	27.17	27.59	27.56	28.04	27.90	28.46	28.39	28.89	28.61	29.17	29.79
37750.9	26.45	26.81	27.15	27.57	27.54	28.02	27.88	28.44	28.37	28.87	28.59	29.15	29.77
37756.7	26.43	26.78	27.13	27.55	27.52	27.99	27.86	28.41	28.35	28.85	28.56	29.12	29.75
37762.4	26.41	26.76	27.10	27.53	27.50	27.97	27.83	28.39	28.32	28.82	28.54	29.10	29.73
37768.1	26.39	26.74	27.08	27.50	27.47	27.95	27.81	28.37	28.30	28.79	28.51	29.07	29.70
37773.8	26.37	26.72	27.06	27.48	27.45	27.92	27.79	28.34	28.28	28.77	28.49	29.05	29.68
37779.6	26.34	26.70	27.04	27.46	27.43	27.90	27.77	28.32	28.25	28.74	28.46	29.02	29.66
37785.3	26.32	26.68	27.02	27.44	27.41	27.88	27.74	28.29	28.23	28.72	28.44	28.99	29.62
37791.0	26.30	26.65	26.99	27.41	27.38	27.85	27.72	28.27	28.20	28.70	28.41	28.97	29.57
37796.9	26.28	26.64	26.97	27.40	27.36	27.83	27.70	28.25	28.18	28.70	28.39	28.98	29.63
37802.9	26.27	26.62	26.96	27.38	27.35	27.81	27.68	28.22	28.16	28.67	28.37	28.95	29.60
37808.8	26.25	26.60	26.94	27.36	27.33	27.80	27.66	28.21	28.14	28.66	28.35	28.94	29.56
37814.8	26.23	26.59	26.92	27.34	27.31	27.78	27.65	28.19	28.12	28.63	28.33	28.90	29.52
37820.7	26.22	26.57	26.91	27.32	27.29	27.76	27.63	28.17	28.10	28.60	28.31	28.85	29.49
37826.6	26.20	26.55	26.89	27.31	27.28	27.74	27.61	28.15	28.08	28.57	28.29	28.84	29.48
37832.6	26.19	26.54	26.87	27.29	27.26	27.72	27.59	28.13	28.06	28.55	28.27	28.82	29.47
37838.5	26.17	26.52	26.86	27.27	27.24	27.71	27.57	28.11	28.04	28.53	28.25	28.80	29.44
37844.5	26.16	26.51	26.84	27.26	27.23	27.69	27.56	28.09	28.03	28.51	28.23	28.78	29.41
37850.4	26.15	26.50	26.83	27.24	27.21	27.67	27.54	28.07	28.01	28.49	28.22	28.77	29.41
37856.4	26.13	26.48	26.82	27.23	27.20	27.66	27.53	28.06	28.00	28.48	28.20	28.75	29.40
37862.3	26.12	26.47	26.80	27.22	27.19	27.64	27.51	28.04	27.98	28.46	28.18	28.74	29.39
37868.2	26.11	26.45	26.79	27.20	27.17	27.63	27.50	28.03	27.97	28.45	28.17	28.72	29.38
37874.2	26.09	26.44	26.78	27.19	27.16	27.62	27.49	28.01	27.95	28.44	28.16	28.71	29.37
37880.1	26.08	26.43	26.76	27.17	27.15	27.60	27.47	28.00	27.94	28.42	28.14	28.70	29.35
37886.1	26.07	26.42	26.75	27.16	27.13	27.59	27.46	27.99	27.92	28.41	28.13	28.69	29.33
37892.0	26.06	26.40	26.74	27.15	27.12	27.58	27.45	27.97	27.91	28.40	28.12	28.68	29.32
37897.9	26.04	26.39	26.72	27.14	27.11	27.56	27.43	27.96	27.90	28.39	28.10	28.66	29.31
37903.8	26.03	26.38	26.71	27.12	27.09	27.55	27.42	27.95	27.88	28.37	28.09	28.65	29.29
37909.6	26.01	26.36	26.70	27.11	27.08	27.54	27.41	27.93	27.87	28.36	28.07	28.64	29.28
37915.5	26.00	26.35	26.68	27.09	27.06	27.52	27.39	27.92	27.86	28.35	28.06	28.63	29.27
37921.4	25.99	26.33	26.67	27.08	27.05	27.51	27.38	27.90	27.84	28.33	28.05	28.61	29.26
37927.3	25.97	26.32	26.65	27.07	27.04	27.49	27.36	27.89	27.83	28.32	28.03	28.60	29.26
37933.2	25.96	26.31	26.64	27.05	27.02	27.48	27.35	27.88	27.81	28.31	28.02	28.59	29.25
37939.1	25.95	26.29	26.63	27.04	27.01	27.47	27.34	27.86	27.80	28.29	28.01	28.58	29.24
37944.9	25.93	26.28	26.61	27.02	26.99	27.45	27.32	27.85	27.79	28.28	27.99	28.56	29.23
37950.8	25.92	26.27	26.60	27.01	26.98	27.44	27.31	27.83	27.77	28.27	27.98	28.55	29.22
37956.7	25.90	26.25	26.58	27.00	26.97	27.43	27.29	27.82	27.76	28.26	27.97	28.54	29.21
37962.6	25.89	26.24	26.57	26.98	26.95	27.41	27.28	27.81	27.75	28.25	27.95	28.53	29.20
37968.5	25.88	26.22	26.56	26.97	26.94	27.40	27.27	27.79	27.73	28.23	27.94	28.53	29.18

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
37974.4	25.86	26.21	26.54	26.95	26.92	27.38	27.25	27.78	27.72	28.20	27.93	28.53	29.16
37980.2	25.85	26.20	26.53	26.94	26.91	27.37	27.24	27.77	27.70	28.20	27.91	28.50	29.17
37986.1	25.83	26.18	26.51	26.93	26.90	27.36	27.22	27.75	27.69	28.19	27.90	28.48	29.17
37992.0	25.82	26.17	26.50	26.91	26.88	27.34	27.21	27.74	27.68	28.18	27.89	28.47	29.16
37997.8	25.80	26.15	26.48	26.90	26.87	27.33	27.19	27.72	27.66	28.17	27.87	28.46	29.14
38003.5	25.79	26.14	26.47	26.88	26.85	27.31	27.18	27.71	27.65	28.15	27.86	28.45	29.12
38009.3	25.77	26.12	26.45	26.87	26.84	27.30	27.16	27.69	27.63	28.14	27.84	28.45	29.09
38015.1	25.76	26.11	26.44	26.85	26.82	27.28	27.15	27.68	27.62	28.12	27.83	28.43	29.07
38020.8	25.74	26.09	26.42	26.84	26.81	27.27	27.13	27.66	27.60	28.10	27.81	28.40	29.07
38026.6	25.73	26.08	26.41	26.82	26.79	27.25	27.12	27.65	27.59	28.08	27.79	28.38	29.05
38032.4	25.71	26.06	26.39	26.81	26.78	27.24	27.11	27.63	27.57	28.06	27.78	28.36	29.04
38038.1	25.70	26.05	26.38	26.79	26.76	27.22	27.09	27.62	27.56	28.05	27.77	28.34	29.04
38043.9	25.68	26.03	26.36	26.78	26.75	27.21	27.08	27.61	27.55	28.04	27.75	28.32	29.03
38049.6	25.67	26.02	26.35	26.76	26.73	27.20	27.06	27.59	27.53	28.02	27.74	28.30	29.02
38055.4	25.65	26.00	26.33	26.75	26.72	27.18	27.05	27.58	27.52	28.01	27.73	28.29	29.00
38061.2	25.64	25.99	26.32	26.73	26.70	27.17	27.04	27.57	27.51	28.00	27.71	28.28	28.99
38066.9	25.62	25.97	26.31	26.72	26.69	27.16	27.02	27.56	27.49	27.99	27.70	28.27	28.98
38072.7	25.61	25.96	26.29	26.71	26.68	27.14	27.01	27.54	27.48	27.97	27.69	28.25	28.95
38078.5	25.59	25.94	26.28	26.69	26.66	27.13	26.99	27.53	27.47	27.96	27.67	28.24	28.93
38084.2	25.58	25.93	26.26	26.68	26.65	27.11	26.98	27.51	27.45	27.95	27.66	28.23	28.92
38090.0	25.56	25.91	26.25	26.66	26.63	27.10	26.97	27.50	27.44	27.93	27.65	28.21	28.91
38096.0	25.55	25.90	26.23	26.65	26.62	27.08	26.95	27.48	27.42	27.92	27.63	28.20	28.91
38102.0	25.53	25.88	26.21	26.63	26.60	27.07	26.93	27.47	27.41	27.90	27.62	28.18	28.87
38108.0	25.51	25.86	26.20	26.61	26.58	27.05	26.92	27.45	27.39	27.89	27.60	28.17	28.86
38114.0	25.49	25.84	26.18	26.60	26.57	27.04	26.90	27.44	27.38	27.87	27.59	28.16	28.84
38120.0	25.47	25.82	26.16	26.58	26.55	27.02	26.88	27.42	27.36	27.86	27.57	28.14	28.82
38126.0	25.46	25.81	26.14	26.56	26.53	27.01	26.87	27.41	27.35	27.85	27.56	28.12	28.81
38132.0	25.44	25.79	26.12	26.54	26.51	26.99	26.85	27.40	27.33	27.83	27.54	28.10	28.79
38138.0	25.42	25.77	26.11	26.53	26.50	26.97	26.84	27.38	27.32	27.81	27.52	28.08	28.78
38144.0	25.40	25.75	26.09	26.51	26.48	26.96	26.82	27.37	27.30	27.79	27.51	28.06	28.77
38150.0	25.38	25.73	26.07	26.49	26.46	26.94	26.80	27.35	27.29	27.77	27.49	28.05	28.75
38156.0	25.36	25.72	26.05	26.48	26.45	26.93	26.79	27.34	27.28	27.76	27.48	28.04	28.74
38162.0	25.34	25.70	26.04	26.46	26.43	26.91	26.77	27.32	27.26	27.74	27.46	28.02	28.73
38168.0	25.32	25.68	26.02	26.45	26.42	26.90	26.76	27.31	27.25	27.73	27.44	28.01	28.71
38174.0	25.31	25.66	26.00	26.43	26.40	26.88	26.74	27.29	27.23	27.72	27.43	28.00	28.70
38180.0	25.29	25.64	25.99	26.41	26.38	26.87	26.73	27.28	27.22	27.70	27.42	27.99	28.69
38186.0	25.27	25.63	25.97	26.40	26.37	26.86	26.72	27.27	27.21	27.69	27.41	27.97	28.68
38192.0	25.25	25.61	25.95	26.39	26.35	26.84	26.70	27.26	27.20	27.68	27.40	27.96	28.67
38197.9	25.23	25.60	25.94	26.37	26.34	26.83	26.69	27.25	27.19	27.68	27.39	27.96	28.67
38203.8	25.22	25.58	25.93	26.36	26.33	26.82	26.68	27.24	27.18	27.67	27.38	27.95	28.67
38209.6	25.21	25.57	25.92	26.35	26.32	26.81	26.67	27.23	27.17	27.66	27.38	27.95	28.66
38215.5	25.19	25.56	25.91	26.34	26.31	26.80	26.66	27.22	27.16	27.65	27.37	27.94	28.65
38221.4	25.18	25.54	25.89	26.33	26.30	26.79	26.65	27.21	27.15	27.64	27.35	27.93	28.65
38227.3	25.16	25.53	25.88	26.32	26.28	26.78	26.64	27.20	27.14	27.63	27.34	27.92	28.64
38233.2	25.15	25.51	25.86	26.30	26.27	26.77	26.62	27.19	27.13	27.62	27.33	27.91	28.63
38239.1	25.13	25.50	25.85	26.29	26.26	26.75	26.61	27.18	27.12	27.61	27.32	27.90	28.63

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
38244.9	25.11	25.48	25.83	26.27	26.24	26.74	26.60	27.17	27.10	27.60	27.31	27.89	28.62
38250.8	25.10	25.46	25.82	26.26	26.23	26.73	26.58	27.15	27.09	27.58	27.29	27.87	28.61
38256.7	25.08	25.45	25.80	26.24	26.21	26.71	26.57	27.14	27.08	27.57	27.28	27.86	28.60
38262.6	25.06	25.43	25.79	26.23	26.20	26.70	26.55	27.13	27.06	27.56	27.27	27.85	28.59
38268.5	25.04	25.41	25.77	26.21	26.18	26.68	26.54	27.11	27.05	27.54	27.25	27.83	28.58
38274.4	25.02	25.39	25.75	26.19	26.16	26.67	26.52	27.10	27.03	27.53	27.24	27.82	28.56
38280.2	25.00	25.38	25.73	26.18	26.15	26.65	26.51	27.08	27.02	27.51	27.22	27.80	28.55
38286.1	24.98	25.36	25.71	26.16	26.13	26.64	26.49	27.07	27.00	27.49	27.20	27.78	28.53
38292.0	24.96	25.34	25.70	26.14	26.11	26.62	26.47	27.05	26.99	27.47	27.19	27.76	28.51
38297.8	24.94	25.32	25.67	26.12	26.09	26.60	26.45	27.03	26.97	27.45	27.16	27.74	28.48
38303.5	24.92	25.29	25.65	26.10	26.07	26.58	26.43	27.01	26.94	27.43	27.14	27.71	28.46
38309.3	24.90	25.27	25.63	26.08	26.05	26.55	26.41	26.99	26.92	27.41	27.12	27.69	28.43
38315.1	24.88	25.25	25.61	26.06	26.02	26.53	26.39	26.97	26.90	27.38	27.10	27.67	28.41
38320.8	24.86	25.23	25.59	26.03	26.00	26.51	26.37	26.94	26.88	27.36	27.08	27.64	28.39
38326.6	24.83	25.21	25.57	26.01	25.98	26.49	26.34	26.92	26.86	27.34	27.06	27.62	28.37
38332.4	24.81	25.19	25.55	25.99	25.96	26.47	26.32	26.90	26.84	27.32	27.03	27.60	28.35
38338.1	24.79	25.17	25.53	25.97	25.94	26.45	26.30	26.88	26.82	27.29	27.01	27.58	28.33
38343.9	24.77	25.15	25.50	25.95	25.92	26.43	26.28	26.86	26.79	27.27	26.99	27.55	28.30
38349.6	24.75	25.13	25.48	25.93	25.90	26.40	26.26	26.83	26.77	27.25	26.97	27.53	28.28
38355.4	24.73	25.10	25.46	25.91	25.87	26.38	26.24	26.81	26.75	27.22	26.94	27.51	28.26
38361.2	24.71	25.08	25.44	25.88	25.85	26.36	26.21	26.79	26.73	27.20	26.92	27.48	28.24
38366.9	24.69	25.06	25.42	25.86	25.83	26.34	26.19	26.77	26.70	27.18	26.90	27.46	28.22
38372.7	24.67	25.04	25.40	25.84	25.81	26.32	26.17	26.74	26.68	27.15	26.87	27.43	28.20
38378.5	24.65	25.02	25.38	25.82	25.79	26.29	26.15	26.72	26.66	27.13	26.85	27.41	28.17
38384.2	24.63	25.00	25.35	25.80	25.76	26.27	26.12	26.70	26.64	27.10	26.82	27.38	28.15
38390.0	24.61	24.98	25.33	25.77	25.74	26.25	26.10	26.67	26.61	27.08	26.80	27.36	28.13
38396.0	24.59	24.96	25.32	25.76	25.73	26.23	26.09	26.66	26.60	27.07	26.79	27.35	28.11
38402.0	24.57	24.95	25.30	25.75	25.71	26.22	26.08	26.65	26.59	27.06	26.78	27.33	28.10
38408.0	24.56	24.93	25.29	25.73	25.70	26.21	26.06	26.64	26.58	27.05	26.77	27.32	28.09
38414.0	24.54	24.92	25.28	25.72	25.69	26.20	26.05	26.63	26.57	27.03	26.76	27.31	28.08
38420.0	24.53	24.90	25.26	25.71	25.67	26.19	26.04	26.62	26.56	27.02	26.75	27.30	28.07
38426.0	24.51	24.89	25.25	25.69	25.66	26.18	26.03	26.61	26.55	27.01	26.73	27.28	28.06
38432.0	24.49	24.88	25.23	25.68	25.65	26.17	26.02	26.60	26.54	27.00	26.72	27.27	28.05
38438.0	24.48	24.86	25.22	25.67	25.64	26.16	26.01	26.59	26.53	26.99	26.71	27.26	28.04
38444.0	24.46	24.85	25.21	25.66	25.63	26.15	26.00	26.58	26.52	26.97	26.70	27.25	28.03
38450.0	24.45	24.83	25.20	25.65	25.61	26.14	25.99	26.57	26.51	26.96	26.69	27.23	28.02
38456.0	24.43	24.82	25.18	25.64	25.60	26.12	25.97	26.56	26.50	26.95	26.68	27.22	28.01
38462.0	24.42	24.81	25.17	25.62	25.59	26.11	25.96	26.54	26.48	26.94	26.66	27.21	28.01
38468.0	24.41	24.79	25.16	25.61	25.58	26.10	25.95	26.53	26.47	26.93	26.65	27.21	28.00
38474.0	24.39	24.78	25.15	25.60	25.57	26.09	25.94	26.53	26.46	26.92	26.65	27.20	28.00
38480.0	24.38	24.77	25.13	25.59	25.55	26.08	25.93	26.52	26.46	26.92	26.64	27.19	27.99
38486.0	24.36	24.76	25.12	25.57	25.54	26.07	25.92	26.51	26.45	26.91	26.63	27.19	27.99
38492.0	24.35	24.74	25.11	25.56	25.53	26.06	25.91	26.51	26.45	26.91	26.63	27.18	27.98
38492.0	24.35	24.74	25.11	25.56	25.53	26.06	25.91	26.51	26.45	26.91	26.63	27.18	27.98
38507.4	24.33	24.70	25.06	25.50	25.47	25.99	25.84	26.44	26.37	26.83	26.55	27.10	27.89
38522.8	24.26	24.64	24.98	25.43	25.40	25.91	25.76	26.36	26.30	26.74	26.47	27.00	27.79

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
38538.1	24.18	24.55	24.90	25.34	25.31	25.83	25.68	26.27	26.21	26.64	26.38	26.90	27.68
38553.5	24.08	24.45	24.80	25.25	25.21	25.73	25.59	26.17	26.11	26.54	26.28	26.79	27.56
38568.5	23.59	23.93	24.27	24.67	24.64	25.09	24.96	25.50	25.43	25.96	25.66	26.26	26.87
38587.3	23.53	23.88	24.22	24.62	24.59	25.05	24.92	25.45	25.39	25.92	25.62	26.22	26.85
38606.2	23.49	23.84	24.18	24.60	24.57	25.03	24.90	25.43	25.37	25.90	25.59	26.21	26.84
38625.0	23.45	23.81	24.17	24.59	24.56	25.02	24.89	25.42	25.36	25.89	25.59	26.20	26.86
38625.0	23.45	23.81	24.17	24.59	24.56	25.02	24.89	25.42	25.36	25.89	25.59	26.20	26.86
38631.0	23.43	23.79	24.15	24.57	24.54	25.00	24.87	25.41	25.34	25.88	25.57	26.19	26.84
38637.0	23.41	23.77	24.13	24.55	24.52	24.98	24.85	25.39	25.33	25.86	25.56	26.17	26.83
38643.0	23.39	23.76	24.11	24.54	24.51	24.97	24.84	25.37	25.31	25.85	25.54	26.16	26.81
38649.0	23.37	23.74	24.10	24.52	24.49	24.95	24.82	25.36	25.29	25.83	25.52	26.14	26.79
38655.0	23.36	23.72	24.08	24.50	24.47	24.93	24.80	25.34	25.28	25.82	25.51	26.13	26.77
38661.0	23.34	23.70	24.06	24.49	24.46	24.92	24.79	25.33	25.26	25.80	25.49	26.11	26.76
38667.0	23.32	23.69	24.05	24.47	24.44	24.90	24.77	25.31	25.24	25.78	25.48	26.09	26.74
38673.0	23.30	23.67	24.03	24.45	24.42	24.88	24.75	25.30	25.23	25.77	25.46	26.08	26.72
38679.0	23.29	23.66	24.01	24.44	24.41	24.87	24.74	25.28	25.21	25.75	25.44	26.06	26.70
38685.0	23.27	23.64	24.00	24.42	24.39	24.85	24.72	25.26	25.20	25.73	25.42	26.04	26.68
38691.0	23.25	23.62	23.98	24.41	24.38	24.84	24.71	25.24	25.18	25.71	25.41	26.02	26.66
38697.0	23.24	23.61	23.97	24.39	24.36	24.82	24.69	25.23	25.16	25.70	25.39	26.00	26.64
38703.0	23.23	23.59	23.95	24.37	24.34	24.80	24.67	25.21	25.14	25.68	25.37	25.98	26.62
38709.0	23.21	23.58	23.94	24.36	24.33	24.79	24.66	25.19	25.13	25.66	25.36	25.97	26.61
38715.0	23.20	23.57	23.92	24.34	24.31	24.77	24.64	25.18	25.11	25.64	25.34	25.95	26.61
38721.0	23.18	23.55	23.91	24.33	24.30	24.75	24.62	25.16	25.09	25.62	25.32	25.93	26.59
38726.9	23.17	23.53	23.89	24.31	24.28	24.73	24.60	25.14	25.07	25.61	25.30	25.91	26.58
38732.9	23.15	23.51	23.87	24.29	24.26	24.71	24.58	25.12	25.06	25.59	25.29	25.89	26.56
38738.8	23.13	23.50	23.85	24.27	24.24	24.70	24.57	25.10	25.04	25.57	25.27	25.88	26.55
38744.8	23.11	23.48	23.83	24.25	24.22	24.68	24.55	25.09	25.02	25.55	25.25	25.86	26.51
38750.7	23.09	23.46	23.81	24.23	24.20	24.66	24.53	25.07	25.00	25.54	25.23	25.84	26.49
38756.6	23.07	23.44	23.79	24.21	24.18	24.64	24.51	25.05	24.98	25.52	25.21	25.82	26.46
38762.6	23.05	23.42	23.77	24.19	24.16	24.62	24.49	25.03	24.97	25.50	25.20	25.81	26.44
38768.5	23.03	23.40	23.75	24.17	24.14	24.60	24.47	25.01	24.95	25.48	25.18	25.79	26.43
38774.5	23.01	23.38	23.73	24.15	24.12	24.58	24.45	25.00	24.93	25.47	25.16	25.77	26.41
38780.4	22.99	23.36	23.71	24.13	24.10	24.56	24.43	24.98	24.91	25.45	25.14	25.75	26.39
38786.4	22.97	23.33	23.69	24.11	24.08	24.54	24.41	24.96	24.89	25.43	25.12	25.74	26.37
38792.3	22.95	23.31	23.67	24.09	24.06	24.52	24.39	24.94	24.87	25.41	25.10	25.72	26.36
38798.2	22.92	23.29	23.65	24.07	24.04	24.50	24.37	24.92	24.85	25.39	25.08	25.70	26.34
38804.2	22.90	23.27	23.63	24.05	24.02	24.48	24.35	24.90	24.83	25.37	25.06	25.68	26.32
38810.1	22.88	23.25	23.60	24.03	24.00	24.46	24.33	24.88	24.81	25.35	25.04	25.66	26.30
38816.1	22.85	23.22	23.58	24.01	23.98	24.44	24.31	24.86	24.79	25.33	25.02	25.64	26.27
38822.0	22.83	23.20	23.56	23.98	23.95	24.42	24.29	24.84	24.77	25.31	25.00	25.62	26.25
38828.0	22.81	23.18	23.54	23.96	23.93	24.40	24.27	24.81	24.75	25.28	24.98	25.59	26.22
38834.0	22.79	23.15	23.51	23.94	23.91	24.37	24.24	24.79	24.72	25.26	24.95	25.56	26.19
38840.0	22.76	23.13	23.49	23.91	23.88	24.35	24.22	24.76	24.70	25.23	24.93	25.53	26.16
38846.0	22.74	23.10	23.46	23.89	23.86	24.32	24.19	24.74	24.67	25.20	24.90	25.50	26.13
38852.0	22.72	23.08	23.44	23.86	23.83	24.30	24.17	24.71	24.64	25.18	24.87	25.48	26.10
38858.0	22.69	23.06	23.41	23.84	23.81	24.27	24.14	24.68	24.62	25.15	24.85	25.45	26.07

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
38864.0	22.67	23.03	23.39	23.81	23.78	24.25	24.11	24.66	24.59	25.12	24.82	25.42	26.03
38870.0	22.65	23.01	23.36	23.79	23.75	24.22	24.09	24.63	24.56	25.09	24.79	25.38	26.00
38876.0	22.62	22.98	23.33	23.76	23.73	24.19	24.06	24.60	24.54	25.06	24.76	25.35	25.97
38882.0	22.60	22.96	23.31	23.73	23.70	24.17	24.03	24.57	24.51	25.03	24.73	25.32	25.93
38888.0	22.58	22.93	23.28	23.71	23.68	24.14	24.01	24.54	24.48	25.00	24.70	25.29	25.89
38894.0	22.55	22.91	23.26	23.68	23.65	24.11	23.98	24.51	24.45	24.96	24.67	25.25	25.86
38900.0	22.53	22.88	23.23	23.65	23.62	24.08	23.95	24.48	24.42	24.93	24.64	25.22	25.82
38906.0	22.50	22.86	23.20	23.62	23.59	24.05	23.92	24.45	24.39	24.90	24.61	25.18	25.78
38912.0	22.48	22.83	23.17	23.59	23.56	24.02	23.89	24.42	24.36	24.86	24.57	25.15	25.74
38918.0	22.45	22.80	23.15	23.57	23.54	23.99	23.86	24.39	24.32	24.83	24.54	25.11	25.70
38924.0	22.43	22.78	23.12	23.54	23.51	23.96	23.83	24.36	24.29	24.79	24.51	25.07	25.65
38930.0	22.43	22.78	23.12	23.55	23.52	23.97	23.84	24.37	24.31	24.81	24.53	25.09	25.68
38936.0	22.43	22.78	23.12	23.55	23.52	23.98	23.85	24.39	24.32	24.83	24.54	25.11	25.70
38942.0	22.42	22.78	23.12	23.54	23.51	23.98	23.85	24.39	24.33	24.84	24.55	25.12	25.71
38948.0	22.41	22.77	23.11	23.54	23.50	23.98	23.84	24.39	24.33	24.84	24.55	25.13	25.72
38954.0	22.40	22.76	23.10	23.53	23.49	23.97	23.83	24.38	24.32	24.84	24.55	25.13	25.72
38960.0	22.39	22.74	23.09	23.51	23.48	23.95	23.82	24.37	24.30	24.84	24.53	25.13	25.72
38966.0	22.37	22.73	23.07	23.50	23.47	23.94	23.80	24.36	24.29	24.82	24.52	25.12	25.72
38972.0	22.35	22.71	23.05	23.48	23.45	23.92	23.79	24.34	24.27	24.80	24.50	25.10	25.71
38978.0	22.33	22.69	23.03	23.46	23.43	23.90	23.77	24.32	24.25	24.79	24.48	25.08	25.72
38984.0	22.31	22.67	23.01	23.44	23.41	23.88	23.75	24.30	24.24	24.77	24.46	25.07	25.72
38990.0	22.29	22.65	22.99	23.42	23.39	23.86	23.73	24.28	24.22	24.75	24.45	25.07	25.70
38996.0	22.26	22.62	22.97	23.40	23.37	23.84	23.71	24.26	24.19	24.72	24.42	25.04	25.67
39002.0	22.24	22.60	22.95	23.38	23.35	23.82	23.68	24.24	24.17	24.70	24.40	25.03	25.65
39008.0	22.21	22.57	22.92	23.35	23.32	23.79	23.66	24.21	24.14	24.67	24.37	25.01	25.64
39014.0	22.18	22.54	22.89	23.32	23.29	23.77	23.63	24.18	24.12	24.65	24.35	24.97	25.59
39020.0	22.15	22.51	22.86	23.29	23.26	23.74	23.60	24.15	24.09	24.61	24.31	24.91	25.52
39026.0	22.13	22.49	22.83	23.27	23.23	23.71	23.57	24.12	24.06	24.58	24.28	24.87	25.48
39032.0	22.10	22.46	22.80	23.24	23.20	23.68	23.54	24.09	24.02	24.54	24.25	24.83	25.46
39037.8	22.09	22.45	22.80	23.23	23.20	23.67	23.54	24.09	24.02	24.54	24.25	24.81	25.47
39043.6	22.08	22.44	22.79	23.23	23.20	23.67	23.54	24.09	24.02	24.54	24.25	24.82	25.45
39049.4	22.07	22.44	22.79	23.23	23.20	23.67	23.54	24.09	24.02	24.54	24.25	24.83	25.44
39055.2	22.07	22.43	22.79	23.23	23.19	23.67	23.54	24.09	24.02	24.55	24.25	24.84	25.43
39060.9	22.06	22.43	22.78	23.23	23.19	23.67	23.54	24.09	24.03	24.55	24.25	24.84	25.43
39066.7	22.05	22.43	22.78	23.23	23.19	23.68	23.54	24.09	24.03	24.55	24.26	24.84	25.43
39072.5	22.05	22.42	22.78	23.23	23.19	23.68	23.54	24.10	24.03	24.55	24.26	24.85	25.44
39078.3	22.05	22.42	22.78	23.23	23.19	23.68	23.54	24.10	24.03	24.56	24.26	24.85	25.44
39084.1	22.04	22.42	22.78	23.23	23.20	23.68	23.54	24.10	24.04	24.56	24.26	24.85	25.44
39089.9	22.04	22.42	22.78	23.23	23.20	23.68	23.55	24.11	24.04	24.57	24.27	24.86	25.45
39095.7	22.04	22.42	22.78	23.23	23.20	23.69	23.55	24.11	24.04	24.57	24.27	24.86	25.45
39101.5	22.04	22.42	22.78	23.23	23.20	23.69	23.55	24.11	24.05	24.57	24.28	24.87	25.46
39107.3	22.04	22.42	22.78	23.23	23.20	23.69	23.55	24.12	24.05	24.58	24.28	24.87	25.46
39113.1	22.03	22.42	22.78	23.24	23.20	23.69	23.56	24.12	24.05	24.58	24.28	24.87	25.47
39118.8	22.03	22.42	22.79	23.24	23.21	23.70	23.56	24.12	24.06	24.59	24.29	24.88	25.47
39124.6	22.03	22.42	22.79	23.24	23.21	23.70	23.56	24.13	24.06	24.59	24.29	24.88	25.48
39130.4	22.03	22.42	22.79	23.24	23.21	23.70	23.56	24.13	24.06	24.60	24.29	24.89	25.49

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39136.2	22.03	22.42	22.79	23.24	23.21	23.71	23.57	24.13	24.07	24.60	24.30	24.90	25.51
39142.0	22.03	22.42	22.79	23.25	23.21	23.71	23.57	24.14	24.07	24.61	24.30	24.90	25.52
39147.7	22.02	22.41	22.78	23.23	23.20	23.69	23.55	24.12	24.05	24.59	24.29	24.88	25.50
39153.5	22.01	22.39	22.76	23.21	23.18	23.68	23.54	24.10	24.04	24.57	24.27	24.86	25.49
39159.2	21.99	22.38	22.75	23.20	23.17	23.66	23.52	24.09	24.02	24.56	24.25	24.84	25.47
39164.9	21.98	22.36	22.73	23.18	23.15	23.64	23.50	24.07	24.00	24.54	24.23	24.83	25.45
39170.7	21.96	22.35	22.71	23.17	23.13	23.62	23.48	24.05	23.98	24.52	24.22	24.81	25.43
39176.4	21.95	22.33	22.70	23.15	23.12	23.61	23.47	24.03	23.96	24.50	24.20	24.80	25.41
39182.2	21.93	22.31	22.68	23.13	23.10	23.59	23.45	24.01	23.94	24.48	24.18	24.78	25.40
39187.9	21.91	22.30	22.66	23.11	23.08	23.57	23.43	23.99	23.93	24.47	24.16	24.77	25.39
39193.6	21.90	22.28	22.65	23.09	23.06	23.55	23.41	23.97	23.91	24.45	24.14	24.74	25.37
39199.4	21.88	22.26	22.63	23.08	23.04	23.54	23.39	23.96	23.89	24.43	24.11	24.72	25.33
39205.1	21.86	22.24	22.61	23.06	23.02	23.52	23.38	23.94	23.87	24.41	24.10	24.71	25.30
39210.8	21.84	22.22	22.59	23.04	23.00	23.49	23.36	23.92	23.85	24.38	24.08	24.68	25.27
39216.6	21.82	22.20	22.57	23.01	22.98	23.47	23.33	23.89	23.83	24.35	24.05	24.64	25.25
39222.3	21.80	22.18	22.54	22.99	22.96	23.45	23.31	23.87	23.80	24.33	24.03	24.63	25.24
39228.1	21.78	22.16	22.52	22.97	22.94	23.42	23.29	23.84	23.78	24.30	24.00	24.61	25.22
39233.8	21.76	22.14	22.50	22.94	22.91	23.40	23.26	23.82	23.75	24.28	23.98	24.58	25.18
39239.5	21.74	22.11	22.47	22.92	22.89	23.37	23.23	23.79	23.72	24.25	23.95	24.55	25.15
39245.3	21.72	22.09	22.45	22.89	22.86	23.34	23.21	23.76	23.70	24.22	23.92	24.52	25.12
39251.0	21.69	22.06	22.42	22.86	22.83	23.31	23.18	23.73	23.67	24.19	23.89	24.48	25.09
39256.8	21.67	22.04	22.40	22.84	22.81	23.29	23.15	23.71	23.64	24.16	23.87	24.45	25.06
39262.6	21.65	22.02	22.38	22.82	22.78	23.26	23.13	23.68	23.62	24.13	23.84	24.43	25.03
39268.4	21.63	22.00	22.35	22.79	22.76	23.24	23.10	23.66	23.59	24.11	23.81	24.40	25.01
39274.2	21.60	21.97	22.33	22.77	22.73	23.21	23.08	23.63	23.56	24.08	23.79	24.37	24.98
39279.9	21.58	21.95	22.30	22.74	22.71	23.19	23.05	23.60	23.53	24.05	23.76	24.34	24.95
39285.7	21.56	21.92	22.28	22.71	22.68	23.16	23.02	23.57	23.51	24.02	23.73	24.31	24.92
39291.5	21.53	21.90	22.25	22.68	22.65	23.13	22.99	23.54	23.48	23.99	23.70	24.28	24.88
39297.3	21.50	21.87	22.22	22.65	22.62	23.10	22.96	23.51	23.45	23.96	23.67	24.24	24.84
39303.1	21.48	21.84	22.19	22.62	22.59	23.07	22.93	23.48	23.41	23.92	23.63	24.21	24.81
39308.9	21.45	21.81	22.16	22.59	22.56	23.03	22.90	23.44	23.38	23.88	23.59	24.17	24.77
39314.7	21.42	21.78	22.12	22.55	22.52	22.99	22.86	23.40	23.33	23.84	23.55	24.12	24.74
39320.5	21.39	21.75	22.09	22.51	22.48	22.95	22.82	23.36	23.29	23.80	23.51	24.08	24.70
39326.3	21.35	21.71	22.05	22.48	22.45	22.91	22.78	23.32	23.26	23.76	23.48	24.05	24.66
39332.1	21.32	21.68	22.02	22.44	22.41	22.88	22.74	23.28	23.22	23.72	23.44	24.01	24.62
39337.8	21.28	21.64	21.98	22.40	22.37	22.84	22.70	23.24	23.18	23.68	23.40	23.97	24.58
39343.6	21.25	21.60	21.94	22.36	22.33	22.79	22.66	23.20	23.14	23.64	23.36	23.92	24.54
39349.4	21.21	21.56	21.90	22.32	22.29	22.75	22.62	23.16	23.09	23.60	23.31	23.88	24.49
39355.2	21.16	21.52	21.85	22.27	22.24	22.70	22.57	23.11	23.04	23.55	23.26	23.82	24.44
39361.0	21.12	21.47	21.81	22.23	22.20	22.66	22.53	23.06	23.00	23.50	23.21	23.77	24.39
39367.0	21.09	21.45	21.78	22.20	22.17	22.63	22.50	23.03	22.97	23.47	23.19	23.75	24.37
39373.0	21.07	21.42	21.76	22.17	22.14	22.60	22.47	23.00	22.94	23.43	23.15	23.71	24.32
39379.0	21.05	21.40	21.73	22.15	22.12	22.57	22.44	22.97	22.90	23.40	23.12	23.67	24.28
39385.0	21.02	21.37	21.71	22.12	22.09	22.54	22.42	22.94	22.88	23.37	23.09	23.65	24.25
39391.0	21.00	21.35	21.69	22.10	22.07	22.51	22.39	22.91	22.84	23.33	23.05	23.61	24.20
39397.0	20.98	21.33	21.66	22.07	22.04	22.49	22.36	22.87	22.81	23.30	23.02	23.58	24.16

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39403.0	20.96	21.31	21.64	22.05	22.02	22.46	22.34	22.85	22.79	23.27	22.99	23.55	24.12
39409.0	20.94	21.29	21.62	22.03	22.00	22.44	22.31	22.82	22.76	23.24	22.97	23.51	24.09
39415.0	20.92	21.27	21.60	22.00	21.98	22.41	22.29	22.79	22.73	23.21	22.94	23.48	24.06
39421.0	20.90	21.25	21.58	21.98	21.95	22.39	22.27	22.77	22.71	23.19	22.92	23.46	24.04
39427.0	20.88	21.23	21.56	21.96	21.93	22.37	22.25	22.75	22.69	23.16	22.89	23.44	24.01
39433.0	20.87	21.21	21.54	21.94	21.92	22.35	22.23	22.73	22.67	23.14	22.87	23.41	23.99
39439.0	20.85	21.20	21.52	21.93	21.90	22.34	22.21	22.71	22.65	23.12	22.85	23.39	23.97
39445.0	20.83	21.18	21.51	21.91	21.88	22.32	22.20	22.69	22.64	23.10	22.83	23.36	23.94
39451.0	20.82	21.16	21.49	21.89	21.87	22.30	22.18	22.68	22.62	23.08	22.82	23.34	23.92
39457.0	20.80	21.15	21.48	21.88	21.85	22.29	22.17	22.67	22.61	23.07	22.81	23.33	23.91
39463.0	20.79	21.13	21.46	21.87	21.84	22.28	22.16	22.66	22.60	23.06	22.80	23.32	23.89
39469.0	20.78	21.12	21.45	21.86	21.83	22.27	22.15	22.65	22.59	23.05	22.79	23.31	23.88
39475.0	20.76	21.11	21.44	21.85	21.82	22.27	22.14	22.65	22.59	23.05	22.79	23.31	23.88
39481.0	20.75	21.09	21.42	21.83	21.80	22.25	22.12	22.63	22.57	23.03	22.77	23.29	23.85
39487.0	20.73	21.07	21.40	21.81	21.78	22.23	22.10	22.61	22.55	23.00	22.75	23.26	23.82
39493.0	20.71	21.05	21.38	21.79	21.76	22.21	22.08	22.58	22.53	22.98	22.72	23.24	23.79
39499.0	20.69	21.03	21.36	21.77	21.74	22.19	22.06	22.56	22.50	22.96	22.70	23.22	23.77
39505.0	20.67	21.01	21.34	21.75	21.72	22.16	22.04	22.54	22.48	22.94	22.68	23.19	23.74
39511.0	20.65	20.99	21.32	21.73	21.70	22.14	22.02	22.52	22.46	22.91	22.66	23.17	23.71
39517.0	20.63	20.97	21.30	21.71	21.68	22.12	22.00	22.50	22.44	22.89	22.64	23.15	23.69
39523.0	20.61	20.95	21.28	21.69	21.66	22.10	21.97	22.48	22.42	22.87	22.61	23.13	23.68
39529.0	20.59	20.93	21.26	21.66	21.64	22.08	21.95	22.45	22.40	22.85	22.59	23.11	23.66
39535.0	20.57	20.91	21.24	21.64	21.61	22.06	21.93	22.43	22.37	22.83	22.57	23.09	23.63
39541.0	20.55	20.89	21.22	21.62	21.59	22.03	21.91	22.41	22.35	22.81	22.55	23.06	23.61
39547.0	20.53	20.87	21.19	21.60	21.57	22.01	21.89	22.39	22.33	22.79	22.53	23.04	23.58
39553.0	20.51	20.85	21.17	21.58	21.55	21.99	21.87	22.37	22.31	22.77	22.51	23.02	23.56
39559.0	20.49	20.82	21.15	21.56	21.53	21.97	21.84	22.35	22.29	22.74	22.49	23.00	23.54
39565.0	20.47	20.80	21.13	21.53	21.51	21.95	21.82	22.32	22.27	22.72	22.46	22.98	23.52
39571.0	20.44	20.78	21.11	21.51	21.48	21.93	21.80	22.30	22.24	22.70	22.44	22.96	23.50
39577.0	20.42	20.76	21.09	21.49	21.46	21.90	21.78	22.28	22.22	22.68	22.42	22.93	23.47
39583.0	20.40	20.74	21.06	21.47	21.44	21.88	21.76	22.26	22.20	22.66	22.40	22.91	23.45
39589.0	20.38	20.72	21.04	21.45	21.42	21.86	21.73	22.24	22.18	22.64	22.38	22.89	23.43
39594.8	20.36	20.70	21.03	21.43	21.40	21.84	21.72	22.22	22.16	22.62	22.36	22.88	23.42
39600.6	20.35	20.68	21.01	21.41	21.38	21.83	21.70	22.21	22.15	22.61	22.35	22.86	23.40
39606.4	20.33	20.67	20.99	21.40	21.37	21.81	21.68	22.19	22.13	22.59	22.33	22.85	23.39
39612.2	20.32	20.65	20.98	21.38	21.35	21.79	21.67	22.18	22.12	22.58	22.32	22.83	23.38
39618.0	20.30	20.64	20.96	21.36	21.33	21.77	21.65	22.16	22.10	22.56	22.30	22.82	23.36
39623.8	20.28	20.62	20.94	21.35	21.32	21.76	21.63	22.14	22.08	22.55	22.29	22.81	23.35
39629.6	20.27	20.60	20.93	21.33	21.30	21.74	21.62	22.13	22.06	22.53	22.27	22.79	23.34
39635.4	20.25	20.59	20.91	21.31	21.28	21.72	21.60	22.11	22.05	22.52	22.25	22.78	23.32
39641.2	20.24	20.57	20.89	21.30	21.27	21.71	21.58	22.09	22.03	22.50	22.24	22.76	23.31
39647.0	20.22	20.55	20.88	21.28	21.25	21.69	21.57	22.08	22.01	22.49	22.22	22.75	23.30
39652.8	20.20	20.54	20.86	21.26	21.23	21.67	21.55	22.06	22.00	22.47	22.20	22.73	23.28
39658.6	20.18	20.52	20.84	21.25	21.22	21.66	21.53	22.04	21.98	22.45	22.19	22.72	23.27
39664.4	20.17	20.50	20.83	21.23	21.20	21.64	21.52	22.02	21.96	22.44	22.17	22.70	23.25
39670.2	20.15	20.48	20.81	21.21	21.18	21.62	21.50	22.01	21.95	22.42	22.15	22.68	23.24

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39676.0	20.13	20.47	20.79	21.20	21.17	21.61	21.48	21.99	21.93	22.41	22.14	22.67	23.22
39681.8	20.11	20.45	20.77	21.18	21.15	21.59	21.47	21.97	21.91	22.39	22.12	22.65	23.21
39687.6	20.09	20.43	20.76	21.16	21.13	21.57	21.45	21.96	21.89	22.37	22.10	22.63	23.20
39693.4	20.08	20.41	20.74	21.14	21.11	21.55	21.43	21.94	21.88	22.35	22.08	22.62	23.18
39699.2	20.06	20.39	20.72	21.13	21.10	21.54	21.41	21.92	21.86	22.34	22.06	22.60	23.17
39705.0	20.04	20.38	20.70	21.11	21.08	21.52	21.40	21.90	21.84	22.32	22.05	22.59	23.16
39710.8	20.02	20.36	20.69	21.09	21.06	21.50	21.38	21.89	21.82	22.30	22.03	22.57	23.14
39716.6	20.00	20.34	20.67	21.07	21.04	21.48	21.36	21.87	21.81	22.29	22.01	22.56	23.13
39722.4	19.99	20.32	20.65	21.06	21.03	21.47	21.34	21.85	21.79	22.27	22.00	22.54	23.11
39728.2	19.97	20.31	20.63	21.04	21.01	21.45	21.32	21.84	21.77	22.26	21.98	22.53	23.10
39734.0	19.95	20.29	20.62	21.02	20.99	21.43	21.31	21.82	21.76	22.24	21.97	22.51	23.09
39739.8	19.93	20.27	20.60	21.00	20.97	21.41	21.29	21.80	21.74	22.22	21.95	22.50	23.08
39745.6	19.92	20.25	20.58	20.98	20.95	21.40	21.27	21.79	21.72	22.21	21.93	22.48	23.06
39751.4	19.90	20.24	20.56	20.97	20.94	21.38	21.25	21.77	21.71	22.19	21.91	22.47	23.04
39757.2	19.88	20.22	20.54	20.95	20.92	21.36	21.24	21.75	21.69	22.18	21.90	22.45	23.03
39763.0	19.86	20.20	20.53	20.93	20.90	21.34	21.22	21.73	21.67	22.16	21.88	22.43	23.01
39768.8	19.85	20.18	20.51	20.91	20.88	21.32	21.20	21.71	21.65	22.14	21.86	22.42	23.00
39774.6	19.83	20.17	20.49	20.89	20.87	21.31	21.18	21.70	21.64	22.13	21.84	22.40	22.98
39780.4	19.81	20.15	20.47	20.88	20.85	21.29	21.16	21.68	21.62	22.11	21.83	22.38	22.97
39786.2	19.79	20.13	20.46	20.86	20.83	21.27	21.15	21.66	21.60	22.09	21.81	22.37	22.95
39792.0	19.78	20.11	20.44	20.84	20.81	21.25	21.13	21.64	21.58	22.08	21.79	22.35	22.93
39797.8	19.76	20.09	20.42	20.82	20.79	21.24	21.11	21.63	21.56	22.06	21.78	22.34	22.91
39803.6	19.74	20.08	20.40	20.80	20.78	21.22	21.09	21.61	21.55	22.04	21.76	22.32	22.90
39809.4	19.72	20.06	20.38	20.79	20.76	21.20	21.07	21.59	21.53	22.03	21.74	22.30	22.88
39815.2	19.70	20.04	20.37	20.77	20.74	21.18	21.06	21.58	21.51	22.01	21.73	22.29	22.87
39821.0	19.69	20.02	20.35	20.75	20.72	21.16	21.04	21.56	21.50	21.99	21.71	22.27	22.85
39826.8	19.67	20.00	20.33	20.73	20.70	21.14	21.02	21.54	21.47	21.97	21.69	22.25	22.83
39832.6	19.65	19.98	20.31	20.71	20.68	21.12	21.00	21.52	21.45	21.95	21.67	22.23	22.81
39838.4	19.63	19.96	20.29	20.69	20.66	21.10	20.98	21.49	21.43	21.94	21.65	22.21	22.79
39844.2	19.61	19.95	20.27	20.67	20.64	21.08	20.96	21.47	21.41	21.92	21.63	22.20	22.78
39850.0	19.59	19.93	20.25	20.65	20.62	21.06	20.94	21.45	21.39	21.90	21.60	22.18	22.75
39855.8	19.57	19.91	20.23	20.63	20.60	21.04	20.91	21.43	21.37	21.87	21.58	22.16	22.73
39861.6	19.55	19.89	20.21	20.61	20.58	21.02	20.89	21.41	21.35	21.85	21.56	22.13	22.71
39867.4	19.53	19.87	20.19	20.59	20.56	21.00	20.87	21.39	21.33	21.83	21.54	22.11	22.69
39873.2	19.51	19.85	20.17	20.57	20.54	20.98	20.85	21.37	21.30	21.81	21.52	22.09	22.67
39879.0	19.49	19.83	20.15	20.55	20.52	20.95	20.83	21.34	21.28	21.79	21.50	22.07	22.65
39884.8	19.47	19.81	20.13	20.53	20.50	20.93	20.81	21.32	21.26	21.76	21.47	22.04	22.62
39890.6	19.46	19.79	20.11	20.51	20.48	20.91	20.79	21.29	21.23	21.73	21.44	22.01	22.58
39896.4	19.44	19.77	20.09	20.49	20.46	20.89	20.77	21.27	21.21	21.70	21.42	21.98	22.56
39902.2	19.42	19.75	20.07	20.47	20.44	20.87	20.75	21.25	21.19	21.68	21.40	21.96	22.54
39908.0	19.40	19.73	20.05	20.45	20.42	20.85	20.73	21.23	21.17	21.66	21.37	21.93	22.51
39913.8	19.38	19.71	20.03	20.43	20.40	20.83	20.71	21.21	21.14	21.63	21.35	21.91	22.49
39919.6	19.36	19.69	20.01	20.41	20.38	20.81	20.69	21.18	21.12	21.61	21.33	21.88	22.46
39925.4	19.34	19.67	19.99	20.39	20.36	20.79	20.67	21.16	21.10	21.58	21.31	21.86	22.44
39931.2	19.32	19.65	19.97	20.36	20.34	20.76	20.64	21.14	21.08	21.56	21.28	21.83	22.41
39937.0	19.30	19.63	19.95	20.34	20.32	20.74	20.62	21.12	21.06	21.54	21.26	21.81	22.39

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39942.8	19.28	19.61	19.93	20.33	20.30	20.73	20.61	21.10	21.04	21.52	21.24	21.79	22.37
39948.6	19.26	19.60	19.92	20.31	20.28	20.71	20.59	21.08	21.02	21.50	21.22	21.77	22.35
39954.4	19.24	19.58	19.90	20.29	20.26	20.69	20.57	21.06	21.00	21.48	21.21	21.75	22.33
39960.2	19.22	19.56	19.88	20.27	20.25	20.67	20.55	21.05	20.99	21.46	21.19	21.73	22.31
39966.0	19.21	19.54	19.86	20.26	20.23	20.66	20.54	21.03	20.97	21.44	21.17	21.71	22.29
39971.8	19.19	19.53	19.85	20.24	20.21	20.64	20.52	21.01	20.95	21.42	21.15	21.69	22.27
39977.6	19.17	19.51	19.83	20.22	20.19	20.62	20.50	20.99	20.93	21.41	21.13	21.67	22.25
39983.4	19.15	19.49	19.81	20.21	20.18	20.60	20.48	20.97	20.91	21.39	21.12	21.66	22.23
39989.2	19.13	19.47	19.79	20.19	20.16	20.59	20.47	20.96	20.90	21.37	21.10	21.64	22.21
39995.0	19.12	19.46	19.78	20.17	20.14	20.57	20.45	20.94	20.88	21.35	21.08	21.62	22.19
40000.8	19.10	19.44	19.76	20.15	20.13	20.55	20.43	20.92	20.86	21.33	21.06	21.60	22.17
40006.6	19.08	19.42	19.74	20.14	20.11	20.53	20.41	20.90	20.84	21.31	21.04	21.58	22.15
40012.4	19.06	19.40	19.73	20.12	20.09	20.52	20.40	20.88	20.83	21.30	21.03	21.56	22.13
40018.2	19.04	19.38	19.71	20.10	20.07	20.50	20.38	20.87	20.81	21.28	21.01	21.54	22.11
40024.0	19.03	19.37	19.69	20.08	20.06	20.48	20.36	20.85	20.79	21.26	20.99	21.52	22.09
40029.8	19.01	19.35	19.67	20.07	20.04	20.46	20.34	20.83	20.77	21.24	20.97	21.50	22.07
40035.6	18.99	19.33	19.66	20.05	20.02	20.45	20.33	20.81	20.76	21.22	20.95	21.49	22.05
40041.4	18.97	19.31	19.64	20.03	20.00	20.43	20.31	20.80	20.74	21.20	20.94	21.47	22.03
40047.2	18.95	19.30	19.62	20.01	19.99	20.41	20.29	20.78	20.72	21.18	20.92	21.45	22.00
40053.0	18.93	19.28	19.60	20.00	19.97	20.39	20.27	20.76	20.70	21.17	20.90	21.43	21.98
40058.9	18.92	19.26	19.59	19.98	19.95	20.37	20.26	20.74	20.68	21.15	20.88	21.41	21.97
40064.8	18.90	19.24	19.57	19.96	19.93	20.36	20.24	20.72	20.67	21.13	20.86	21.39	21.95
40070.7	18.88	19.23	19.55	19.95	19.92	20.34	20.22	20.71	20.65	21.11	20.85	21.37	21.93
40076.6	18.87	19.21	19.54	19.93	19.90	20.32	20.21	20.69	20.63	21.10	20.83	21.36	21.91
40082.5	18.85	19.19	19.52	19.91	19.88	20.31	20.19	20.67	20.61	21.08	20.81	21.34	21.90
40088.4	18.83	19.18	19.50	19.90	19.87	20.29	20.17	20.66	20.60	21.06	20.80	21.32	21.88
40094.3	18.82	19.16	19.49	19.88	19.85	20.27	20.16	20.64	20.58	21.05	20.78	21.31	21.86
40100.2	18.80	19.15	19.47	19.87	19.84	20.26	20.14	20.62	20.57	21.03	20.76	21.29	21.85
40106.1	18.79	19.13	19.46	19.85	19.82	20.24	20.12	20.61	20.55	21.01	20.75	21.27	21.83
40112.0	18.77	19.12	19.44	19.83	19.81	20.23	20.11	20.59	20.54	21.00	20.73	21.26	21.82
40117.9	18.76	19.10	19.43	19.82	19.79	20.21	20.09	20.58	20.52	20.98	20.72	21.24	21.80
40123.8	18.74	19.09	19.41	19.80	19.78	20.20	20.08	20.56	20.51	20.97	20.70	21.23	21.79
40129.7	18.73	19.07	19.40	19.79	19.76	20.18	20.07	20.55	20.49	20.96	20.69	21.22	21.78
40135.6	18.71	19.06	19.38	19.78	19.75	20.17	20.05	20.54	20.48	20.94	20.68	21.20	21.76
40141.5	18.70	19.05	19.37	19.76	19.73	20.16	20.04	20.52	20.47	20.93	20.66	21.19	21.75
40147.4	18.68	19.03	19.36	19.75	19.72	20.14	20.03	20.51	20.45	20.92	20.65	21.18	21.74
40153.3	18.67	19.02	19.34	19.74	19.71	20.13	20.01	20.50	20.44	20.90	20.64	21.17	21.73
40159.2	18.66	19.01	19.33	19.72	19.70	20.12	20.00	20.49	20.43	20.89	20.63	21.16	21.72
40165.1	18.64	18.99	19.32	19.71	19.68	20.11	19.99	20.47	20.42	20.88	20.61	21.15	21.71
40171.0	18.63	18.98	19.31	19.70	19.67	20.09	19.98	20.46	20.40	20.87	20.60	21.14	21.70
40176.8	18.62	18.96	19.29	19.68	19.65	20.08	19.96	20.44	20.39	20.85	20.58	21.12	21.68
40182.6	18.60	18.95	19.27	19.66	19.64	20.06	19.94	20.42	20.37	20.83	20.56	21.10	21.66
40188.4	18.58	18.93	19.25	19.65	19.62	20.04	19.92	20.40	20.35	20.81	20.54	21.08	21.64
40194.2	18.57	18.91	19.24	19.63	19.60	20.02	19.90	20.38	20.33	20.79	20.52	21.05	21.61
40200.0	18.55	18.89	19.22	19.61	19.58	20.00	19.88	20.36	20.31	20.77	20.50	21.03	21.59
40205.8	18.53	18.88	19.20	19.59	19.56	19.98	19.86	20.34	20.29	20.75	20.48	21.01	21.57

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
40211.6	18.51	18.86	19.18	19.57	19.54	19.96	19.84	20.32	20.26	20.73	20.46	20.99	21.55
40217.4	18.50	18.84	19.16	19.55	19.52	19.94	19.82	20.30	20.24	20.71	20.44	20.97	21.52
40223.2	18.48	18.82	19.14	19.53	19.50	19.92	19.80	20.28	20.22	20.68	20.42	20.94	21.50
40229.0	18.46	18.80	19.12	19.51	19.48	19.90	19.78	20.26	20.20	20.66	20.40	20.92	21.48
40234.8	18.44	18.79	19.10	19.49	19.46	19.87	19.76	20.24	20.18	20.64	20.37	20.90	21.45
40240.6	18.42	18.77	19.08	19.47	19.44	19.85	19.74	20.21	20.16	20.61	20.35	20.87	21.43
40246.4	18.41	18.75	19.06	19.45	19.42	19.83	19.72	20.19	20.13	20.59	20.33	20.85	21.40
40252.2	18.39	18.73	19.04	19.43	19.40	19.81	19.69	20.17	20.11	20.56	20.30	20.82	21.37
40258.0	18.37	18.71	19.02	19.40	19.38	19.78	19.67	20.14	20.09	20.54	20.28	20.80	21.35
40263.8	18.35	18.69	19.00	19.38	19.35	19.76	19.65	20.12	20.06	20.52	20.26	20.77	21.32
40269.6	18.33	18.67	18.98	19.36	19.33	19.74	19.62	20.09	20.04	20.50	20.23	20.75	21.30
40275.4	18.31	18.65	18.96	19.34	19.31	19.71	19.60	20.07	20.01	20.47	20.21	20.73	21.28
40281.2	18.29	18.62	18.94	19.31	19.29	19.69	19.58	20.05	19.99	20.45	20.19	20.71	21.25
40287.0	18.27	18.60	18.91	19.29	19.26	19.67	19.55	20.02	19.97	20.43	20.16	20.68	21.23
40292.8	18.25	18.59	18.90	19.27	19.24	19.65	19.54	20.01	19.95	20.41	20.14	20.67	21.21
40298.5	18.24	18.57	18.88	19.25	19.23	19.63	19.52	19.99	19.93	20.39	20.13	20.65	21.20
40304.3	18.22	18.55	18.86	19.24	19.21	19.62	19.50	19.97	19.92	20.38	20.11	20.63	21.18
40310.0	18.20	18.54	18.85	19.22	19.19	19.60	19.49	19.96	19.90	20.36	20.10	20.62	21.17
40315.8	18.19	18.52	18.83	19.20	19.18	19.58	19.47	19.94	19.89	20.35	20.08	20.60	21.16
40321.5	18.17	18.50	18.81	19.19	19.16	19.57	19.45	19.93	19.87	20.33	20.07	20.59	21.14
40327.3	18.15	18.49	18.79	19.17	19.14	19.55	19.43	19.91	19.85	20.31	20.05	20.57	21.12
40333.0	18.14	18.47	18.77	19.15	19.12	19.53	19.42	19.89	19.83	20.29	20.03	20.55	21.10
40338.8	18.12	18.45	18.75	19.13	19.10	19.51	19.40	19.87	19.81	20.27	20.01	20.53	21.08
40344.5	18.10	18.43	18.74	19.11	19.08	19.49	19.38	19.85	19.79	20.25	19.99	20.51	21.06
40350.3	18.08	18.41	18.72	19.09	19.06	19.47	19.36	19.83	19.77	20.23	19.97	20.49	21.05
40356.0	18.07	18.39	18.70	19.07	19.04	19.45	19.34	19.81	19.75	20.21	19.94	20.46	21.01
40361.8	18.05	18.37	18.68	19.05	19.02	19.43	19.32	19.79	19.73	20.19	19.92	20.44	20.98
40367.5	18.03	18.35	18.66	19.03	19.00	19.41	19.30	19.76	19.71	20.16	19.90	20.42	20.95
40373.3	18.01	18.33	18.64	19.01	18.98	19.39	19.27	19.74	19.69	20.14	19.88	20.40	20.93
40379.0	17.99	18.31	18.62	18.99	18.96	19.36	19.25	19.72	19.66	20.12	19.85	20.37	20.90
40384.8	17.96	18.29	18.59	18.97	18.94	19.34	19.23	19.69	19.64	20.09	19.83	20.34	20.87
40390.5	17.94	18.27	18.57	18.94	18.92	19.32	19.21	19.67	19.61	20.06	19.80	20.32	20.84
40396.3	17.92	18.25	18.55	18.92	18.89	19.29	19.18	19.64	19.59	20.04	19.78	20.29	20.81
40402.0	17.90	18.22	18.53	18.90	18.87	19.27	19.16	19.62	19.56	20.02	19.76	20.27	20.78
40408.0	17.87	18.20	18.51	18.88	18.85	19.25	19.14	19.60	19.54	20.00	19.74	20.26	20.74
40414.0	17.85	18.18	18.49	18.86	18.83	19.23	19.12	19.57	19.52	19.97	19.71	20.22	20.73
40420.0	17.83	18.16	18.47	18.83	18.81	19.20	19.09	19.55	19.49	19.94	19.68	20.19	20.72
40426.0	17.81	18.14	18.45	18.81	18.79	19.18	19.07	19.53	19.47	19.92	19.66	20.17	20.69
40432.0	17.79	18.12	18.43	18.79	18.77	19.16	19.05	19.50	19.45	19.88	19.63	20.16	20.65
40438.0	17.77	18.10	18.41	18.77	18.75	19.14	19.03	19.47	19.43	19.85	19.60	20.15	20.61
40444.0	17.75	18.08	18.39	18.75	18.73	19.12	19.01	19.45	19.41	19.83	19.58	20.12	20.59
40450.0	17.73	18.06	18.37	18.73	18.71	19.10	18.99	19.44	19.39	19.82	19.57	20.09	20.57
40456.0	17.71	18.04	18.35	18.71	18.69	19.08	18.97	19.42	19.37	19.80	19.55	20.06	20.55
40462.0	17.69	18.02	18.33	18.69	18.67	19.06	18.95	19.40	19.35	19.78	19.53	20.02	20.53
40468.0	17.67	18.00	18.31	18.67	18.65	19.04	18.93	19.38	19.33	19.76	19.51	20.00	20.50
40474.0	17.65	17.98	18.28	18.65	18.63	19.02	18.91	19.36	19.31	19.74	19.49	19.98	20.48

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
40480.0	17.63	17.96	18.26	18.63	18.61	19.00	18.89	19.34	19.29	19.72	19.47	19.96	20.45
40486.0	17.61	17.94	18.24	18.61	18.59	18.98	18.87	19.32	19.27	19.70	19.45	19.94	20.44
40492.0	17.59	17.92	18.22	18.59	18.57	18.96	18.86	19.30	19.25	19.68	19.43	19.92	20.43
40498.0	17.56	17.90	18.20	18.57	18.55	18.94	18.84	19.28	19.23	19.66	19.41	19.90	20.40
40504.0	17.54	17.88	18.18	18.55	18.53	18.92	18.81	19.26	19.21	19.64	19.39	19.88	20.38
40510.0	17.52	17.85	18.16	18.53	18.51	18.90	18.79	19.24	19.19	19.62	19.37	19.86	20.36
40516.0	17.50	17.83	18.14	18.51	18.49	18.88	18.77	19.22	19.17	19.60	19.35	19.84	20.34
40521.9	17.48	17.81	18.12	18.49	18.47	18.86	18.76	19.20	19.15	19.58	19.33	19.82	20.33
40527.9	17.47	17.79	18.10	18.48	18.45	18.84	18.74	19.18	19.13	19.56	19.32	19.80	20.31
40533.8	17.45	17.78	18.08	18.46	18.43	18.83	18.72	19.17	19.11	19.54	19.30	19.78	20.29
40539.8	17.43	17.76	18.07	18.44	18.41	18.81	18.70	19.15	19.10	19.53	19.28	19.76	20.27
40545.7	17.41	17.74	18.05	18.42	18.39	18.79	18.68	19.14	19.08	19.51	19.27	19.75	20.25
40551.7	17.39	17.72	18.03	18.40	18.38	18.78	18.67	19.12	19.07	19.50	19.25	19.73	20.23
40557.6	17.37	17.70	18.01	18.39	18.36	18.76	18.65	19.11	19.05	19.49	19.24	19.72	20.21
40563.6	17.36	17.68	17.99	18.37	18.34	18.74	18.63	19.09	19.03	19.47	19.22	19.70	20.19
40569.5	17.34	17.66	17.97	18.35	18.32	18.72	18.61	19.07	19.01	19.45	19.20	19.69	20.18
40575.5	17.32	17.64	17.95	18.33	18.30	18.70	18.59	19.05	19.00	19.43	19.19	19.67	20.17
40581.4	17.30	17.62	17.93	18.31	18.28	18.68	18.57	19.03	18.98	19.42	19.17	19.65	20.14
40587.4	17.28	17.60	17.91	18.29	18.26	18.66	18.55	19.01	18.96	19.39	19.15	19.63	20.13
40593.3	17.26	17.58	17.89	18.26	18.24	18.64	18.53	18.99	18.94	19.37	19.13	19.61	20.11
40599.3	17.24	17.56	17.87	18.24	18.22	18.62	18.51	18.97	18.92	19.35	19.10	19.59	20.10
40605.2	17.22	17.54	17.85	18.22	18.19	18.60	18.49	18.95	18.90	19.33	19.08	19.57	20.07
40611.2	17.19	17.52	17.82	18.20	18.17	18.58	18.46	18.93	18.87	19.31	19.06	19.55	20.05
40617.1	17.17	17.50	17.80	18.18	18.15	18.55	18.44	18.91	18.85	19.29	19.04	19.53	20.02
40623.1	17.15	17.47	17.78	18.15	18.13	18.53	18.42	18.88	18.83	19.26	19.02	19.50	20.00
40629.0	17.13	17.45	17.75	18.13	18.10	18.50	18.39	18.85	18.80	19.23	18.99	19.48	19.96
40634.8	17.11	17.43	17.73	18.11	18.08	18.48	18.37	18.83	18.77	19.21	18.96	19.45	19.94
40640.7	17.09	17.41	17.71	18.09	18.06	18.46	18.35	18.81	18.75	19.19	18.94	19.43	19.92
40646.5	17.07	17.39	17.69	18.06	18.04	18.44	18.33	18.79	18.73	19.17	18.92	19.41	19.90
40652.4	17.05	17.37	17.67	18.04	18.02	18.41	18.30	18.77	18.71	19.15	18.90	19.39	19.88
40658.2	17.03	17.35	17.65	18.02	18.00	18.39	18.28	18.74	18.69	19.13	18.88	19.37	19.86
40664.1	17.01	17.33	17.63	18.00	17.97	18.37	18.26	18.72	18.66	19.10	18.85	19.34	19.83
40669.9	16.99	17.31	17.61	17.98	17.95	18.35	18.24	18.69	18.64	19.08	18.83	19.32	19.81
40675.7	16.97	17.29	17.59	17.96	17.93	18.32	18.22	18.67	18.62	19.05	18.81	19.30	19.79
40681.6	16.95	17.27	17.57	17.94	17.91	18.30	18.19	18.65	18.59	19.03	18.78	19.27	19.76
40687.4	16.94	17.25	17.55	17.92	17.89	18.28	18.17	18.62	18.57	19.01	18.76	19.25	19.74
40693.3	16.92	17.23	17.53	17.90	17.87	18.26	18.15	18.60	18.55	18.99	18.74	19.22	19.72
40699.1	16.90	17.21	17.51	17.88	17.85	18.24	18.13	18.58	18.53	18.97	18.71	19.20	19.70
40704.9	16.88	17.19	17.49	17.86	17.83	18.22	18.11	18.56	18.50	18.94	18.69	19.18	19.68
40710.8	16.86	17.17	17.47	17.84	17.81	18.20	18.09	18.54	18.48	18.92	18.67	19.16	19.66
40716.6	16.84	17.15	17.45	17.82	17.79	18.17	18.07	18.51	18.46	18.90	18.65	19.14	19.64
40722.5	16.82	17.14	17.43	17.79	17.77	18.15	18.05	18.49	18.44	18.88	18.62	19.12	19.62
40728.3	16.80	17.12	17.41	17.77	17.75	18.13	18.03	18.47	18.41	18.85	18.60	19.10	19.59
40734.2	16.78	17.10	17.39	17.75	17.73	18.11	18.00	18.45	18.39	18.83	18.58	19.08	19.57
40740.0	16.76	17.08	17.37	17.73	17.71	18.09	17.98	18.42	18.37	18.81	18.56	19.06	19.55
40745.9	16.74	17.06	17.35	17.71	17.69	18.07	17.96	18.40	18.35	18.79	18.53	19.03	19.53

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
40751.9	16.73	17.04	17.34	17.69	17.67	18.05	17.94	18.38	18.33	18.77	18.51	19.01	19.51
40757.8	16.71	17.02	17.32	17.67	17.65	18.03	17.92	18.36	18.31	18.74	18.49	18.99	19.49
40763.8	16.69	17.01	17.30	17.66	17.63	18.01	17.90	18.34	18.29	18.72	18.47	18.97	19.46
40769.7	16.68	16.99	17.28	17.64	17.61	17.99	17.88	18.32	18.26	18.70	18.45	18.94	19.44
40775.7	16.66	16.97	17.27	17.62	17.59	17.97	17.86	18.30	18.24	18.67	18.42	18.92	19.42
40781.6	16.64	16.96	17.25	17.60	17.57	17.95	17.85	18.27	18.22	18.65	18.40	18.90	19.39
40787.6	16.63	16.94	17.23	17.58	17.56	17.93	17.83	18.25	18.20	18.63	18.38	18.87	19.36
40793.5	16.61	16.92	17.22	17.56	17.54	17.91	17.81	18.23	18.18	18.60	18.36	18.84	19.34
40799.5	16.60	16.91	17.20	17.55	17.52	17.89	17.79	18.21	18.16	18.58	18.33	18.82	19.31
40805.4	16.58	16.89	17.18	17.53	17.50	17.87	17.77	18.19	18.14	18.55	18.31	18.79	19.29
40811.4	16.57	16.88	17.17	17.51	17.49	17.85	17.75	18.17	18.12	18.53	18.29	18.76	19.26
40817.3	16.55	16.86	17.15	17.49	17.47	17.83	17.73	18.15	18.10	18.51	18.27	18.74	19.24
40823.3	16.54	16.84	17.13	17.48	17.45	17.81	17.71	18.13	18.08	18.48	18.25	18.72	19.21
40829.2	16.52	16.83	17.12	17.46	17.43	17.79	17.69	18.11	18.06	18.46	18.23	18.69	19.18
40835.2	16.51	16.81	17.10	17.44	17.42	17.77	17.68	18.09	18.04	18.44	18.21	18.67	19.16
40841.1	16.49	16.80	17.08	17.42	17.40	17.76	17.66	18.07	18.02	18.42	18.19	18.65	19.14
40847.1	16.48	16.78	17.07	17.41	17.38	17.74	17.64	18.05	18.00	18.40	18.17	18.63	19.12
40853.0	16.46	16.77	17.05	17.39	17.37	17.72	17.62	18.03	17.98	18.38	18.15	18.61	19.10
40858.8	16.44	16.75	17.03	17.37	17.35	17.70	17.60	18.01	17.96	18.36	18.13	18.59	19.08
40864.7	16.43	16.73	17.01	17.35	17.33	17.68	17.58	17.99	17.94	18.34	18.11	18.56	19.05
40870.5	16.41	16.71	17.00	17.33	17.31	17.66	17.56	17.96	17.92	18.31	18.08	18.54	19.03
40876.3	16.39	16.70	16.98	17.31	17.29	17.64	17.54	17.94	17.89	18.29	18.06	18.52	19.01
40882.2	16.38	16.68	16.96	17.29	17.27	17.62	17.52	17.92	17.87	18.27	18.04	18.50	18.99
40888.0	16.36	16.66	16.94	17.27	17.25	17.59	17.50	17.90	17.85	18.24	18.01	18.47	18.96
40893.8	16.34	16.64	16.92	17.25	17.23	17.57	17.48	17.87	17.83	18.22	17.99	18.45	18.94
40899.7	16.33	16.62	16.90	17.23	17.21	17.55	17.46	17.85	17.80	18.20	17.97	18.43	18.92
40905.5	16.31	16.61	16.88	17.21	17.19	17.53	17.43	17.83	17.78	18.17	17.94	18.40	18.90
40911.3	16.29	16.59	16.86	17.19	17.16	17.51	17.41	17.80	17.76	18.15	17.92	18.38	18.87
40917.2	16.27	16.57	16.84	17.17	17.14	17.48	17.39	17.78	17.73	18.13	17.90	18.36	18.85
40923.0	16.25	16.55	16.82	17.14	17.12	17.46	17.37	17.75	17.71	18.10	17.87	18.33	18.83
40928.8	16.23	16.53	16.80	17.12	17.10	17.44	17.34	17.73	17.68	18.08	17.85	18.31	18.80
40934.7	16.22	16.51	16.78	17.10	17.08	17.41	17.32	17.70	17.66	18.05	17.82	18.28	18.78
40940.5	16.20	16.49	16.76	17.08	17.05	17.39	17.29	17.68	17.63	18.03	17.80	18.26	18.75
40946.3	16.18	16.47	16.74	17.05	17.03	17.36	17.27	17.65	17.61	18.00	17.77	18.23	18.73
40952.2	16.16	16.45	16.72	17.03	17.01	17.33	17.24	17.63	17.58	17.98	17.75	18.21	18.70
40958.0	16.14	16.43	16.69	17.00	16.98	17.31	17.22	17.60	17.56	17.95	17.72	18.18	18.66
40963.9	16.12	16.41	16.67	16.98	16.96	17.29	17.20	17.58	17.54	17.93	17.70	18.16	18.64
40969.8	16.10	16.39	16.65	16.96	16.94	17.27	17.17	17.56	17.52	17.91	17.68	18.14	18.63
40975.7	16.08	16.37	16.63	16.94	16.92	17.24	17.15	17.54	17.49	17.89	17.66	18.12	18.60
40981.6	16.06	16.35	16.61	16.92	16.89	17.22	17.13	17.52	17.47	17.87	17.64	18.09	18.57
40987.4	16.04	16.33	16.59	16.90	16.87	17.20	17.11	17.50	17.45	17.85	17.62	18.08	18.56
40993.3	16.02	16.31	16.57	16.88	16.85	17.18	17.09	17.48	17.43	17.83	17.60	18.06	18.55
40999.2	16.00	16.29	16.55	16.85	16.83	17.16	17.07	17.46	17.42	17.81	17.58	18.04	18.53
41005.1	15.99	16.27	16.53	16.83	16.81	17.14	17.05	17.44	17.40	17.79	17.56	18.02	18.51
41011.0	15.97	16.25	16.51	16.81	16.79	17.12	17.03	17.42	17.38	17.77	17.54	18.00	18.49
41016.9	15.95	16.23	16.49	16.79	16.77	17.11	17.01	17.41	17.36	17.76	17.53	17.99	18.48

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
41022.8	15.93	16.21	16.47	16.77	16.75	17.09	16.99	17.39	17.34	17.74	17.51	17.98	18.47
41028.7	15.91	16.19	16.45	16.75	16.73	17.07	16.97	17.37	17.32	17.73	17.49	17.96	18.45
41034.6	15.89	16.17	16.43	16.74	16.71	17.05	16.96	17.36	17.31	17.71	17.48	17.94	18.44
41040.4	15.86	16.15	16.41	16.72	16.69	17.03	16.94	17.34	17.29	17.70	17.46	17.93	18.42
41046.3	15.84	16.13	16.39	16.70	16.68	17.02	16.92	17.32	17.28	17.68	17.45	17.92	18.41
41052.2	15.82	16.11	16.37	16.68	16.66	17.00	16.90	17.31	17.26	17.67	17.43	17.90	18.40
41058.1	15.80	16.09	16.35	16.66	16.64	16.98	16.89	17.29	17.24	17.65	17.42	17.89	18.38
41064.0	15.78	16.07	16.33	16.64	16.62	16.97	16.87	17.28	17.23	17.64	17.40	17.87	18.37
41069.9	15.76	16.05	16.31	16.62	16.60	16.95	16.85	17.26	17.21	17.62	17.38	17.85	18.35
41075.9	15.74	16.03	16.29	16.60	16.58	16.93	16.83	17.24	17.19	17.60	17.36	17.84	18.33
41081.8	15.72	16.01	16.27	16.58	16.56	16.91	16.81	17.22	17.17	17.58	17.34	17.82	18.31
41087.8	15.70	15.99	16.25	16.56	16.54	16.89	16.79	17.20	17.15	17.56	17.33	17.80	18.29
41093.7	15.68	15.96	16.23	16.54	16.52	16.87	16.77	17.18	17.13	17.54	17.31	17.78	18.27
41099.7	15.66	15.94	16.21	16.52	16.50	16.85	16.75	17.16	17.11	17.52	17.29	17.76	18.26
41105.6	15.63	15.92	16.19	16.50	16.48	16.83	16.73	17.15	17.10	17.51	17.27	17.74	18.24
41111.6	15.61	15.90	16.17	16.49	16.46	16.81	16.72	17.13	17.08	17.49	17.25	17.73	18.22
41117.5	15.59	15.88	16.15	16.47	16.44	16.80	16.70	17.11	17.06	17.47	17.23	17.71	18.20
41123.4	15.57	15.86	16.13	16.45	16.43	16.78	16.68	17.09	17.04	17.46	17.22	17.69	18.18
41129.4	15.55	15.84	16.11	16.43	16.41	16.76	16.66	17.08	17.03	17.44	17.20	17.68	18.17
41135.3	15.53	15.82	16.09	16.41	16.39	16.75	16.65	17.06	17.01	17.42	17.19	17.66	18.15
41141.3	15.51	15.80	16.07	16.40	16.37	16.73	16.63	17.05	17.00	17.41	17.17	17.65	18.14
41147.2	15.49	15.78	16.05	16.38	16.36	16.71	16.62	17.03	16.98	17.40	17.16	17.63	18.12
41153.2	15.47	15.77	16.04	16.36	16.34	16.70	16.60	17.02	16.97	17.38	17.14	17.62	18.11
41159.1	15.45	15.75	16.02	16.35	16.33	16.69	16.59	17.00	16.95	17.37	17.13	17.60	18.10
41165.1	15.43	15.73	16.00	16.33	16.31	16.67	16.57	16.99	16.94	17.36	17.12	17.59	18.09
41171.0	15.41	15.71	15.99	16.32	16.30	16.66	16.56	16.98	16.93	17.34	17.10	17.58	18.08
41177.0	15.39	15.69	15.97	16.30	16.28	16.64	16.54	16.96	16.91	17.33	17.09	17.56	18.07
41183.0	15.37	15.67	15.95	16.28	16.26	16.62	16.52	16.94	16.89	17.31	17.07	17.55	18.05
41189.0	15.34	15.65	15.93	16.26	16.24	16.61	16.50	16.93	16.88	17.30	17.05	17.53	18.04
41195.0	15.32	15.63	15.91	16.24	16.22	16.59	16.49	16.91	16.86	17.28	17.03	17.51	18.02
41201.0	15.30	15.61	15.89	16.22	16.20	16.57	16.47	16.89	16.84	17.26	17.01	17.49	18.00
41207.0	15.28	15.58	15.87	16.21	16.18	16.55	16.45	16.87	16.82	17.24	16.99	17.48	17.98
41213.0	15.26	15.56	15.85	16.19	16.16	16.53	16.43	16.85	16.80	17.22	16.97	17.46	17.95
41219.0	15.24	15.54	15.83	16.17	16.14	16.51	16.41	16.83	16.78	17.20	16.95	17.44	17.93
41225.0	15.21	15.52	15.81	16.15	16.12	16.49	16.39	16.81	16.76	17.18	16.93	17.42	17.91
41231.0	15.19	15.50	15.79	16.12	16.10	16.47	16.37	16.79	16.74	17.16	16.91	17.39	17.88
41237.0	15.17	15.48	15.77	16.10	16.08	16.45	16.35	16.77	16.72	17.13	16.89	17.37	17.86
41243.0	15.15	15.46	15.75	16.08	16.06	16.43	16.32	16.74	16.69	17.11	16.87	17.35	17.84
41249.0	15.13	15.44	15.72	16.06	16.04	16.41	16.30	16.72	16.67	17.09	16.85	17.33	17.82
41255.0	15.11	15.42	15.70	16.04	16.02	16.38	16.28	16.70	16.65	17.07	16.83	17.30	17.79
41261.0	15.09	15.40	15.68	16.02	16.00	16.36	16.26	16.68	16.63	17.05	16.80	17.27	17.76
41267.0	15.07	15.37	15.66	16.00	15.97	16.34	16.24	16.66	16.61	17.02	16.78	17.25	17.73
41273.0	15.05	15.35	15.64	15.98	15.95	16.32	16.22	16.64	16.59	17.00	16.76	17.23	17.71
41279.0	15.03	15.33	15.62	15.96	15.93	16.30	16.20	16.62	16.57	16.98	16.74	17.21	17.69
41284.8	15.01	15.31	15.60	15.94	15.91	16.28	16.18	16.59	16.54	16.96	16.72	17.19	17.66
41290.6	14.99	15.29	15.58	15.91	15.89	16.25	16.15	16.57	16.52	16.93	16.70	17.16	17.63

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
41296.3	14.97	15.27	15.56	15.89	15.87	16.23	16.13	16.55	16.50	16.91	16.67	17.14	17.59
41302.1	14.95	15.25	15.54	15.87	15.85	16.21	16.11	16.53	16.48	16.88	16.65	17.11	17.57
41307.9	14.93	15.23	15.52	15.85	15.83	16.19	16.09	16.51	16.46	16.86	16.63	17.09	17.55
41313.7	14.91	15.21	15.50	15.83	15.81	16.17	16.07	16.49	16.44	16.84	16.61	17.07	17.53
41319.4	14.89	15.19	15.48	15.82	15.79	16.15	16.05	16.47	16.42	16.82	16.59	17.05	17.51
41325.2	14.87	15.17	15.46	15.80	15.77	16.13	16.03	16.45	16.40	16.80	16.57	17.03	17.49
41331.0	14.84	15.15	15.44	15.77	15.75	16.11	16.01	16.42	16.38	16.78	16.55	17.00	17.47
41336.8	14.82	15.13	15.42	15.75	15.73	16.09	15.99	16.40	16.36	16.76	16.53	16.98	17.45
41342.6	14.80	15.11	15.40	15.73	15.71	16.07	15.97	16.38	16.33	16.74	16.50	16.96	17.43
41348.3	14.78	15.09	15.37	15.71	15.69	16.05	15.95	16.36	16.31	16.71	16.48	16.94	17.39
41354.1	14.76	15.07	15.35	15.69	15.67	16.03	15.93	16.34	16.29	16.69	16.46	16.91	17.37
41359.9	14.74	15.05	15.33	15.67	15.65	16.01	15.91	16.32	16.27	16.67	16.44	16.89	17.34
41365.7	14.72	15.03	15.31	15.65	15.63	15.99	15.89	16.30	16.25	16.65	16.42	16.87	17.32
41371.4	14.70	15.01	15.29	15.63	15.61	15.97	15.87	16.28	16.23	16.63	16.40	16.85	17.30
41377.2	14.67	14.98	15.27	15.61	15.58	15.95	15.85	16.26	16.21	16.61	16.38	16.82	17.28
41383.0	14.65	14.96	15.25	15.59	15.56	15.93	15.83	16.24	16.19	16.58	16.35	16.80	17.25
41388.9	14.64	14.94	15.23	15.57	15.55	15.91	15.81	16.22	16.17	16.57	16.34	16.79	17.24
41394.9	14.62	14.93	15.21	15.56	15.53	15.89	15.79	16.20	16.16	16.55	16.32	16.77	17.22
41400.8	14.60	14.91	15.20	15.54	15.52	15.88	15.78	16.19	16.14	16.54	16.31	16.76	17.21
41406.8	14.58	14.89	15.18	15.53	15.50	15.87	15.77	16.18	16.13	16.53	16.30	16.74	17.20
41412.7	14.57	14.88	15.16	15.51	15.49	15.85	15.75	16.16	16.11	16.51	16.28	16.73	17.18
41418.7	14.55	14.86	15.15	15.50	15.47	15.84	15.74	16.15	16.10	16.50	16.27	16.72	17.17
41424.6	14.54	14.85	15.14	15.48	15.46	15.82	15.72	16.13	16.09	16.48	16.25	16.70	17.16
41430.6	14.52	14.83	15.12	15.47	15.44	15.81	15.71	16.12	16.07	16.47	16.24	16.69	17.15
41436.5	14.51	14.82	15.11	15.46	15.43	15.80	15.70	16.11	16.06	16.45	16.23	16.67	17.13
41442.4	14.50	14.81	15.10	15.44	15.42	15.78	15.68	16.09	16.05	16.44	16.21	16.66	17.12
41448.4	14.48	14.79	15.08	15.43	15.41	15.77	15.67	16.08	16.03	16.43	16.20	16.65	17.10
41454.3	14.47	14.78	15.07	15.42	15.39	15.76	15.66	16.07	16.02	16.42	16.19	16.64	17.08
41460.3	14.46	14.77	15.06	15.41	15.38	15.75	15.65	16.06	16.01	16.41	16.18	16.62	17.07
41466.2	14.45	14.76	15.05	15.40	15.37	15.74	15.64	16.05	16.00	16.39	16.16	16.61	17.06
41472.2	14.43	14.75	15.04	15.39	15.36	15.72	15.63	16.04	15.99	16.38	16.15	16.60	17.06
41478.1	14.42	14.74	15.03	15.37	15.35	15.71	15.62	16.03	15.98	16.37	16.15	16.59	17.04
41484.1	14.41	14.73	15.02	15.36	15.34	15.70	15.61	16.02	15.97	16.36	16.14	16.58	17.03
41490.0	14.40	14.72	15.01	15.36	15.33	15.70	15.60	16.01	15.96	16.35	16.13	16.58	17.03
41496.0	14.39	14.70	14.99	15.34	15.32	15.68	15.58	16.00	15.95	16.34	16.12	16.57	17.02
41502.0	14.37	14.68	14.98	15.33	15.30	15.67	15.57	15.99	15.94	16.33	16.11	16.55	17.02
41508.0	14.35	14.67	14.96	15.32	15.29	15.66	15.56	15.97	15.93	16.33	16.09	16.55	17.02
41514.0	14.33	14.65	14.95	15.30	15.28	15.65	15.55	15.96	15.91	16.31	16.08	16.54	17.01
41520.0	14.32	14.63	14.93	15.29	15.26	15.63	15.53	15.95	15.90	16.31	16.07	16.53	17.01
41526.0	14.30	14.62	14.91	15.27	15.25	15.62	15.52	15.94	15.89	16.30	16.06	16.52	17.00
41532.0	14.28	14.60	14.90	15.25	15.23	15.61	15.50	15.93	15.88	16.29	16.05	16.51	16.99
41538.0	14.27	14.58	14.88	15.24	15.21	15.59	15.48	15.91	15.86	16.27	16.03	16.50	16.97
41544.0	14.25	14.56	14.86	15.22	15.19	15.57	15.47	15.90	15.85	16.25	16.02	16.48	16.96
41550.0	14.23	14.54	14.84	15.20	15.17	15.55	15.45	15.88	15.83	16.23	16.00	16.46	16.94
41556.0	14.21	14.52	14.82	15.18	15.15	15.53	15.43	15.86	15.81	16.21	15.98	16.45	16.93
41562.0	14.19	14.50	14.80	15.16	15.13	15.51	15.41	15.84	15.79	16.20	15.96	16.44	16.91

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
41568.0	14.17	14.48	14.78	15.14	15.11	15.49	15.39	15.82	15.77	16.18	15.94	16.41	16.89
41574.0	14.15	14.46	14.76	15.12	15.09	15.47	15.37	15.80	15.74	16.15	15.92	16.39	16.87
41580.0	14.12	14.44	14.74	15.10	15.07	15.45	15.35	15.77	15.73	16.13	15.90	16.37	16.85
41586.0	14.09	14.41	14.71	15.08	15.05	15.43	15.33	15.75	15.70	16.12	15.87	16.35	16.82
41592.0	14.06	14.38	14.69	15.05	15.03	15.41	15.30	15.73	15.68	16.09	15.85	16.32	16.80
41598.0	14.03	14.35	14.66	15.02	15.00	15.38	15.28	15.71	15.66	16.07	15.83	16.30	16.77
41603.9	14.01	14.34	14.64	15.01	14.98	15.36	15.26	15.69	15.64	16.05	15.81	16.27	16.73
41609.9	14.00	14.32	14.62	14.99	14.96	15.35	15.24	15.67	15.62	16.03	15.79	16.25	16.72
41615.8	13.98	14.30	14.61	14.97	14.95	15.33	15.22	15.65	15.60	16.01	15.77	16.23	16.70
41621.8	13.96	14.28	14.59	14.95	14.93	15.31	15.21	15.63	15.58	15.99	15.75	16.21	16.68
41627.7	13.95	14.27	14.57	14.94	14.91	15.29	15.19	15.61	15.56	15.97	15.74	16.19	16.66
41633.7	13.93	14.25	14.56	14.92	14.89	15.28	15.17	15.59	15.54	15.95	15.71	16.17	16.65
41639.6	13.91	14.24	14.54	14.90	14.88	15.26	15.15	15.57	15.52	15.93	15.69	16.14	16.64
41645.6	13.90	14.22	14.52	14.89	14.86	15.24	15.14	15.55	15.50	15.91	15.67	16.12	16.61
41651.5	13.88	14.20	14.51	14.87	14.84	15.22	15.12	15.53	15.48	15.88	15.65	16.10	16.59
41657.4	13.87	14.19	14.49	14.85	14.83	15.20	15.10	15.51	15.46	15.85	15.62	16.08	16.57
41663.4	13.86	14.18	14.48	14.84	14.81	15.18	15.08	15.49	15.44	15.84	15.61	16.06	16.55
41669.3	13.84	14.16	14.46	14.82	14.80	15.17	15.07	15.48	15.43	15.82	15.59	16.04	16.53
41675.3	13.83	14.15	14.45	14.81	14.78	15.15	15.05	15.46	15.41	15.81	15.58	16.03	16.51
41681.2	13.82	14.13	14.44	14.79	14.77	15.13	15.04	15.44	15.39	15.78	15.55	16.00	16.49
41687.2	13.80	14.12	14.42	14.78	14.75	15.12	15.02	15.43	15.37	15.76	15.53	15.98	16.47
41693.1	13.79	14.11	14.41	14.77	14.74	15.11	15.01	15.41	15.36	15.75	15.52	15.97	16.45
41699.1	13.78	14.10	14.40	14.75	14.73	15.09	14.99	15.39	15.35	15.73	15.51	15.95	16.44
41705.0	13.77	14.08	14.38	14.74	14.71	15.08	14.98	15.38	15.33	15.71	15.49	15.93	16.42
41710.9	13.75	14.07	14.37	14.72	14.70	15.06	14.96	15.36	15.31	15.69	15.47	15.91	16.39
41716.8	13.74	14.05	14.35	14.70	14.68	15.04	14.94	15.34	15.29	15.67	15.45	15.89	16.38
41722.7	13.72	14.03	14.33	14.68	14.66	15.02	14.92	15.32	15.27	15.65	15.43	15.87	16.34
41728.6	13.70	14.02	14.31	14.67	14.64	15.00	14.90	15.30	15.25	15.63	15.41	15.83	16.30
41734.4	13.69	14.00	14.30	14.65	14.62	14.98	14.88	15.28	15.23	15.61	15.39	15.81	16.28
41740.3	13.67	13.98	14.28	14.63	14.60	14.96	14.87	15.26	15.21	15.59	15.37	15.80	16.27
41746.2	13.65	13.96	14.26	14.61	14.59	14.94	14.85	15.24	15.19	15.57	15.35	15.78	16.24
41752.1	13.63	13.94	14.24	14.59	14.57	14.93	14.83	15.22	15.17	15.55	15.33	15.76	16.23
41758.0	13.62	13.93	14.22	14.58	14.55	14.91	14.81	15.20	15.16	15.53	15.31	15.75	16.21
41763.9	13.60	13.91	14.21	14.56	14.53	14.89	14.79	15.18	15.14	15.51	15.29	15.73	16.20
41769.8	13.58	13.89	14.19	14.54	14.51	14.87	14.77	15.16	15.12	15.49	15.27	15.71	16.17
41775.7	13.56	13.87	14.17	14.52	14.49	14.85	14.75	15.14	15.10	15.47	15.25	15.69	16.15
41781.6	13.54	13.85	14.15	14.50	14.47	14.83	14.73	15.12	15.08	15.45	15.23	15.67	16.14
41787.4	13.52	13.83	14.13	14.48	14.45	14.80	14.71	15.09	15.05	15.43	15.20	15.65	16.12
41793.3	13.50	13.81	14.10	14.45	14.43	14.78	14.69	15.07	15.03	15.41	15.18	15.63	16.10
41799.2	13.48	13.79	14.08	14.43	14.41	14.76	14.67	15.05	15.01	15.39	15.16	15.61	16.08
41805.1	13.46	13.77	14.06	14.41	14.39	14.74	14.64	15.03	14.99	15.37	15.14	15.59	16.06
41811.0	13.44	13.75	14.04	14.38	14.36	14.71	14.62	15.01	14.96	15.35	15.12	15.57	16.04
41816.8	13.42	13.73	14.02	14.36	14.34	14.69	14.60	14.99	14.94	15.33	15.10	15.55	16.03
41822.6	13.41	13.71	14.00	14.34	14.32	14.67	14.58	14.97	14.92	15.31	15.08	15.53	16.01
41828.4	13.39	13.69	13.98	14.32	14.30	14.65	14.55	14.94	14.90	15.29	15.05	15.51	15.99
41834.2	13.37	13.67	13.95	14.30	14.27	14.62	14.53	14.92	14.87	15.27	15.03	15.50	15.98

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
41839.9	13.35	13.65	13.93	14.27	14.25	14.60	14.51	14.90	14.85	15.25	15.01	15.48	15.96
41845.7	13.33	13.63	13.91	14.25	14.22	14.57	14.48	14.87	14.83	15.22	14.99	15.46	15.95
41851.5	13.32	13.61	13.89	14.23	14.20	14.55	14.45	14.85	14.80	15.20	14.96	15.44	15.93
41857.3	13.30	13.59	13.87	14.21	14.18	14.53	14.43	14.83	14.78	15.19	14.95	15.42	15.92
41863.1	13.28	13.57	13.85	14.19	14.16	14.51	14.42	14.81	14.76	15.17	14.93	15.41	15.91
41868.9	13.26	13.56	13.84	14.17	14.14	14.49	14.40	14.80	14.75	15.16	14.91	15.39	15.90
41874.7	13.24	13.54	13.82	14.15	14.13	14.47	14.38	14.78	14.73	15.14	14.90	15.38	15.88
41880.5	13.22	13.52	13.80	14.13	14.11	14.46	14.36	14.77	14.72	15.13	14.88	15.37	15.87
41886.3	13.20	13.50	13.78	14.11	14.09	14.44	14.34	14.75	14.70	15.12	14.87	15.36	15.87
41892.1	13.19	13.48	13.76	14.10	14.07	14.42	14.33	14.73	14.69	15.11	14.86	15.35	15.86
41897.8	13.17	13.46	13.75	14.08	14.06	14.41	14.31	14.72	14.67	15.09	14.84	15.34	15.85
41903.6	13.15	13.44	13.73	14.06	14.04	14.39	14.29	14.70	14.65	15.08	14.82	15.33	15.84
41909.4	13.13	13.43	13.71	14.04	14.02	14.37	14.27	14.69	14.64	15.07	14.81	15.32	15.83
41915.2	13.11	13.41	13.69	14.02	14.00	14.35	14.25	14.67	14.62	15.06	14.79	15.31	15.82
41921.0	13.09	13.39	13.67	14.00	13.98	14.33	14.23	14.65	14.60	15.04	14.78	15.30	15.81
41927.0	13.07	13.37	13.65	13.99	13.96	14.32	14.22	14.64	14.59	15.03	14.77	15.30	15.80
41933.0	13.05	13.35	13.63	13.97	13.94	14.30	14.20	14.63	14.58	15.02	14.76	15.29	15.79
41939.0	13.03	13.33	13.62	13.95	13.93	14.29	14.19	14.62	14.57	15.01	14.75	15.28	15.79
41945.0	13.01	13.31	13.60	13.93	13.91	14.27	14.17	14.61	14.55	15.00	14.73	15.27	15.78
41951.0	12.99	13.29	13.58	13.92	13.89	14.26	14.16	14.59	14.54	14.99	14.72	15.26	15.77
41957.0	12.97	13.27	13.56	13.90	13.88	14.25	14.14	14.58	14.53	14.98	14.71	15.25	15.76
41963.0	12.95	13.25	13.54	13.89	13.86	14.23	14.13	14.57	14.52	14.97	14.70	15.24	15.75
41969.0	12.94	13.24	13.53	13.87	13.85	14.22	14.12	14.56	14.51	14.96	14.69	15.24	15.75
41975.0	12.92	13.22	13.51	13.86	13.83	14.21	14.11	14.55	14.50	14.95	14.68	15.23	15.73
41981.0	12.90	13.20	13.50	13.84	13.82	14.20	14.09	14.54	14.48	14.94	14.67	15.22	15.73
41987.0	12.88	13.18	13.48	13.83	13.80	14.19	14.08	14.53	14.47	14.93	14.66	15.21	15.71
41993.0	12.86	13.17	13.46	13.81	13.79	14.17	14.07	14.52	14.46	14.92	14.65	15.20	15.71
41999.0	12.85	13.15	13.45	13.80	13.77	14.16	14.06	14.50	14.45	14.91	14.64	15.19	15.70
42005.0	12.83	13.13	13.43	13.79	13.76	14.15	14.04	14.49	14.44	14.91	14.63	15.18	15.69
42011.0	12.81	13.12	13.42	13.77	13.75	14.14	14.03	14.48	14.43	14.90	14.62	15.17	15.68
42017.0	12.79	13.10	13.40	13.76	13.73	14.13	14.02	14.48	14.42	14.89	14.61	15.16	15.67
42023.0	12.78	13.08	13.39	13.75	13.72	14.12	14.01	14.47	14.41	14.88	14.60	15.15	15.66
42029.0	12.76	13.07	13.37	13.74	13.71	14.11	14.00	14.46	14.40	14.87	14.59	15.14	15.65
42034.8	12.74	13.05	13.36	13.73	13.70	14.10	13.99	14.45	14.40	14.86	14.58	15.14	15.65
42040.6	12.73	13.04	13.34	13.72	13.69	14.09	13.98	14.44	14.39	14.86	14.58	15.13	15.64
42046.4	12.72	13.03	13.33	13.70	13.68	14.08	13.97	14.43	14.38	14.85	14.57	15.12	15.64
42052.2	12.70	13.01	13.32	13.69	13.66	14.07	13.96	14.43	14.37	14.84	14.56	15.11	15.63
42057.9	12.69	13.00	13.30	13.68	13.65	14.06	13.95	14.42	14.36	14.84	14.55	15.10	15.62
42063.7	12.67	12.98	13.29	13.67	13.64	14.05	13.94	14.41	14.35	14.83	14.54	15.10	15.62
42069.5	12.66	12.97	13.28	13.65	13.63	14.04	13.93	14.40	14.34	14.82	14.53	15.08	15.62
42075.3	12.65	12.96	13.26	13.64	13.61	14.03	13.92	14.39	14.33	14.81	14.52	15.06	15.59
42081.1	12.63	12.94	13.25	13.63	13.60	14.02	13.90	14.38	14.32	14.79	14.51	15.06	15.58
42086.9	12.62	12.93	13.24	13.61	13.59	14.00	13.89	14.37	14.31	14.79	14.50	15.05	15.57
42092.7	12.60	12.92	13.22	13.60	13.57	13.99	13.88	14.36	14.30	14.78	14.49	15.04	15.56
42098.5	12.59	12.90	13.21	13.59	13.56	13.98	13.87	14.35	14.29	14.76	14.48	15.03	15.55
42104.3	12.58	12.89	13.20	13.58	13.55	13.97	13.85	14.34	14.28	14.75	14.47	15.02	15.54

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42110.1	12.56	12.87	13.18	13.56	13.54	13.95	13.84	14.32	14.27	14.74	14.46	15.01	15.53
42115.8	12.54	12.86	13.17	13.55	13.52	13.94	13.83	14.31	14.25	14.73	14.45	14.99	15.52
42121.6	12.53	12.84	13.15	13.53	13.51	13.92	13.81	14.29	14.24	14.72	14.44	14.98	15.50
42127.4	12.51	12.83	13.14	13.52	13.49	13.91	13.79	14.27	14.22	14.70	14.42	14.97	15.50
42133.2	12.49	12.81	13.12	13.50	13.48	13.89	13.78	14.26	14.21	14.69	14.41	14.96	15.48
42139.0	12.48	12.80	13.11	13.49	13.46	13.88	13.77	14.24	14.19	14.67	14.39	14.94	15.48
42144.9	12.46	12.78	13.09	13.47	13.44	13.85	13.74	14.22	14.17	14.65	14.36	14.92	15.47
42150.9	12.44	12.76	13.07	13.44	13.42	13.83	13.72	14.20	14.15	14.62	14.34	14.90	15.45
42156.8	12.42	12.74	13.04	13.42	13.39	13.81	13.69	14.17	14.12	14.60	14.31	14.88	15.43
42162.8	12.40	12.72	13.02	13.39	13.37	13.78	13.67	14.15	14.09	14.57	14.28	14.85	15.41
42168.7	12.39	12.70	13.00	13.37	13.34	13.75	13.64	14.12	14.06	14.55	14.26	14.83	15.39
42174.7	12.37	12.68	12.98	13.35	13.32	13.73	13.62	14.09	14.04	14.52	14.23	14.80	15.36
42180.6	12.35	12.66	12.96	13.33	13.30	13.71	13.60	14.07	14.02	14.50	14.21	14.78	15.34
42186.6	12.33	12.64	12.94	13.31	13.28	13.68	13.58	14.05	13.99	14.48	14.19	14.75	15.32
42192.5	12.31	12.62	12.92	13.29	13.26	13.66	13.55	14.03	13.97	14.46	14.17	14.73	15.30
42198.4	12.29	12.60	12.90	13.27	13.24	13.64	13.53	14.01	13.95	14.44	14.15	14.71	15.28
42204.4	12.27	12.58	12.88	13.24	13.22	13.62	13.51	13.99	13.93	14.42	14.13	14.70	15.26
42210.3	12.25	12.56	12.86	13.22	13.20	13.60	13.49	13.97	13.91	14.40	14.11	14.68	15.24
42216.3	12.23	12.54	12.84	13.20	13.17	13.58	13.47	13.95	13.89	14.38	14.09	14.66	15.22
42222.2	12.21	12.52	12.82	13.18	13.15	13.55	13.44	13.92	13.87	14.36	14.06	14.64	15.20
42228.2	12.19	12.50	12.79	13.15	13.12	13.53	13.42	13.90	13.84	14.34	14.04	14.62	15.18
42234.1	12.17	12.47	12.77	13.13	13.10	13.51	13.40	13.88	13.82	14.32	14.02	14.60	15.15
42240.1	12.14	12.45	12.74	13.10	13.07	13.48	13.37	13.85	13.80	14.30	14.00	14.57	15.13
42246.0	12.12	12.42	12.72	13.07	13.05	13.46	13.35	13.83	13.77	14.27	13.97	14.55	15.11
42251.9	12.10	12.41	12.70	13.06	13.03	13.44	13.33	13.82	13.76	14.26	13.96	14.54	15.09
42257.8	12.09	12.39	12.69	13.05	13.02	13.43	13.32	13.81	13.75	14.25	13.95	14.53	15.08
42263.7	12.08	12.38	12.67	13.04	13.01	13.42	13.31	13.80	13.74	14.24	13.94	14.52	15.07
42269.6	12.06	12.36	12.66	13.02	13.00	13.41	13.30	13.79	13.73	14.23	13.93	14.50	15.06
42275.4	12.05	12.35	12.65	13.01	12.98	13.40	13.29	13.77	13.72	14.22	13.91	14.49	15.04
42281.3	12.03	12.34	12.64	13.00	12.97	13.38	13.27	13.76	13.70	14.20	13.90	14.48	15.03
42287.2	12.02	12.32	12.62	12.99	12.96	13.37	13.26	13.75	13.69	14.19	13.89	14.47	15.02
42293.1	12.00	12.31	12.61	12.97	12.95	13.36	13.25	13.74	13.68	14.18	13.88	14.45	15.00
42299.0	11.99	12.30	12.60	12.96	12.94	13.35	13.24	13.72	13.67	14.16	13.86	14.44	14.99
42304.9	11.98	12.29	12.59	12.95	12.92	13.34	13.23	13.71	13.65	14.15	13.85	14.42	14.97
42310.8	11.97	12.28	12.58	12.94	12.91	13.32	13.21	13.70	13.64	14.13	13.83	14.40	14.95
42316.7	11.96	12.26	12.56	12.93	12.90	13.31	13.20	13.68	13.63	14.12	13.82	14.38	14.93
42322.6	11.95	12.25	12.55	12.91	12.89	13.30	13.19	13.67	13.61	14.10	13.80	14.36	14.91
42328.4	11.93	12.24	12.54	12.90	12.88	13.28	13.17	13.65	13.59	14.08	13.79	14.33	14.88
42334.3	11.92	12.23	12.53	12.89	12.86	13.27	13.16	13.63	13.58	14.06	13.77	14.31	14.85
42340.2	11.91	12.22	12.52	12.88	12.85	13.26	13.15	13.62	13.56	14.03	13.75	14.28	14.82
42346.1	11.90	12.21	12.51	12.86	12.84	13.24	13.13	13.60	13.55	14.01	13.73	14.26	14.80
42352.0	11.89	12.20	12.49	12.85	12.82	13.23	13.12	13.58	13.53	13.99	13.71	14.23	14.78
42358.0	11.88	12.18	12.48	12.84	12.81	13.21	13.11	13.57	13.52	13.98	13.70	14.21	14.75
42364.0	11.86	12.17	12.47	12.82	12.80	13.20	13.09	13.55	13.50	13.96	13.68	14.20	14.73
42370.0	11.85	12.16	12.45	12.81	12.78	13.18	13.08	13.54	13.48	13.94	13.66	14.18	14.71
42376.0	11.84	12.14	12.44	12.79	12.77	13.17	13.06	13.52	13.47	13.92	13.65	14.17	14.68

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42382.0	11.82	12.13	12.42	12.78	12.75	13.15	13.05	13.50	13.45	13.91	13.63	14.15	14.66
42388.0	11.81	12.11	12.41	12.76	12.74	13.14	13.03	13.49	13.44	13.89	13.62	14.13	14.63
42394.0	11.79	12.10	12.40	12.75	12.72	13.12	13.02	13.47	13.42	13.88	13.60	14.12	14.61
42400.0	11.78	12.09	12.38	12.74	12.71	13.11	13.00	13.46	13.41	13.87	13.58	14.11	14.58
42406.0	11.76	12.07	12.37	12.72	12.70	13.09	12.99	13.44	13.39	13.85	13.57	14.10	14.56
42412.0	11.75	12.06	12.35	12.71	12.68	13.08	12.97	13.43	13.38	13.83	13.55	14.08	14.54
42418.0	11.73	12.04	12.34	12.69	12.67	13.06	12.96	13.41	13.36	13.81	13.54	14.05	14.52
42424.0	11.72	12.02	12.32	12.68	12.65	13.05	12.94	13.40	13.35	13.79	13.52	14.03	14.51
42430.0	11.70	12.01	12.31	12.66	12.64	13.03	12.93	13.38	13.33	13.78	13.51	14.02	14.49
42436.0	11.68	11.99	12.29	12.64	12.62	13.02	12.91	13.36	13.31	13.76	13.49	14.00	14.48
42442.0	11.67	11.98	12.28	12.63	12.60	13.00	12.90	13.35	13.30	13.74	13.47	13.98	14.46
42448.0	11.65	11.96	12.26	12.61	12.59	12.98	12.88	13.33	13.28	13.73	13.46	13.96	14.44
42454.0	11.63	11.94	12.24	12.60	12.57	12.97	12.86	13.31	13.26	13.71	13.44	13.94	14.42
42460.0	11.61	11.92	12.23	12.58	12.55	12.95	12.85	13.30	13.25	13.69	13.42	13.93	14.40
42466.0	11.59	11.90	12.21	12.56	12.53	12.93	12.83	13.28	13.23	13.67	13.40	13.90	14.38
42472.0	11.57	11.88	12.19	12.54	12.51	12.91	12.81	13.26	13.21	13.65	13.38	13.88	14.35
42478.0	11.55	11.86	12.17	12.52	12.49	12.89	12.79	13.24	13.19	13.63	13.36	13.86	14.33
42484.0	11.53	11.84	12.14	12.50	12.47	12.87	12.77	13.22	13.17	13.61	13.34	13.84	14.31
42490.0	11.51	11.82	12.12	12.48	12.45	12.85	12.74	13.19	13.14	13.59	13.32	13.82	14.29
42496.0	11.49	11.80	12.10	12.45	12.43	12.83	12.72	13.17	13.12	13.56	13.29	13.80	14.27
42502.0	11.47	11.77	12.08	12.43	12.41	12.80	12.70	13.15	13.10	13.54	13.27	13.78	14.25
42508.0	11.45	11.75	12.05	12.41	12.38	12.78	12.68	13.13	13.08	13.52	13.25	13.75	14.22
42514.0	11.43	11.73	12.03	12.39	12.36	12.76	12.66	13.11	13.06	13.50	13.23	13.73	14.20
42520.0	11.41	11.71	12.01	12.36	12.34	12.74	12.63	13.08	13.03	13.47	13.20	13.71	14.18
42526.0	11.39	11.69	11.99	12.34	12.31	12.71	12.61	13.06	13.01	13.45	13.18	13.68	14.15
42532.0	11.37	11.67	11.97	12.32	12.29	12.69	12.59	13.04	12.99	13.43	13.16	13.66	14.13
42538.0	11.35	11.65	11.95	12.29	12.27	12.67	12.56	13.01	12.96	13.40	13.13	13.63	14.10
42544.0	11.33	11.63	11.93	12.27	12.25	12.64	12.54	12.99	12.94	13.38	13.11	13.61	14.08
42550.0	11.32	11.62	11.91	12.25	12.22	12.62	12.51	12.96	12.91	13.35	13.08	13.58	14.05
42556.0	11.30	11.60	11.89	12.23	12.20	12.59	12.49	12.94	12.89	13.33	13.05	13.56	14.02
42562.0	11.28	11.58	11.87	12.21	12.18	12.57	12.47	12.91	12.86	13.30	13.03	13.53	13.99
42568.0	11.26	11.56	11.85	12.19	12.16	12.54	12.45	12.88	12.84	13.27	13.00	13.50	13.97
42574.0	11.25	11.55	11.84	12.17	12.15	12.53	12.43	12.87	12.82	13.26	12.99	13.49	13.95
42580.0	11.24	11.54	11.83	12.16	12.14	12.52	12.42	12.86	12.81	13.25	12.97	13.48	13.94
42586.0	11.23	11.52	11.81	12.15	12.12	12.50	12.41	12.84	12.80	13.23	12.96	13.46	13.92
42592.0	11.21	11.51	11.80	12.13	12.11	12.49	12.39	12.83	12.78	13.22	12.94	13.45	13.91
42598.0	11.20	11.50	11.79	12.12	12.09	12.48	12.38	12.81	12.77	13.20	12.93	13.44	13.89
42604.0	11.18	11.48	11.77	12.11	12.08	12.46	12.37	12.80	12.75	13.19	12.91	13.42	13.87
42610.0	11.17	11.47	11.76	12.09	12.07	12.45	12.35	12.78	12.74	13.17	12.90	13.40	13.85
42616.0	11.16	11.45	11.74	12.08	12.05	12.43	12.34	12.76	12.72	13.15	12.88	13.38	13.83
42622.0	11.14	11.44	11.73	12.06	12.04	12.41	12.32	12.75	12.70	13.13	12.86	13.36	13.82
42628.0	11.13	11.43	11.72	12.05	12.02	12.40	12.31	12.73	12.69	13.11	12.84	13.34	13.80
42634.0	11.11	11.41	11.70	12.03	12.01	12.38	12.29	12.72	12.67	13.10	12.82	13.33	13.78
42640.0	11.10	11.40	11.69	12.02	11.99	12.37	12.28	12.70	12.66	13.08	12.81	13.31	13.77
42646.0	11.08	11.38	11.67	12.00	11.98	12.35	12.26	12.68	12.64	13.07	12.79	13.29	13.75
42652.0	11.07	11.37	11.66	11.99	11.96	12.34	12.25	12.67	12.63	13.05	12.78	13.28	13.73

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42658.0	11.05	11.35	11.64	11.97	11.95	12.32	12.23	12.65	12.61	13.04	12.76	13.26	13.71
42664.0	11.04	11.34	11.63	11.96	11.93	12.31	12.22	12.64	12.59	13.02	12.74	13.24	13.69
42670.0	11.02	11.32	11.61	11.94	11.92	12.29	12.20	12.62	12.58	13.00	12.73	13.22	13.66
42676.0	11.00	11.30	11.60	11.92	11.90	12.28	12.18	12.60	12.56	12.98	12.71	13.20	13.64
42681.9	10.99	11.29	11.58	11.91	11.88	12.26	12.17	12.59	12.55	12.97	12.69	13.19	13.62
42687.9	10.97	11.27	11.57	11.89	11.87	12.25	12.15	12.57	12.53	12.96	12.68	13.17	13.60
42693.8	10.95	11.26	11.55	11.88	11.85	12.23	12.14	12.56	12.52	12.94	12.66	13.15	13.59
42699.8	10.94	11.24	11.54	11.86	11.84	12.22	12.12	12.54	12.50	12.93	12.65	13.14	13.57
42705.7	10.92	11.22	11.52	11.85	11.82	12.20	12.11	12.53	12.49	12.91	12.63	13.12	13.55
42711.7	10.91	11.21	11.51	11.83	11.81	12.19	12.10	12.52	12.47	12.90	12.62	13.11	13.54
42717.6	10.89	11.19	11.49	11.82	11.79	12.17	12.08	12.50	12.46	12.88	12.60	13.09	13.52
42723.6	10.87	11.18	11.48	11.80	11.78	12.16	12.07	12.49	12.45	12.87	12.59	13.08	13.51
42729.5	10.86	11.16	11.46	11.79	11.76	12.14	12.05	12.47	12.43	12.86	12.57	13.07	13.49
42735.4	10.84	11.15	11.45	11.77	11.75	12.13	12.04	12.46	12.42	12.84	12.56	13.05	13.48
42741.4	10.82	11.13	11.43	11.76	11.74	12.12	12.03	12.45	12.41	12.83	12.55	13.04	13.47
42747.3	10.81	11.12	11.42	11.75	11.72	12.10	12.01	12.43	12.39	12.82	12.53	13.03	13.46
42753.3	10.79	11.10	11.40	11.73	11.71	12.09	12.00	12.42	12.38	12.80	12.52	13.01	13.44
42759.2	10.77	11.09	11.39	11.72	11.69	12.08	11.99	12.41	12.37	12.79	12.51	13.00	13.43
42765.2	10.76	11.07	11.38	11.70	11.68	12.06	11.97	12.39	12.35	12.78	12.49	12.99	13.42
42771.1	10.74	11.06	11.36	11.69	11.67	12.05	11.96	12.38	12.34	12.77	12.48	12.98	13.42
42777.1	10.72	11.04	11.35	11.68	11.65	12.04	11.95	12.37	12.33	12.75	12.47	12.96	13.40
42783.0	10.71	11.03	11.34	11.66	11.64	12.02	11.94	12.36	12.32	12.74	12.45	12.95	13.39
42789.0	10.69	11.01	11.32	11.65	11.63	12.01	11.92	12.34	12.30	12.73	12.44	12.94	13.38
42795.0	10.68	11.00	11.31	11.64	11.61	12.00	11.91	12.33	12.29	12.71	12.42	12.92	13.37
42801.0	10.66	10.99	11.30	11.62	11.60	11.98	11.89	12.31	12.28	12.70	12.41	12.91	13.35
42807.0	10.65	10.97	11.28	11.61	11.59	11.97	11.88	12.30	12.26	12.69	12.39	12.90	13.34
42813.0	10.64	10.96	11.27	11.59	11.57	11.95	11.87	12.29	12.25	12.67	12.38	12.88	13.33
42819.0	10.62	10.94	11.26	11.58	11.56	11.94	11.85	12.27	12.23	12.66	12.37	12.87	13.31
42825.0	10.61	10.93	11.24	11.57	11.54	11.93	11.84	12.26	12.22	12.65	12.35	12.86	13.30
42831.0	10.59	10.92	11.23	11.55	11.53	11.91	11.83	12.25	12.21	12.64	12.34	12.84	13.29
42837.0	10.58	10.90	11.22	11.54	11.52	11.90	11.81	12.23	12.19	12.63	12.33	12.83	13.28
42843.0	10.57	10.89	11.20	11.52	11.50	11.88	11.80	12.22	12.18	12.61	12.31	12.82	13.27
42849.0	10.55	10.88	11.19	11.51	11.49	11.87	11.79	12.21	12.17	12.61	12.30	12.82	13.26
42855.0	10.54	10.86	11.18	11.50	11.47	11.86	11.77	12.20	12.16	12.60	12.29	12.81	13.25
42861.0	10.52	10.85	11.16	11.48	11.46	11.84	11.76	12.18	12.14	12.59	12.28	12.80	13.24
42867.0	10.51	10.84	11.15	11.47	11.44	11.83	11.74	12.17	12.13	12.58	12.26	12.79	13.24
42873.0	10.50	10.82	11.14	11.45	11.43	11.82	11.73	12.16	12.12	12.57	12.25	12.78	13.23
42879.0	10.48	10.81	11.12	11.44	11.41	11.80	11.72	12.14	12.11	12.55	12.24	12.77	13.22
42885.0	10.47	10.79	11.11	11.42	11.40	11.79	11.70	12.13	12.09	12.54	12.22	12.76	13.21
42891.0	10.45	10.78	11.09	11.40	11.38	11.77	11.69	12.11	12.08	12.53	12.20	12.74	13.19
42897.0	10.43	10.76	11.07	11.39	11.36	11.75	11.67	12.10	12.06	12.51	12.19	12.73	13.18
42903.0	10.41	10.74	11.06	11.37	11.34	11.73	11.65	12.08	12.04	12.50	12.17	12.72	13.17
42909.0	10.40	10.72	11.04	11.35	11.33	11.72	11.63	12.06	12.02	12.48	12.15	12.70	13.16
42915.0	10.38	10.71	11.02	11.33	11.31	11.70	11.61	12.04	12.01	12.46	12.13	12.68	13.14
42921.0	10.37	10.69	11.01	11.31	11.29	11.68	11.60	12.03	11.99	12.45	12.11	12.67	13.13
42927.0	10.35	10.68	10.99	11.29	11.27	11.66	11.58	12.01	11.97	12.43	12.09	12.65	13.11

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42933.0	10.33	10.66	10.98	11.28	11.25	11.64	11.56	11.98	11.95	12.42	12.07	12.64	13.10
42939.0	10.32	10.65	10.96	11.26	11.24	11.62	11.54	11.97	11.93	12.40	12.05	12.62	13.08
42945.0	10.31	10.63	10.95	11.24	11.22	11.61	11.52	11.95	11.91	12.38	12.04	12.61	13.07
42951.0	10.29	10.62	10.93	11.23	11.21	11.59	11.51	11.93	11.90	12.37	12.02	12.59	13.05
42957.0	10.28	10.60	10.92	11.21	11.19	11.57	11.49	11.92	11.88	12.36	12.00	12.58	13.04
42963.0	10.26	10.59	10.90	11.20	11.17	11.56	11.48	11.90	11.87	12.34	11.99	12.57	13.03
42969.0	10.25	10.58	10.89	11.18	11.16	11.54	11.46	11.89	11.86	12.33	11.98	12.55	13.01
42975.0	10.24	10.56	10.88	11.16	11.14	11.53	11.45	11.88	11.84	12.32	11.96	12.54	13.00
42981.0	10.22	10.55	10.86	11.15	11.13	11.51	11.43	11.86	11.83	12.30	11.95	12.53	12.98
42987.0	10.21	10.54	10.85	11.14	11.11	11.49	11.42	11.85	11.81	12.29	11.93	12.51	12.97
42992.8	10.20	10.53	10.84	11.12	11.10	11.48	11.40	11.83	11.80	12.28	11.92	12.50	12.96
42998.6	10.19	10.52	10.83	11.11	11.09	11.47	11.39	11.82	11.79	12.27	11.90	12.49	12.94
43004.5	10.18	10.51	10.82	11.10	11.08	11.46	11.38	11.81	11.78	12.26	11.89	12.47	12.93
43010.3	10.17	10.50	10.81	11.09	11.07	11.44	11.37	11.80	11.76	12.24	11.88	12.46	12.92
43016.1	10.16	10.49	10.80	11.07	11.05	11.43	11.35	11.78	11.75	12.23	11.86	12.45	12.90
43021.9	10.15	10.48	10.79	11.06	11.04	11.42	11.34	11.77	11.74	12.22	11.85	12.44	12.89
43027.8	10.14	10.46	10.78	11.05	11.03	11.40	11.33	11.76	11.73	12.21	11.84	12.42	12.88
43033.6	10.13	10.45	10.77	11.04	11.02	11.39	11.32	11.74	11.71	12.20	11.82	12.41	12.86
43039.4	10.12	10.44	10.75	11.03	11.01	11.38	11.30	11.73	11.70	12.18	11.81	12.40	12.85
43045.2	10.11	10.43	10.74	11.01	10.99	11.36	11.29	11.72	11.69	12.17	11.79	12.39	12.84
43051.1	10.10	10.42	10.73	11.00	10.98	11.35	11.28	11.70	11.67	12.16	11.78	12.37	12.82
43056.9	10.09	10.41	10.72	10.99	10.97	11.34	11.26	11.69	11.66	12.14	11.76	12.36	12.81
43062.7	10.08	10.40	10.71	10.97	10.95	11.32	11.25	11.67	11.64	12.13	11.75	12.35	12.80
43068.5	10.07	10.39	10.70	10.96	10.94	11.31	11.24	11.66	11.63	12.12	11.73	12.33	12.78
43074.4	10.06	10.38	10.69	10.95	10.93	11.30	11.23	11.65	11.62	12.10	11.72	12.32	12.77
43080.2	10.04	10.37	10.68	10.93	10.92	11.28	11.21	11.63	11.60	12.09	11.70	12.30	12.75
43086.0	10.03	10.36	10.67	10.92	10.90	11.27	11.20	11.62	11.59	12.07	11.69	12.29	12.73
43086.0	10.03	10.36	10.67	10.92	10.90	11.27	11.20	11.62	11.59	12.07	11.69	12.29	12.73
43100.7	10.01	10.33	10.64	10.89	10.88	11.24	11.17	11.58	11.56	12.04	11.65	12.25	12.69
43115.4	9.99	10.31	10.62	10.87	10.85	11.21	11.14	11.55	11.52	12.00	11.61	12.21	12.64
43130.1	9.97	10.29	10.60	10.84	10.82	11.17	11.11	11.51	11.49	11.97	11.57	12.17	12.59
43144.8	9.95	10.26	10.57	10.81	10.79	11.14	11.08	11.48	11.46	11.94	11.54	12.14	12.54
43159.4	9.92	10.24	10.55	10.78	10.76	11.11	11.05	11.44	11.42	11.90	11.50	12.09	12.49
43174.1	9.90	10.22	10.52	10.75	10.73	11.07	11.02	11.41	11.39	11.86	11.46	12.05	12.42
43188.8	9.88	10.19	10.50	10.71	10.70	11.04	10.99	11.38	11.36	11.83	11.42	12.02	12.37
43203.5	9.86	10.17	10.47	10.68	10.67	11.01	10.96	11.35	11.33	11.81	11.39	11.99	12.33
43214.5	9.57	9.89	10.20	10.54	10.52	10.86	10.77	11.15	11.10	11.48	11.26	11.71	12.21
43228.1	9.54	9.86	10.17	10.51	10.48	10.82	10.73	11.11	11.06	11.44	11.22	11.67	12.17
43241.7	9.51	9.83	10.13	10.47	10.45	10.78	10.69	11.07	11.03	11.41	11.18	11.63	12.13
43255.3	9.48	9.79	10.10	10.43	10.41	10.75	10.66	11.04	10.99	11.37	11.15	11.60	12.10
43268.9	9.44	9.76	10.06	10.40	10.37	10.71	10.62	11.00	10.95	11.33	11.11	11.56	12.06
43282.6	9.41	9.72	10.03	10.36	10.34	10.68	10.59	10.96	10.92	11.30	11.08	11.53	12.03
43296.2	9.38	9.69	9.99	10.33	10.30	10.64	10.55	10.93	10.88	11.26	11.04	11.49	12.00
43309.8	9.34	9.65	9.95	10.29	10.27	10.61	10.52	10.89	10.85	11.23	11.01	11.46	11.96
43323.4	9.30	9.62	9.92	10.26	10.23	10.57	10.48	10.86	10.81	11.19	10.97	11.42	11.93
43337.0	9.26	9.58	9.88	10.22	10.20	10.54	10.45	10.82	10.78	11.15	10.94	11.38	11.89

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
43337.0	9.26	9.58	9.88	10.22	10.20	10.54	10.45	10.82	10.78	11.15	10.94	11.38	11.89
43342.7	9.25	9.56	9.87	10.21	10.19	10.53	10.44	10.81	10.77	11.14	10.92	11.37	11.88
43348.5	9.23	9.55	9.86	10.20	10.18	10.52	10.43	10.80	10.76	11.13	10.91	11.36	11.87
43354.2	9.22	9.54	9.84	10.19	10.17	10.51	10.42	10.79	10.75	11.12	10.90	11.35	11.86
43359.9	9.21	9.52	9.83	10.18	10.15	10.50	10.41	10.78	10.73	11.11	10.89	11.34	11.85
43365.7	9.19	9.51	9.82	10.17	10.14	10.48	10.39	10.77	10.72	11.10	10.88	11.33	11.84
43371.4	9.18	9.50	9.81	10.15	10.13	10.47	10.38	10.76	10.71	11.09	10.87	11.32	11.83
43377.2	9.16	9.48	9.79	10.14	10.12	10.46	10.37	10.75	10.70	11.08	10.86	11.31	11.82
43382.9	9.15	9.47	9.78	10.13	10.11	10.45	10.36	10.73	10.69	11.07	10.85	11.30	11.82
43388.6	9.14	9.46	9.77	10.12	10.10	10.44	10.35	10.72	10.68	11.05	10.84	11.29	11.81
43394.4	9.12	9.44	9.76	10.11	10.08	10.43	10.34	10.71	10.67	11.04	10.83	11.28	11.80
43400.1	9.11	9.43	9.74	10.10	10.07	10.42	10.33	10.70	10.66	11.03	10.81	11.27	11.79
43405.8	9.10	9.42	9.73	10.09	10.06	10.41	10.32	10.69	10.65	11.02	10.80	11.26	11.78
43411.6	9.08	9.41	9.72	10.07	10.05	10.40	10.30	10.68	10.64	11.01	10.79	11.25	11.77
43417.3	9.07	9.39	9.71	10.06	10.04	10.39	10.29	10.67	10.63	11.00	10.78	11.24	11.76
43423.1	9.06	9.38	9.69	10.05	10.03	10.37	10.28	10.66	10.61	10.99	10.77	11.23	11.75
43428.8	9.05	9.37	9.68	10.04	10.02	10.36	10.27	10.65	10.60	10.98	10.76	11.22	11.75
43434.5	9.03	9.36	9.67	10.03	10.00	10.35	10.26	10.64	10.59	10.97	10.75	11.21	11.74
43440.3	9.02	9.35	9.66	10.02	9.99	10.34	10.25	10.63	10.58	10.96	10.74	11.20	11.74
43446.0	9.01	9.33	9.65	10.01	9.98	10.33	10.24	10.62	10.58	10.96	10.73	11.20	11.74
43451.7	8.99	9.32	9.63	9.99	9.97	10.32	10.23	10.61	10.56	10.95	10.73	11.19	11.73
43457.5	8.98	9.30	9.62	9.98	9.96	10.31	10.22	10.60	10.55	10.94	10.71	11.18	11.73
43463.2	8.96	9.29	9.61	9.97	9.94	10.29	10.20	10.59	10.54	10.93	10.70	11.17	11.72
43468.9	8.95	9.27	9.59	9.96	9.93	10.28	10.19	10.58	10.54	10.91	10.69	11.17	11.69
43474.7	8.93	9.26	9.58	9.94	9.92	10.27	10.18	10.58	10.53	10.90	10.67	11.17	11.68
43480.4	8.91	9.24	9.56	9.93	9.90	10.26	10.17	10.57	10.52	10.89	10.66	11.16	11.67
43486.2	8.90	9.23	9.55	9.91	9.89	10.25	10.16	10.55	10.51	10.88	10.65	11.15	11.66
43491.9	8.88	9.21	9.53	9.90	9.87	10.24	10.14	10.54	10.49	10.86	10.63	11.14	11.65
43497.6	8.86	9.19	9.51	9.88	9.85	10.22	10.13	10.52	10.48	10.85	10.62	11.12	11.64
43503.4	8.85	9.18	9.50	9.86	9.84	10.21	10.11	10.51	10.46	10.83	10.61	11.11	11.63
43509.1	8.83	9.16	9.48	9.85	9.82	10.19	10.09	10.49	10.45	10.82	10.59	11.09	11.62
43514.8	8.82	9.15	9.47	9.83	9.81	10.17	10.08	10.47	10.43	10.81	10.58	11.08	11.61
43520.6	8.80	9.13	9.45	9.81	9.79	10.16	10.06	10.45	10.41	10.80	10.57	11.06	11.59
43526.3	8.78	9.11	9.43	9.80	9.77	10.14	10.04	10.44	10.39	10.79	10.56	11.04	11.58
43532.1	8.76	9.09	9.41	9.78	9.75	10.12	10.03	10.42	10.37	10.77	10.54	11.03	11.57
43537.8	8.75	9.08	9.40	9.76	9.74	10.11	10.01	10.41	10.36	10.76	10.53	11.02	11.56
43543.5	8.73	9.06	9.38	9.75	9.72	10.09	10.00	10.39	10.34	10.74	10.51	11.00	11.55
43549.3	8.71	9.04	9.36	9.73	9.70	10.08	9.98	10.37	10.33	10.73	10.50	10.99	11.54
43555.0	8.70	9.02	9.34	9.71	9.68	10.06	9.96	10.36	10.31	10.71	10.48	10.97	11.52
43560.7	8.68	9.01	9.32	9.70	9.67	10.05	9.95	10.35	10.30	10.70	10.47	10.96	11.52
43566.5	8.67	9.00	9.31	9.69	9.66	10.04	9.94	10.34	10.29	10.70	10.46	10.96	11.51
43572.2	8.66	8.98	9.30	9.67	9.65	10.03	9.93	10.33	10.28	10.69	10.45	10.95	11.51
43577.9	8.64	8.97	9.29	9.66	9.64	10.02	9.92	10.32	10.27	10.68	10.44	10.94	11.51
43583.7	8.63	8.96	9.27	9.65	9.62	10.01	9.91	10.31	10.26	10.67	10.43	10.94	11.50
43589.4	8.61	8.94	9.26	9.64	9.61	10.00	9.90	10.30	10.25	10.66	10.42	10.93	11.50
43595.2	8.60	8.93	9.25	9.63	9.60	9.98	9.89	10.29	10.24	10.65	10.41	10.93	11.49

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
43600.9	8.59	8.92	9.24	9.62	9.59	9.98	9.88	10.28	10.23	10.65	10.41	10.92	11.49
43606.6	8.57	8.90	9.23	9.60	9.58	9.97	9.86	10.27	10.22	10.64	10.40	10.92	11.48
43612.4	8.56	8.89	9.21	9.59	9.56	9.95	9.85	10.26	10.21	10.63	10.39	10.91	11.48
43618.1	8.54	8.88	9.20	9.58	9.55	9.94	9.84	10.25	10.20	10.62	10.38	10.91	11.48
43623.8	8.53	8.86	9.19	9.57	9.54	9.93	9.83	10.24	10.19	10.61	10.37	10.90	11.47
43629.6	8.51	8.85	9.17	9.55	9.53	9.92	9.82	10.23	10.18	10.61	10.36	10.89	11.47
43635.3	8.50	8.83	9.16	9.54	9.51	9.91	9.80	10.22	10.17	10.60	10.35	10.88	11.47
43641.1	8.48	8.82	9.15	9.53	9.50	9.89	9.79	10.21	10.16	10.59	10.34	10.87	11.46
43646.8	8.47	8.81	9.13	9.51	9.49	9.88	9.78	10.20	10.15	10.58	10.33	10.86	11.46
43652.5	8.45	8.79	9.12	9.50	9.47	9.87	9.77	10.18	10.13	10.57	10.32	10.86	11.46
43658.3	8.44	8.78	9.10	9.49	9.46	9.86	9.75	10.17	10.12	10.56	10.31	10.85	11.45
43664.0	8.42	8.76	9.09	9.47	9.44	9.84	9.74	10.16	10.11	10.55	10.30	10.84	11.44
43669.9	8.41	8.74	9.07	9.46	9.43	9.83	9.72	10.15	10.10	10.54	10.29	10.84	11.44
43675.9	8.39	8.73	9.06	9.44	9.41	9.81	9.71	10.14	10.09	10.53	10.28	10.83	11.44
43681.8	8.37	8.71	9.04	9.43	9.40	9.80	9.70	10.13	10.07	10.51	10.26	10.83	11.45
43687.8	8.35	8.69	9.03	9.41	9.38	9.78	9.68	10.11	10.06	10.50	10.25	10.82	11.45
43693.7	8.33	8.68	9.01	9.39	9.37	9.77	9.66	10.09	10.04	10.49	10.23	10.81	11.44
43699.7	8.32	8.66	9.00	9.38	9.35	9.75	9.64	10.08	10.02	10.48	10.22	10.80	11.44
43705.6	8.30	8.64	8.98	9.36	9.34	9.74	9.63	10.07	10.01	10.47	10.21	10.80	11.44
43711.6	8.28	8.63	8.96	9.35	9.32	9.72	9.62	10.05	10.00	10.46	10.20	10.79	11.43
43717.5	8.26	8.61	8.95	9.33	9.30	9.71	9.60	10.04	9.99	10.45	10.18	10.78	11.43
43723.4	8.24	8.59	8.93	9.31	9.29	9.69	9.58	10.03	9.97	10.44	10.17	10.77	11.42
43729.4	8.22	8.57	8.91	9.30	9.27	9.68	9.57	10.01	9.96	10.43	10.15	10.76	11.42
43735.3	8.21	8.56	8.90	9.28	9.26	9.66	9.55	10.00	9.95	10.42	10.15	10.75	11.41
43741.3	8.19	8.54	8.88	9.27	9.24	9.65	9.54	9.99	9.93	10.41	10.13	10.74	11.40
43747.2	8.17	8.53	8.87	9.25	9.23	9.63	9.53	9.97	9.92	10.40	10.12	10.73	11.39
43753.2	8.15	8.51	8.85	9.24	9.21	9.62	9.51	9.96	9.91	10.39	10.11	10.73	11.39
43759.1	8.13	8.49	8.84	9.23	9.20	9.61	9.50	9.95	9.90	10.38	10.10	10.72	11.39
43765.1	8.11	8.48	8.83	9.21	9.18	9.60	9.49	9.94	9.89	10.37	10.09	10.71	11.39
43771.0	8.10	8.46	8.81	9.20	9.17	9.59	9.48	9.93	9.88	10.37	10.08	10.71	11.38
43776.9	8.08	8.45	8.80	9.19	9.16	9.58	9.46	9.92	9.86	10.35	10.07	10.70	11.38
43782.8	8.07	8.43	8.78	9.17	9.14	9.56	9.45	9.91	9.85	10.35	10.06	10.69	11.37
43788.7	8.05	8.42	8.77	9.16	9.13	9.55	9.44	9.90	9.84	10.34	10.05	10.69	11.38
43794.6	8.04	8.41	8.76	9.15	9.12	9.54	9.43	9.89	9.83	10.33	10.04	10.68	11.37
43800.5	8.02	8.39	8.74	9.13	9.10	9.53	9.42	9.88	9.82	10.32	10.03	10.67	11.37
43806.4	8.01	8.38	8.73	9.12	9.09	9.52	9.40	9.86	9.81	10.31	10.02	10.67	11.36
43812.3	7.99	8.36	8.72	9.11	9.08	9.51	9.39	9.85	9.80	10.30	10.01	10.66	11.36
43818.2	7.97	8.35	8.70	9.09	9.07	9.50	9.38	9.85	9.79	10.30	10.00	10.66	11.36
43824.1	7.96	8.33	8.69	9.08	9.05	9.49	9.37	9.84	9.78	10.29	10.00	10.66	11.36
43829.9	7.94	8.32	8.68	9.07	9.04	9.48	9.36	9.83	9.78	10.28	9.99	10.65	11.37
43835.8	7.93	8.31	8.67	9.06	9.03	9.47	9.36	9.83	9.77	10.28	9.98	10.65	11.37
43841.7	7.91	8.29	8.65	9.05	9.02	9.46	9.35	9.82	9.76	10.27	9.98	10.64	11.38
43847.6	7.90	8.28	8.64	9.04	9.01	9.45	9.34	9.81	9.75	10.27	9.97	10.64	11.37
43853.5	7.88	8.26	8.63	9.03	9.00	9.45	9.33	9.80	9.74	10.26	9.96	10.63	11.36
43859.4	7.86	8.25	8.62	9.02	8.99	9.44	9.32	9.80	9.74	10.26	9.96	10.61	11.36
43865.3	7.85	8.23	8.60	9.01	8.98	9.43	9.31	9.79	9.73	10.26	9.95	10.61	11.37

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
43871.2	7.83	8.22	8.59	9.00	8.97	9.43	9.31	9.79	9.73	10.25	9.94	10.61	11.36
43877.1	7.81	8.20	8.58	8.99	8.96	9.42	9.30	9.78	9.72	10.24	9.94	10.61	11.35
43883.0	7.80	8.19	8.56	8.98	8.95	9.41	9.29	9.77	9.71	10.24	9.93	10.60	11.34
43888.8	7.78	8.17	8.55	8.97	8.94	9.40	9.28	9.77	9.70	10.23	9.93	10.60	11.34
43894.6	7.76	8.16	8.54	8.96	8.93	9.39	9.27	9.76	9.70	10.22	9.92	10.60	11.33
43900.4	7.75	8.14	8.53	8.95	8.92	9.38	9.26	9.75	9.69	10.22	9.91	10.59	11.33
43906.2	7.73	8.13	8.51	8.94	8.91	9.38	9.25	9.74	9.68	10.21	9.91	10.59	11.32
43912.0	7.71	8.12	8.50	8.93	8.90	9.37	9.24	9.73	9.67	10.20	9.90	10.59	11.32
43917.8	7.70	8.10	8.49	8.92	8.88	9.36	9.23	9.72	9.66	10.20	9.89	10.58	11.31
43923.6	7.68	8.09	8.48	8.91	8.87	9.35	9.22	9.71	9.65	10.19	9.88	10.58	11.31
43929.4	7.67	8.08	8.46	8.90	8.86	9.34	9.21	9.71	9.64	10.18	9.87	10.57	11.31
43935.2	7.65	8.06	8.45	8.89	8.85	9.33	9.20	9.70	9.64	10.18	9.87	10.57	11.30
43941.0	7.64	8.05	8.44	8.88	8.84	9.32	9.19	9.69	9.63	10.17	9.86	10.56	11.31
43946.8	7.63	8.04	8.43	8.87	8.83	9.31	9.19	9.68	9.62	10.16	9.85	10.56	11.30
43952.6	7.62	8.03	8.42	8.86	8.82	9.30	9.18	9.67	9.61	10.16	9.84	10.55	11.30
43958.4	7.60	8.01	8.41	8.85	8.81	9.30	9.17	9.67	9.60	10.15	9.84	10.55	11.29
43964.2	7.59	8.00	8.40	8.84	8.81	9.29	9.16	9.66	9.60	10.14	9.83	10.54	11.29
43970.0	7.58	7.99	8.39	8.83	8.80	9.28	9.15	9.65	9.59	10.14	9.82	10.54	11.28
43975.8	7.57	7.98	8.38	8.82	8.79	9.27	9.14	9.64	9.58	10.13	9.81	10.53	11.28
43981.6	7.56	7.97	8.37	8.81	8.78	9.26	9.14	9.64	9.57	10.12	9.81	10.53	11.27
43987.4	7.55	7.96	8.36	8.80	8.77	9.26	9.13	9.63	9.57	10.12	9.80	10.52	11.27
43993.2	7.54	7.95	8.35	8.79	8.76	9.25	9.12	9.62	9.56	10.11	9.79	10.52	11.26
43999.0	7.53	7.94	8.34	8.79	8.75	9.24	9.11	9.61	9.55	10.10	9.79	10.51	11.26
44004.8	7.52	7.93	8.33	8.78	8.75	9.24	9.11	9.61	9.55	10.10	9.78	10.51	11.26
44010.6	7.51	7.93	8.33	8.77	8.74	9.23	9.10	9.61	9.54	10.10	9.78	10.51	11.26
44016.4	7.50	7.92	8.32	8.77	8.73	9.23	9.10	9.60	9.54	10.09	9.77	10.50	11.25
44022.2	7.50	7.91	8.31	8.76	8.73	9.22	9.09	9.60	9.53	10.09	9.77	10.50	11.25
44028.0	7.49	7.91	8.31	8.76	8.72	9.22	9.09	9.59	9.53	10.09	9.76	10.50	11.25
44033.8	7.48	7.90	8.30	8.75	8.72	9.21	9.08	9.59	9.52	10.08	9.76	10.50	11.24
44039.6	7.48	7.89	8.29	8.75	8.71	9.21	9.08	9.58	9.52	10.08	9.76	10.49	11.23
44045.4	7.47	7.89	8.29	8.74	8.71	9.20	9.07	9.58	9.51	10.08	9.75	10.49	11.23
44051.2	7.46	7.88	8.28	8.73	8.70	9.20	9.07	9.57	9.51	10.07	9.75	10.49	11.23
44057.0	7.46	7.88	8.28	8.73	8.70	9.19	9.06	9.57	9.50	10.07	9.74	10.49	11.23
44062.8	7.45	7.87	8.27	8.72	8.69	9.19	9.06	9.56	9.50	10.06	9.74	10.48	11.22
44068.6	7.45	7.87	8.26	8.71	8.68	9.18	9.05	9.56	9.49	10.06	9.74	10.48	11.22
44074.4	7.44	7.86	8.26	8.71	8.68	9.18	9.04	9.56	9.49	10.06	9.73	10.48	11.22
44080.2	7.43	7.86	8.25	8.70	8.67	9.17	9.04	9.55	9.49	10.05	9.73	10.47	11.22
44086.0	7.43	7.85	8.25	8.70	8.67	9.17	9.04	9.55	9.48	10.05	9.72	10.47	11.22
44091.8	7.42	7.85	8.24	8.69	8.66	9.16	9.03	9.54	9.48	10.05	9.72	10.47	11.21
44097.6	7.42	7.84	8.24	8.69	8.66	9.16	9.03	9.54	9.47	10.05	9.72	10.47	11.21
44103.4	7.41	7.84	8.23	8.69	8.65	9.15	9.02	9.54	9.47	10.04	9.71	10.47	11.21
44109.2	7.41	7.83	8.23	8.68	8.65	9.15	9.02	9.53	9.47	10.04	9.71	10.46	11.21
44115.0	7.40	7.83	8.22	8.68	8.64	9.15	9.01	9.53	9.46	10.04	9.71	10.46	11.20
44121.0	7.40	7.82	8.22	8.67	8.64	9.14	9.01	9.52	9.46	10.03	9.70	10.46	11.20
44127.0	7.39	7.81	8.21	8.66	8.63	9.13	9.00	9.52	9.45	10.03	9.70	10.45	11.19
44133.0	7.38	7.80	8.20	8.66	8.62	9.12	8.99	9.51	9.44	10.02	9.69	10.45	11.19

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
44139.0	7.37	7.80	8.19	8.65	8.61	9.12	8.99	9.50	9.44	10.02	9.69	10.44	11.19
44145.0	7.36	7.79	8.19	8.64	8.61	9.11	8.98	9.50	9.43	10.01	9.68	10.44	11.19
44151.0	7.35	7.78	8.18	8.63	8.60	9.10	8.97	9.49	9.42	10.01	9.67	10.43	11.18
44157.0	7.35	7.77	8.17	8.63	8.59	9.10	8.97	9.48	9.42	10.00	9.67	10.43	11.17
44163.0	7.34	7.77	8.16	8.62	8.58	9.09	8.96	9.48	9.41	10.00	9.66	10.42	11.16
44169.0	7.33	7.76	8.16	8.61	8.58	9.08	8.95	9.47	9.40	9.99	9.66	10.42	11.17
44175.0	7.32	7.75	8.15	8.60	8.57	9.08	8.94	9.47	9.40	9.98	9.65	10.41	11.16
44181.0	7.31	7.74	8.14	8.60	8.56	9.07	8.94	9.46	9.39	9.98	9.64	10.41	11.16
44187.0	7.30	7.73	8.13	8.59	8.55	9.06	8.93	9.45	9.38	9.97	9.64	10.40	11.15
44193.0	7.29	7.72	8.12	8.58	8.55	9.05	8.92	9.45	9.37	9.97	9.63	10.39	11.15
44199.0	7.28	7.72	8.12	8.57	8.54	9.05	8.91	9.44	9.37	9.96	9.63	10.39	11.14
44205.0	7.28	7.71	8.11	8.57	8.53	9.04	8.91	9.43	9.36	9.95	9.62	10.38	11.14
44211.0	7.27	7.70	8.10	8.56	8.52	9.03	8.90	9.42	9.35	9.95	9.61	10.38	11.13
44217.0	7.26	7.69	8.09	8.55	8.51	9.02	8.89	9.42	9.34	9.94	9.61	10.37	11.12
44223.0	7.25	7.68	8.08	8.54	8.51	9.01	8.88	9.41	9.34	9.93	9.60	10.36	11.12
44229.0	7.24	7.67	8.07	8.53	8.50	9.01	8.87	9.40	9.33	9.93	9.59	10.36	11.11
44234.9	7.23	7.66	8.07	8.53	8.49	9.00	8.87	9.40	9.32	9.92	9.59	10.35	11.11
44240.9	7.22	7.65	8.06	8.52	8.48	8.99	8.86	9.39	9.32	9.92	9.58	10.35	11.11
44246.8	7.21	7.64	8.05	8.51	8.48	8.99	8.86	9.39	9.31	9.91	9.58	10.35	11.10
44252.8	7.20	7.64	8.04	8.51	8.47	8.98	8.85	9.38	9.31	9.91	9.57	10.34	11.10
44258.7	7.19	7.63	8.03	8.50	8.46	8.98	8.84	9.38	9.30	9.90	9.57	10.34	11.10
44264.7	7.18	7.62	8.03	8.49	8.46	8.97	8.84	9.37	9.30	9.90	9.56	10.34	11.10
44270.6	7.17	7.61	8.02	8.48	8.45	8.97	8.83	9.37	9.29	9.90	9.56	10.33	11.10
44276.6	7.15	7.60	8.01	8.48	8.44	8.96	8.83	9.36	9.29	9.89	9.55	10.33	11.10
44282.5	7.14	7.59	8.00	8.47	8.44	8.95	8.82	9.36	9.28	9.89	9.55	10.33	11.09
44288.5	7.13	7.58	7.99	8.46	8.43	8.95	8.81	9.35	9.28	9.88	9.54	10.32	11.08
44294.4	7.12	7.57	7.99	8.46	8.42	8.94	8.81	9.35	9.27	9.88	9.54	10.32	11.08
44300.4	7.11	7.56	7.98	8.45	8.41	8.94	8.80	9.34	9.27	9.88	9.53	10.32	11.08
44306.3	7.10	7.55	7.97	8.44	8.41	8.93	8.80	9.34	9.26	9.87	9.53	10.32	11.08
44312.3	7.09	7.54	7.96	8.44	8.40	8.93	8.79	9.33	9.26	9.87	9.52	10.31	11.07
44318.2	7.08	7.53	7.95	8.43	8.39	8.92	8.78	9.33	9.25	9.86	9.52	10.31	11.07
44324.2	7.07	7.52	7.94	8.42	8.38	8.91	8.77	9.32	9.25	9.86	9.51	10.31	11.07
44330.1	7.06	7.51	7.93	8.41	8.38	8.91	8.77	9.31	9.24	9.85	9.51	10.30	11.07
44336.1	7.05	7.50	7.93	8.41	8.37	8.90	8.76	9.31	9.23	9.85	9.50	10.30	11.07
44342.0	7.04	7.49	7.92	8.40	8.36	8.90	8.76	9.30	9.23	9.84	9.50	10.30	11.06
44348.0	7.03	7.49	7.91	8.39	8.36	8.89	8.75	9.30	9.23	9.84	9.50	10.29	11.06
44354.0	7.03	7.48	7.91	8.39	8.35	8.89	8.75	9.30	9.22	9.84	9.49	10.29	11.06
44360.0	7.02	7.48	7.90	8.39	8.35	8.89	8.75	9.29	9.22	9.84	9.49	10.29	11.06
44366.0	7.01	7.47	7.90	8.38	8.34	8.88	8.74	9.29	9.22	9.84	9.49	10.29	11.06
44372.0	7.01	7.47	7.89	8.38	8.34	8.88	8.74	9.29	9.21	9.83	9.49	10.29	11.06
44378.0	7.00	7.46	7.89	8.37	8.34	8.88	8.74	9.29	9.21	9.83	9.48	10.29	11.06
44384.0	7.00	7.46	7.88	8.37	8.33	8.88	8.73	9.28	9.21	9.83	9.48	10.29	11.06
44390.0	6.99	7.45	7.88	8.37	8.33	8.87	8.73	9.28	9.21	9.83	9.48	10.28	11.06
44396.0	6.99	7.45	7.88	8.36	8.33	8.87	8.73	9.28	9.20	9.83	9.48	10.28	11.06
44402.0	6.98	7.45	7.87	8.36	8.32	8.87	8.72	9.28	9.20	9.82	9.47	10.28	11.05
44408.0	6.98	7.44	7.87	8.36	8.32	8.86	8.72	9.27	9.20	9.82	9.47	10.28	11.04

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
44414.0	6.97	7.44	7.86	8.35	8.31	8.86	8.72	9.27	9.19	9.82	9.47	10.28	11.04
44420.0	6.97	7.43	7.86	8.35	8.31	8.86	8.71	9.27	9.19	9.82	9.47	10.28	11.04
44426.0	6.96	7.43	7.85	8.34	8.31	8.86	8.71	9.27	9.19	9.82	9.46	10.28	11.04
44432.0	6.96	7.42	7.85	8.34	8.30	8.85	8.71	9.26	9.19	9.81	9.46	10.28	11.03
44438.0	6.96	7.42	7.85	8.34	8.30	8.85	8.71	9.26	9.18	9.81	9.46	10.27	11.03
44444.0	6.95	7.42	7.84	8.34	8.30	8.85	8.70	9.26	9.18	9.81	9.46	10.27	11.03
44450.0	6.95	7.41	7.84	8.33	8.29	8.85	8.70	9.26	9.18	9.81	9.46	10.27	11.03
44456.0	6.94	7.41	7.83	8.33	8.29	8.84	8.70	9.25	9.18	9.81	9.45	10.27	11.03
44462.0	6.94	7.40	7.83	8.33	8.29	8.84	8.70	9.25	9.17	9.81	9.45	10.27	11.03
44467.8	6.93	7.40	7.82	8.32	8.28	8.84	8.69	9.25	9.17	9.80	9.45	10.26	11.03
44473.5	6.93	7.39	7.82	8.31	8.28	8.83	8.69	9.24	9.16	9.80	9.44	10.26	11.02
44479.3	6.92	7.39	7.81	8.31	8.27	8.82	8.68	9.24	9.16	9.79	9.44	10.26	11.02
44485.0	6.92	7.38	7.81	8.30	8.27	8.82	8.67	9.23	9.15	9.79	9.43	10.25	11.01
44490.8	6.91	7.38	7.80	8.30	8.26	8.81	8.67	9.23	9.15	9.78	9.43	10.25	11.01
44496.5	6.91	7.37	7.80	8.29	8.25	8.81	8.66	9.22	9.14	9.78	9.42	10.24	11.00
44502.3	6.90	7.37	7.79	8.29	8.25	8.80	8.66	9.21	9.14	9.77	9.42	10.24	11.00
44508.0	6.90	7.36	7.79	8.28	8.24	8.80	8.65	9.21	9.13	9.76	9.41	10.23	10.99
44513.8	6.89	7.36	7.78	8.28	8.24	8.79	8.65	9.20	9.13	9.76	9.40	10.23	10.99
44519.5	6.89	7.35	7.78	8.27	8.23	8.79	8.64	9.20	9.12	9.75	9.40	10.22	10.98
44525.3	6.89	7.35	7.77	8.27	8.23	8.78	8.64	9.19	9.11	9.75	9.39	10.22	10.98
44531.0	6.88	7.34	7.77	8.26	8.22	8.78	8.63	9.19	9.11	9.74	9.39	10.21	10.97
44536.8	6.88	7.34	7.76	8.26	8.22	8.77	8.63	9.18	9.10	9.74	9.38	10.21	10.96
44542.5	6.87	7.33	7.76	8.25	8.21	8.77	8.62	9.17	9.10	9.73	9.38	10.21	10.96
44548.3	6.87	7.33	7.75	8.25	8.21	8.76	8.62	9.17	9.09	9.73	9.37	10.20	10.95
44554.0	6.86	7.32	7.75	8.24	8.20	8.76	8.61	9.16	9.09	9.72	9.37	10.20	10.95
44559.8	6.86	7.32	7.74	8.24	8.20	8.75	8.60	9.16	9.08	9.71	9.36	10.19	10.94
44565.5	6.85	7.31	7.74	8.23	8.19	8.74	8.60	9.15	9.07	9.71	9.35	10.19	10.93
44571.3	6.85	7.31	7.73	8.23	8.19	8.74	8.59	9.14	9.07	9.70	9.35	10.18	10.92
44577.0	6.85	7.30	7.73	8.22	8.18	8.73	8.59	9.14	9.06	9.69	9.34	10.17	10.91
44582.9	6.84	7.30	7.72	8.21	8.18	8.73	8.58	9.13	9.05	9.69	9.33	10.17	10.90
44588.8	6.83	7.29	7.71	8.21	8.17	8.72	8.57	9.12	9.05	9.68	9.32	10.15	10.89
44594.7	6.83	7.28	7.70	8.20	8.16	8.71	8.57	9.12	9.04	9.67	9.32	10.14	10.88
44600.6	6.82	7.28	7.70	8.19	8.16	8.71	8.56	9.11	9.03	9.66	9.31	10.13	10.87
44606.5	6.82	7.27	7.69	8.19	8.15	8.70	8.55	9.10	9.02	9.65	9.30	10.12	10.86
44612.4	6.81	7.27	7.68	8.18	8.14	8.69	8.55	9.09	9.01	9.64	9.29	10.11	10.85
44618.3	6.81	7.26	7.68	8.17	8.13	8.68	8.54	9.08	9.01	9.63	9.28	10.10	10.82
44624.2	6.80	7.25	7.67	8.17	8.13	8.68	8.53	9.08	9.00	9.62	9.27	10.08	10.81
44630.1	6.80	7.25	7.67	8.16	8.12	8.67	8.53	9.07	8.99	9.61	9.26	10.07	10.80
44636.0	6.79	7.24	7.66	8.15	8.11	8.66	8.52	9.06	8.98	9.59	9.25	10.05	10.80
44642.0	6.79	7.24	7.65	8.15	8.11	8.65	8.51	9.05	8.97	9.58	9.24	10.04	10.79
44647.9	6.78	7.23	7.65	8.14	8.10	8.65	8.50	9.03	8.96	9.56	9.23	10.03	10.76
44653.8	6.78	7.23	7.64	8.13	8.09	8.63	8.49	9.02	8.94	9.55	9.21	10.01	10.73
44659.7	6.77	7.22	7.64	8.12	8.09	8.62	8.48	9.01	8.93	9.53	9.20	10.00	10.72
44665.6	6.77	7.22	7.63	8.12	8.08	8.61	8.48	9.00	8.92	9.52	9.19	9.99	10.70
44671.5	6.76	7.21	7.62	8.11	8.07	8.61	8.47	8.99	8.92	9.51	9.18	9.98	10.68
44677.4	6.76	7.21	7.62	8.10	8.07	8.60	8.46	8.98	8.91	9.50	9.17	9.96	10.65

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
44683.3	6.75	7.20	7.61	8.10	8.06	8.59	8.45	8.97	8.90	9.49	9.16	9.96	10.64
44689.2	6.75	7.20	7.61	8.09	8.05	8.59	8.45	8.97	8.89	9.48	9.15	9.94	10.64
44695.1	6.75	7.19	7.60	8.09	8.05	8.58	8.44	8.96	8.88	9.47	9.14	9.93	10.62
44701.0	6.74	7.19	7.60	8.08	8.04	8.57	8.43	8.95	8.88	9.46	9.14	9.93	10.61
44706.9	6.74	7.18	7.59	8.08	8.04	8.57	8.43	8.94	8.87	9.46	9.13	9.92	10.61
44712.9	6.73	7.18	7.59	8.07	8.03	8.56	8.42	8.94	8.86	9.45	9.12	9.92	10.60
44718.8	6.73	7.17	7.58	8.06	8.03	8.55	8.42	8.93	8.86	9.45	9.12	9.91	10.60
44724.8	6.72	7.17	7.58	8.06	8.02	8.55	8.41	8.93	8.85	9.44	9.11	9.91	10.60
44730.7	6.72	7.16	7.57	8.06	8.02	8.55	8.41	8.92	8.85	9.44	9.11	9.91	10.61
44736.7	6.72	7.16	7.57	8.05	8.01	8.54	8.40	8.92	8.84	9.43	9.10	9.90	10.61
44742.6	6.71	7.16	7.56	8.05	8.01	8.54	8.40	8.91	8.84	9.43	9.10	9.90	10.61
44748.6	6.71	7.15	7.56	8.04	8.00	8.53	8.39	8.91	8.83	9.43	9.10	9.90	10.60
44754.5	6.70	7.15	7.55	8.04	8.00	8.53	8.39	8.90	8.83	9.42	9.09	9.89	10.60
44760.4	6.70	7.14	7.55	8.03	7.99	8.52	8.38	8.90	8.82	9.42	9.09	9.88	10.60
44766.4	6.69	7.14	7.54	8.03	7.99	8.52	8.38	8.89	8.82	9.41	9.08	9.88	10.59
44772.3	6.69	7.13	7.54	8.02	7.98	8.51	8.37	8.89	8.81	9.41	9.08	9.87	10.59
44778.3	6.68	7.13	7.53	8.02	7.98	8.51	8.37	8.88	8.81	9.40	9.07	9.87	10.58
44784.2	6.68	7.12	7.53	8.01	7.97	8.50	8.36	8.88	8.80	9.40	9.07	9.87	10.59
44790.2	6.67	7.12	7.52	8.01	7.97	8.50	8.36	8.87	8.80	9.39	9.06	9.86	10.58
44796.1	6.67	7.11	7.52	8.00	7.96	8.49	8.35	8.87	8.79	9.39	9.06	9.86	10.58
44802.1	6.66	7.11	7.51	8.00	7.96	8.49	8.35	8.86	8.79	9.38	9.05	9.85	10.58
44808.0	6.66	7.10	7.51	7.99	7.95	8.48	8.34	8.86	8.78	9.38	9.05	9.85	10.58
44813.9	6.66	7.10	7.50	7.99	7.95	8.48	8.34	8.85	8.78	9.37	9.04	9.85	10.57
44819.8	6.65	7.09	7.50	7.98	7.94	8.47	8.33	8.85	8.77	9.37	9.04	9.84	10.57
44825.6	6.64	7.09	7.49	7.98	7.94	8.47	8.33	8.84	8.77	9.36	9.03	9.84	10.56
44831.5	6.64	7.08	7.49	7.97	7.93	8.46	8.32	8.84	8.76	9.36	9.03	9.83	10.56
44837.4	6.63	7.08	7.48	7.96	7.93	8.45	8.32	8.83	8.75	9.35	9.02	9.83	10.55
44843.3	6.63	7.07	7.48	7.96	7.92	8.45	8.31	8.83	8.75	9.35	9.02	9.83	10.54
44849.2	6.62	7.06	7.47	7.95	7.91	8.44	8.31	8.82	8.74	9.34	9.01	9.82	10.54
44855.1	6.62	7.06	7.46	7.95	7.91	8.44	8.30	8.81	8.74	9.34	9.00	9.82	10.54
44860.9	6.61	7.05	7.46	7.94	7.90	8.43	8.29	8.81	8.73	9.33	9.00	9.81	10.52
44866.8	6.61	7.05	7.45	7.93	7.90	8.43	8.29	8.80	8.73	9.33	8.99	9.81	10.52
44872.7	6.60	7.04	7.45	7.93	7.89	8.42	8.28	8.80	8.72	9.32	8.99	9.80	10.54
44878.6	6.60	7.04	7.44	7.92	7.88	8.41	8.28	8.79	8.71	9.31	8.98	9.80	10.53
44884.5	6.59	7.03	7.43	7.92	7.88	8.41	8.27	8.79	8.71	9.31	8.98	9.80	10.53
44890.4	6.59	7.02	7.43	7.91	7.87	8.40	8.26	8.78	8.70	9.30	8.97	9.79	10.52
44896.2	6.58	7.02	7.42	7.90	7.87	8.40	8.26	8.77	8.70	9.30	8.96	9.79	10.51
44902.1	6.57	7.01	7.42	7.90	7.86	8.39	8.25	8.77	8.69	9.29	8.96	9.78	10.51
44908.0	6.57	7.01	7.41	7.89	7.85	8.38	8.25	8.76	8.68	9.28	8.95	9.78	10.50
44914.0	6.56	7.00	7.41	7.89	7.85	8.38	8.24	8.75	8.68	9.28	8.94	9.77	10.47
44920.0	6.56	7.00	7.40	7.88	7.84	8.37	8.23	8.75	8.67	9.27	8.94	9.77	10.46
44926.0	6.55	6.99	7.39	7.87	7.83	8.36	8.23	8.74	8.66	9.26	8.93	9.76	10.45
44932.0	6.55	6.98	7.39	7.87	7.83	8.36	8.22	8.73	8.65	9.25	8.92	9.75	10.43
44938.0	6.54	6.98	7.38	7.86	7.82	8.35	8.21	8.72	8.64	9.24	8.91	9.74	10.43
44944.0	6.54	6.97	7.37	7.85	7.81	8.34	8.20	8.71	8.64	9.23	8.90	9.74	10.42
44950.0	6.53	6.97	7.37	7.85	7.81	8.33	8.20	8.71	8.63	9.23	8.89	9.73	10.41

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
44956.0	6.53	6.96	7.36	7.84	7.80	8.33	8.19	8.70	8.62	9.22	8.89	9.72	10.40
44962.0	6.52	6.96	7.36	7.83	7.79	8.32	8.18	8.69	8.61	9.21	8.88	9.71	10.37
44968.0	6.52	6.95	7.35	7.82	7.79	8.31	8.17	8.68	8.60	9.20	8.87	9.70	10.37
44974.0	6.51	6.94	7.34	7.82	7.78	8.30	8.17	8.67	8.59	9.19	8.86	9.69	10.36
44980.0	6.50	6.94	7.34	7.81	7.77	8.30	8.16	8.66	8.58	9.18	8.85	9.68	10.35
44986.0	6.50	6.93	7.33	7.80	7.76	8.29	8.15	8.65	8.58	9.17	8.84	9.67	10.34
44992.0	6.49	6.92	7.32	7.79	7.76	8.28	8.14	8.64	8.57	9.16	8.83	9.66	10.35
44998.0	6.49	6.92	7.31	7.79	7.75	8.27	8.14	8.64	8.56	9.15	8.82	9.65	10.35
45004.0	6.48	6.91	7.31	7.78	7.74	8.26	8.13	8.63	8.55	9.13	8.81	9.64	10.33
45010.0	6.47	6.90	7.30	7.77	7.73	8.26	8.12	8.62	8.54	9.12	8.80	9.64	10.29
45016.0	6.47	6.90	7.29	7.76	7.72	8.24	8.11	8.61	8.53	9.12	8.78	9.64	10.24
45021.8	6.46	6.89	7.28	7.75	7.71	8.23	8.10	8.59	8.52	9.12	8.77	9.63	10.24
45027.6	6.45	6.88	7.28	7.75	7.71	8.23	8.09	8.59	8.51	9.11	8.77	9.62	10.24
45033.4	6.45	6.88	7.27	7.74	7.70	8.22	8.09	8.58	8.50	9.10	8.76	9.62	10.25
45039.2	6.44	6.87	7.26	7.73	7.69	8.21	8.08	8.57	8.49	9.09	8.75	9.61	10.25
45045.0	6.43	6.86	7.26	7.73	7.69	8.21	8.07	8.56	8.49	9.08	8.75	9.60	10.25
45050.9	6.43	6.86	7.25	7.72	7.68	8.20	8.07	8.56	8.48	9.08	8.75	9.60	10.25
45056.7	6.42	6.85	7.24	7.72	7.68	8.20	8.06	8.55	8.47	9.08	8.74	9.60	10.25
45062.5	6.41	6.84	7.24	7.71	7.67	8.19	8.06	8.55	8.47	9.07	8.74	9.60	10.24
45068.3	6.41	6.83	7.23	7.71	7.67	8.19	8.05	8.54	8.46	9.08	8.73	9.60	10.23
45074.1	6.40	6.83	7.22	7.70	7.66	8.18	8.05	8.54	8.46	9.07	8.73	9.59	10.23
45079.9	6.39	6.82	7.22	7.69	7.66	8.18	8.04	8.53	8.46	9.07	8.72	9.59	10.23
45085.7	6.38	6.81	7.21	7.69	7.65	8.17	8.04	8.53	8.45	9.06	8.72	9.59	10.23
45091.5	6.37	6.80	7.20	7.68	7.64	8.17	8.03	8.52	8.44	9.06	8.71	9.60	10.22
45097.3	6.37	6.80	7.20	7.68	7.64	8.16	8.03	8.52	8.44	9.05	8.71	9.58	10.21
45103.1	6.36	6.79	7.19	7.67	7.63	8.16	8.02	8.51	8.43	9.05	8.70	9.57	10.21
45109.0	6.35	6.78	7.18	7.66	7.62	8.15	8.02	8.51	8.42	9.03	8.69	9.55	10.21
45114.8	6.34	6.77	7.17	7.66	7.62	8.15	8.01	8.50	8.42	9.02	8.69	9.54	10.22
45120.6	6.33	6.76	7.17	7.65	7.61	8.14	8.00	8.49	8.42	9.00	8.68	9.52	10.23
45126.4	6.32	6.75	7.16	7.64	7.60	8.13	8.00	8.49	8.41	8.99	8.68	9.52	10.22
45132.2	6.31	6.75	7.15	7.64	7.60	8.13	7.99	8.48	8.40	8.99	8.67	9.51	10.22
45138.0	6.30	6.74	7.14	7.63	7.59	8.12	7.99	8.48	8.40	8.98	8.67	9.51	10.22
45143.8	6.29	6.73	7.13	7.62	7.58	8.12	7.98	8.47	8.39	8.98	8.66	9.51	10.21
45149.5	6.28	6.72	7.12	7.62	7.57	8.11	7.97	8.46	8.39	8.97	8.65	9.50	10.20
45155.3	6.27	6.71	7.11	7.61	7.57	8.10	7.96	8.46	8.38	8.96	8.65	9.50	10.20
45161.0	6.26	6.70	7.11	7.60	7.56	8.09	7.96	8.45	8.37	8.96	8.64	9.50	10.19
45166.8	6.25	6.69	7.10	7.59	7.55	8.09	7.95	8.44	8.37	8.96	8.64	9.49	10.19
45172.5	6.24	6.68	7.09	7.58	7.54	8.08	7.94	8.44	8.36	8.96	8.63	9.49	10.19
45178.3	6.23	6.67	7.08	7.58	7.54	8.07	7.94	8.43	8.35	8.96	8.62	9.48	10.19
45184.0	6.22	6.66	7.07	7.57	7.53	8.07	7.93	8.42	8.34	8.95	8.62	9.48	10.18
45189.8	6.21	6.66	7.06	7.56	7.52	8.06	7.92	8.42	8.34	8.95	8.61	9.48	10.18
45195.5	6.20	6.65	7.05	7.55	7.51	8.05	7.91	8.41	8.33	8.95	8.61	9.48	10.16
45201.3	6.19	6.64	7.05	7.54	7.50	8.04	7.90	8.40	8.32	8.96	8.59	9.50	10.14
45207.0	6.18	6.63	7.04	7.53	7.49	8.03	7.89	8.39	8.31	8.96	8.58	9.50	10.13
45212.8	6.17	6.62	7.03	7.52	7.48	8.02	7.88	8.38	8.30	8.95	8.58	9.49	10.13
45218.5	6.16	6.61	7.02	7.52	7.47	8.01	7.88	8.37	8.29	8.94	8.57	9.49	10.12

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
45224.3	6.15	6.60	7.01	7.51	7.46	8.00	7.87	8.36	8.28	8.94	8.56	9.49	10.10
45230.0	6.14	6.59	7.00	7.50	7.45	8.00	7.86	8.35	8.27	8.93	8.55	9.47	10.11
45235.8	6.13	6.58	6.99	7.49	7.44	7.99	7.85	8.34	8.26	8.92	8.54	9.46	10.10
45241.5	6.12	6.57	6.98	7.48	7.43	7.98	7.84	8.33	8.25	8.91	8.53	9.45	10.09
45247.3	6.10	6.55	6.97	7.47	7.42	7.97	7.83	8.32	8.24	8.90	8.52	9.45	10.08
45253.0	6.09	6.54	6.95	7.46	7.41	7.96	7.82	8.31	8.23	8.89	8.51	9.44	10.07
45259.0	6.09	6.54	6.95	7.45	7.41	7.95	7.82	8.31	8.23	8.89	8.50	9.44	10.08
45265.0	6.09	6.54	6.95	7.45	7.41	7.95	7.81	8.31	8.23	8.88	8.50	9.44	10.06
45271.0	6.08	6.54	6.95	7.45	7.41	7.95	7.81	8.31	8.22	8.88	8.50	9.43	10.07
45277.0	6.08	6.54	6.95	7.45	7.41	7.95	7.81	8.31	8.22	8.88	8.50	9.43	10.06
45283.0	6.08	6.53	6.95	7.45	7.41	7.95	7.81	8.31	8.22	8.89	8.50	9.44	10.05
45289.0	6.08	6.53	6.95	7.45	7.41	7.95	7.81	8.31	8.22	8.88	8.50	9.43	10.04
45295.0	6.08	6.53	6.95	7.45	7.41	7.95	7.81	8.31	8.22	8.88	8.50	9.43	10.04
45301.0	6.08	6.53	6.95	7.45	7.41	7.95	7.81	8.31	8.22	8.87	8.50	9.43	10.07
45307.0	6.08	6.53	6.95	7.45	7.41	7.95	7.81	8.31	8.22	8.88	8.50	9.43	10.04
45313.0	6.07	6.53	6.95	7.45	7.41	7.95	7.81	8.31	8.22	8.88	8.50	9.43	10.04
45319.0	6.07	6.53	6.94	7.45	7.41	7.95	7.81	8.31	8.22	8.88	8.50	9.43	10.05
45325.0	6.07	6.53	6.94	7.45	7.40	7.95	7.81	8.31	8.22	8.87	8.50	9.43	10.05
45331.0	6.07	6.53	6.94	7.45	7.40	7.95	7.81	8.31	8.23	8.87	8.51	9.43	10.05
45337.0	6.07	6.53	6.94	7.45	7.40	7.95	7.81	8.30	8.23	8.87	8.51	9.42	10.03
45343.0	6.07	6.53	6.94	7.45	7.40	7.95	7.81	8.29	8.24	8.87	8.53	9.43	10.02
45349.0	6.07	6.53	6.94	7.45	7.40	7.95	7.81	8.29	8.24	8.86	8.52	9.42	10.02
45355.0	6.07	6.53	6.94	7.45	7.40	7.95	7.81	8.29	8.23	8.85	8.52	9.41	10.03
45361.0	6.07	6.53	6.94	7.45	7.40	7.95	7.81	8.29	8.23	8.85	8.51	9.41	10.03
45367.0	6.07	6.53	6.94	7.45	7.40	7.95	7.81	8.30	8.23	8.85	8.51	9.41	10.04
45373.0	6.07	6.52	6.94	7.45	7.40	7.95	7.81	8.30	8.23	8.85	8.51	9.41	10.05
45378.9	6.06	6.52	6.94	7.44	7.40	7.94	7.81	8.29	8.22	8.85	8.51	9.41	10.04
45384.8	6.06	6.52	6.93	7.44	7.39	7.94	7.80	8.28	8.22	8.85	8.50	9.40	10.03
45390.7	6.06	6.51	6.93	7.43	7.39	7.93	7.80	8.27	8.21	8.84	8.49	9.40	10.02
45396.6	6.05	6.51	6.92	7.43	7.39	7.93	7.79	8.27	8.20	8.83	8.48	9.39	10.02
45402.5	6.05	6.50	6.92	7.42	7.38	7.92	7.79	8.26	8.20	8.82	8.48	9.39	10.01
45408.4	6.04	6.50	6.91	7.42	7.38	7.92	7.78	8.26	8.19	8.82	8.47	9.38	10.00
45414.3	6.04	6.49	6.91	7.41	7.37	7.91	7.78	8.26	8.18	8.82	8.45	9.38	9.99
45420.2	6.03	6.49	6.90	7.41	7.37	7.91	7.77	8.25	8.17	8.81	8.45	9.38	9.98
45426.1	6.03	6.48	6.90	7.40	7.36	7.90	7.77	8.25	8.16	8.81	8.44	9.37	9.97
45431.9	6.03	6.48	6.89	7.40	7.36	7.90	7.76	8.24	8.16	8.81	8.43	9.37	9.96
45437.8	6.02	6.47	6.89	7.39	7.35	7.89	7.76	8.23	8.15	8.81	8.43	9.37	9.94
45443.7	6.02	6.47	6.88	7.39	7.35	7.89	7.75	8.23	8.15	8.80	8.42	9.36	9.93
45449.6	6.01	6.47	6.88	7.38	7.34	7.88	7.74	8.22	8.14	8.79	8.42	9.36	9.92
45455.5	6.01	6.46	6.87	7.38	7.34	7.88	7.74	8.22	8.13	8.78	8.41	9.34	9.91
45461.4	6.00	6.46	6.87	7.37	7.33	7.87	7.73	8.21	8.13	8.77	8.40	9.34	9.90
45467.3	6.00	6.45	6.86	7.37	7.32	7.86	7.73	8.20	8.12	8.75	8.39	9.32	9.88
45473.2	5.99	6.45	6.86	7.36	7.32	7.86	7.72	8.19	8.11	8.75	8.38	9.30	9.85
45479.1	5.99	6.44	6.85	7.36	7.31	7.84	7.73	8.17	8.12	8.73	8.34	9.29	9.82
45485.0	5.99	6.44	6.85	7.35	7.31	7.82	7.73	8.15	8.12	8.71	8.33	9.27	9.80
45490.7	5.99	6.44	6.84	7.36	7.32	7.85	7.70	8.18	8.08	8.66	8.34	9.25	9.79

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
45496.4	5.98	6.44	6.84	7.34	7.30	7.83	7.71	8.16	8.09	8.67	8.36	9.23	9.85
45502.1	5.98	6.44	6.84	7.34	7.30	7.84	7.69	8.17	8.07	8.65	8.34	9.25	9.88
45507.9	5.98	6.44	6.84	7.34	7.30	7.83	7.69	8.17	8.08	8.66	8.35	9.24	9.88
45513.6	5.98	6.44	6.85	7.34	7.30	7.83	7.70	8.17	8.08	8.67	8.35	9.23	9.87
45519.3	5.98	6.44	6.85	7.34	7.30	7.83	7.70	8.16	8.08	8.68	8.36	9.22	9.85
45525.0	5.98	6.44	6.85	7.35	7.30	7.84	7.70	8.17	8.09	8.68	8.36	9.22	9.85
45530.7	5.98	6.44	6.85	7.35	7.30	7.84	7.70	8.17	8.09	8.68	8.36	9.24	9.87
45536.4	5.98	6.44	6.85	7.35	7.31	7.84	7.70	8.17	8.09	8.68	8.36	9.25	9.87
45542.1	5.98	6.44	6.85	7.35	7.31	7.84	7.70	8.17	8.09	8.68	8.36	9.25	9.88
45547.9	5.99	6.44	6.85	7.35	7.31	7.84	7.71	8.17	8.09	8.69	8.36	9.25	9.89
45553.6	5.99	6.44	6.86	7.35	7.31	7.84	7.71	8.18	8.09	8.69	8.37	9.25	9.89
45559.3	5.99	6.44	6.86	7.36	7.31	7.85	7.71	8.18	8.10	8.69	8.37	9.25	9.89
45565.0	5.99	6.45	6.86	7.36	7.32	7.85	7.72	8.18	8.10	8.70	8.37	9.26	9.90
45565.0	5.99	6.45	6.86	7.36	7.32	7.85	7.72	8.18	8.10	8.70	8.37	9.26	9.90
45578.3	5.98	6.44	6.85	7.35	7.30	7.84	7.70	8.17	8.09	8.68	8.36	9.24	9.89
45591.5	5.97	6.42	6.84	7.33	7.29	7.82	7.69	8.15	8.07	8.67	8.34	9.23	9.87
45606.5	5.69	6.14	6.53	7.01	6.97	7.49	7.35	7.90	7.83	8.38	8.06	8.65	9.26
45619.8	5.69	6.12	6.52	7.00	6.96	7.47	7.33	7.88	7.81	8.36	8.04	8.62	9.23
45633.0	5.66	6.10	6.49	6.97	6.93	7.44	7.30	7.85	7.78	8.33	8.01	8.59	9.20
45633.0	5.66	6.10	6.49	6.97	6.93	7.44	7.30	7.85	7.78	8.33	8.01	8.59	9.20
45639.0	5.65	6.09	6.48	6.96	6.92	7.43	7.30	7.84	7.78	8.32	8.01	8.59	9.20
45645.0	5.65	6.09	6.48	6.96	6.92	7.43	7.29	7.84	7.77	8.32	8.00	8.58	9.19
45651.0	5.64	6.08	6.47	6.95	6.91	7.42	7.29	7.83	7.77	8.31	7.99	8.57	9.19
45657.0	5.64	6.07	6.47	6.94	6.90	7.42	7.28	7.82	7.76	8.31	7.99	8.57	9.18
45663.0	5.63	6.07	6.46	6.94	6.90	7.41	7.27	7.82	7.75	8.30	7.98	8.56	9.18
45669.0	5.63	6.06	6.46	6.93	6.89	7.40	7.27	7.81	7.75	8.29	7.98	8.56	9.17
45675.0	5.62	6.06	6.45	6.93	6.89	7.40	7.26	7.81	7.74	8.29	7.97	8.55	9.16
45681.0	5.62	6.05	6.45	6.92	6.88	7.39	7.26	7.80	7.74	8.28	7.96	8.54	9.16
45687.0	5.61	6.05	6.44	6.91	6.87	7.39	7.25	7.79	7.73	8.28	7.96	8.54	9.15
45693.0	5.61	6.04	6.43	6.91	6.87	7.38	7.24	7.79	7.72	8.27	7.95	8.53	9.15
45699.0	5.60	6.04	6.43	6.90	6.86	7.37	7.24	7.78	7.72	8.26	7.95	8.52	9.14
45705.0	5.60	6.03	6.42	6.89	6.86	7.37	7.23	7.77	7.71	8.26	7.94	8.52	9.13
45711.0	5.59	6.03	6.41	6.89	6.85	7.36	7.22	7.77	7.70	8.25	7.93	8.51	9.13
45717.0	5.59	6.02	6.41	6.88	6.84	7.35	7.22	7.76	7.70	8.24	7.92	8.50	9.12
45723.0	5.58	6.01	6.40	6.87	6.83	7.35	7.21	7.75	7.69	8.24	7.92	8.50	9.11
45729.0	5.58	6.01	6.40	6.87	6.83	7.34	7.20	7.75	7.68	8.23	7.91	8.49	9.10
45735.0	5.57	6.00	6.39	6.86	6.82	7.33	7.19	7.74	7.67	8.22	7.90	8.48	9.10
45741.0	5.57	6.00	6.38	6.85	6.81	7.32	7.19	7.73	7.67	8.21	7.89	8.47	9.09
45746.8	5.56	5.99	6.37	6.84	6.80	7.31	7.18	7.72	7.66	8.21	7.89	8.47	9.08
45752.5	5.56	5.98	6.37	6.84	6.80	7.31	7.17	7.72	7.65	8.20	7.88	8.46	9.08
45758.3	5.55	5.98	6.36	6.83	6.79	7.30	7.16	7.71	7.64	8.19	7.87	8.45	9.07
45764.0	5.54	5.97	6.35	6.82	6.78	7.29	7.15	7.70	7.63	8.18	7.86	8.45	9.06
45769.8	5.54	5.97	6.34	6.81	6.77	7.28	7.15	7.69	7.63	8.18	7.86	8.44	9.06
45775.6	5.53	5.96	6.34	6.80	6.76	7.27	7.14	7.68	7.62	8.17	7.85	8.43	9.05
45781.3	5.53	5.95	6.33	6.80	6.76	7.27	7.13	7.68	7.61	8.16	7.84	8.43	9.04
45787.1	5.52	5.94	6.32	6.79	6.75	7.26	7.12	7.67	7.60	8.15	7.83	8.42	9.04

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
45792.9	5.51	5.94	6.31	6.78	6.74	7.25	7.11	7.66	7.59	8.15	7.83	8.41	9.03
45798.6	5.51	5.93	6.31	6.77	6.73	7.24	7.10	7.65	7.59	8.14	7.82	8.40	9.02
45804.4	5.50	5.92	6.30	6.76	6.72	7.23	7.09	7.64	7.58	8.13	7.81	8.40	9.02
45810.1	5.49	5.92	6.29	6.75	6.71	7.22	7.08	7.64	7.57	8.12	7.80	8.39	9.01
45815.9	5.49	5.91	6.28	6.74	6.70	7.21	7.07	7.63	7.56	8.12	7.79	8.38	9.00
45821.7	5.48	5.90	6.27	6.73	6.69	7.20	7.07	7.62	7.55	8.11	7.79	8.38	9.00
45827.4	5.47	5.89	6.26	6.72	6.68	7.20	7.06	7.61	7.54	8.10	7.78	8.37	8.99
45833.2	5.46	5.88	6.25	6.72	6.68	7.19	7.05	7.60	7.53	8.09	7.77	8.36	8.98
45839.0	5.46	5.88	6.25	6.71	6.67	7.18	7.04	7.59	7.53	8.09	7.76	8.35	8.98
45844.7	5.45	5.87	6.24	6.70	6.66	7.17	7.03	7.59	7.52	8.08	7.75	8.35	8.97
45850.5	5.44	5.86	6.23	6.69	6.65	7.16	7.02	7.58	7.51	8.07	7.74	8.34	8.96
45856.2	5.44	5.85	6.22	6.68	6.64	7.15	7.01	7.57	7.50	8.06	7.74	8.33	8.96
45862.0	5.43	5.84	6.21	6.66	6.62	7.14	7.00	7.56	7.49	8.05	7.73	8.32	8.95
45867.8	5.42	5.84	6.20	6.66	6.62	7.13	6.99	7.55	7.48	8.05	7.72	8.31	8.94
45873.6	5.42	5.83	6.19	6.65	6.61	7.12	6.98	7.54	7.47	8.04	7.71	8.31	8.93
45879.4	5.41	5.82	6.18	6.64	6.60	7.11	6.97	7.53	7.46	8.03	7.70	8.30	8.92
45885.2	5.40	5.82	6.18	6.63	6.59	7.10	6.96	7.52	7.45	8.02	7.69	8.29	8.91
45891.0	5.40	5.81	6.17	6.62	6.58	7.09	6.95	7.51	7.44	8.01	7.68	8.28	8.91
45896.8	5.39	5.80	6.16	6.61	6.57	7.08	6.94	7.50	7.44	8.00	7.67	8.27	8.90
45902.6	5.38	5.79	6.15	6.60	6.56	7.07	6.93	7.50	7.43	7.99	7.66	8.26	8.89
45908.4	5.38	5.79	6.14	6.59	6.55	7.06	6.92	7.49	7.42	7.99	7.66	8.26	8.88
45914.2	5.37	5.78	6.14	6.59	6.55	7.06	6.91	7.48	7.41	7.98	7.65	8.25	8.87
45920.0	5.36	5.77	6.13	6.58	6.54	7.05	6.90	7.47	7.40	7.97	7.64	8.24	8.87
45925.8	5.35	5.77	6.12	6.57	6.53	7.04	6.90	7.46	7.39	7.96	7.63	8.23	8.86
45931.6	5.35	5.76	6.11	6.56	6.52	7.03	6.89	7.45	7.38	7.95	7.62	8.22	8.85
45937.4	5.34	5.75	6.10	6.55	6.51	7.02	6.88	7.45	7.38	7.95	7.62	8.22	8.84
45943.2	5.33	5.74	6.10	6.55	6.51	7.01	6.87	7.44	7.37	7.94	7.61	8.21	8.83
45949.0	5.32	5.74	6.09	6.54	6.50	7.01	6.86	7.43	7.36	7.93	7.60	8.20	8.83
45954.8	5.32	5.73	6.08	6.53	6.49	7.00	6.85	7.42	7.35	7.92	7.59	8.19	8.82
45960.6	5.31	5.72	6.07	6.52	6.48	6.99	6.85	7.42	7.35	7.92	7.59	8.19	8.81
45966.4	5.30	5.71	6.06	6.51	6.47	6.98	6.84	7.41	7.34	7.91	7.58	8.18	8.80
45972.2	5.29	5.70	6.06	6.51	6.47	6.98	6.83	7.40	7.33	7.90	7.57	8.17	8.79
45978.0	5.28	5.69	6.05	6.50	6.46	6.97	6.82	7.39	7.32	7.89	7.56	8.16	8.79
45983.9	5.27	5.69	6.04	6.49	6.45	6.96	6.82	7.39	7.32	7.89	7.56	8.15	8.78
45989.9	5.27	5.68	6.04	6.49	6.45	6.95	6.81	7.38	7.31	7.88	7.55	8.15	8.77
45995.8	5.26	5.68	6.03	6.48	6.44	6.95	6.80	7.37	7.30	7.87	7.54	8.14	8.76
46001.8	5.26	5.67	6.02	6.47	6.43	6.94	6.80	7.36	7.29	7.86	7.53	8.13	8.75
46007.7	5.25	5.67	6.02	6.47	6.43	6.93	6.79	7.36	7.29	7.85	7.52	8.12	8.74
46013.7	5.24	5.66	6.01	6.46	6.42	6.93	6.78	7.35	7.28	7.84	7.52	8.11	8.73
46019.6	5.24	5.65	6.01	6.45	6.41	6.92	6.78	7.34	7.27	7.83	7.51	8.10	8.72
46025.6	5.23	5.65	6.00	6.45	6.41	6.91	6.77	7.33	7.26	7.83	7.50	8.09	8.71
46031.5	5.23	5.64	5.99	6.44	6.40	6.90	6.76	7.32	7.25	7.82	7.49	8.08	8.70
46037.5	5.22	5.64	5.99	6.44	6.39	6.90	6.75	7.32	7.25	7.81	7.48	8.07	8.69
46043.4	5.22	5.63	5.98	6.43	6.39	6.89	6.75	7.31	7.24	7.80	7.47	8.07	8.67
46049.4	5.21	5.63	5.98	6.42	6.38	6.88	6.74	7.30	7.23	7.79	7.47	8.06	8.66
46055.3	5.21	5.62	5.97	6.42	6.38	6.88	6.73	7.29	7.22	7.78	7.46	8.05	8.65

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
46061.3	5.20	5.62	5.97	6.41	6.37	6.87	6.73	7.29	7.22	7.77	7.45	8.04	8.64
46067.2	5.20	5.61	5.96	6.40	6.36	6.86	6.72	7.28	7.21	7.76	7.44	8.03	8.63
46073.2	5.19	5.61	5.95	6.40	6.36	6.85	6.71	7.27	7.20	7.76	7.43	8.02	8.62
46079.1	5.19	5.60	5.95	6.39	6.35	6.85	6.71	7.26	7.19	7.75	7.42	8.01	8.61
46085.1	5.18	5.60	5.94	6.38	6.34	6.84	6.70	7.25	7.18	7.74	7.42	8.00	8.60
46091.0	5.18	5.59	5.94	6.38	6.34	6.83	6.69	7.24	7.17	7.73	7.41	7.99	8.58
46096.8	5.17	5.58	5.93	6.37	6.33	6.82	6.68	7.24	7.17	7.72	7.40	7.98	8.57
46102.7	5.16	5.58	5.92	6.36	6.32	6.81	6.67	7.23	7.16	7.71	7.39	7.97	8.56
46108.5	5.15	5.57	5.91	6.35	6.31	6.81	6.67	7.22	7.15	7.70	7.38	7.96	8.55
46114.4	5.15	5.56	5.91	6.34	6.30	6.80	6.66	7.21	7.14	7.69	7.37	7.95	8.54
46120.2	5.14	5.55	5.90	6.34	6.30	6.79	6.65	7.20	7.13	7.68	7.36	7.94	8.53
46126.1	5.13	5.55	5.89	6.33	6.29	6.78	6.64	7.19	7.12	7.67	7.35	7.93	8.52
46131.9	5.12	5.54	5.88	6.32	6.28	6.77	6.63	7.18	7.11	7.66	7.34	7.92	8.51
46137.7	5.12	5.53	5.87	6.31	6.27	6.76	6.62	7.17	7.10	7.65	7.34	7.91	8.50
46143.6	5.11	5.52	5.87	6.30	6.26	6.76	6.62	7.16	7.10	7.64	7.33	7.90	8.49
46149.4	5.10	5.52	5.86	6.30	6.26	6.75	6.61	7.16	7.09	7.63	7.32	7.89	8.48
46155.3	5.10	5.51	5.85	6.29	6.25	6.74	6.60	7.15	7.08	7.62	7.31	7.88	8.47
46161.1	5.09	5.50	5.84	6.28	6.24	6.73	6.59	7.14	7.07	7.62	7.30	7.87	8.45
46166.9	5.08	5.50	5.84	6.27	6.23	6.72	6.58	7.13	7.06	7.61	7.29	7.86	8.44
46172.8	5.07	5.49	5.83	6.26	6.22	6.71	6.57	7.12	7.05	7.60	7.28	7.85	8.43
46178.6	5.07	5.48	5.82	6.26	6.21	6.70	6.56	7.11	7.04	7.59	7.27	7.84	8.42
46184.5	5.06	5.47	5.81	6.25	6.21	6.70	6.56	7.10	7.03	7.58	7.26	7.83	8.41
46190.3	5.05	5.47	5.81	6.24	6.20	6.69	6.55	7.09	7.02	7.57	7.25	7.82	8.40
46196.2	5.05	5.46	5.80	6.23	6.19	6.68	6.54	7.08	7.01	7.56	7.24	7.81	8.39
46202.0	5.04	5.45	5.79	6.22	6.18	6.67	6.53	7.07	7.00	7.55	7.23	7.80	8.37
46207.9	5.04	5.45	5.78	6.22	6.18	6.66	6.52	7.07	7.00	7.54	7.23	7.80	8.37
46213.8	5.03	5.44	5.78	6.21	6.17	6.66	6.52	7.06	6.99	7.54	7.22	7.79	8.37
46219.7	5.02	5.44	5.77	6.21	6.16	6.65	6.51	7.06	6.99	7.53	7.22	7.79	8.36
46225.6	5.02	5.43	5.77	6.20	6.16	6.65	6.51	7.05	6.98	7.53	7.21	7.78	8.36
46231.5	5.01	5.42	5.76	6.20	6.15	6.64	6.50	7.05	6.98	7.52	7.21	7.78	8.35
46237.4	5.01	5.42	5.75	6.19	6.15	6.64	6.50	7.04	6.97	7.52	7.20	7.77	8.35
46243.3	5.00	5.41	5.75	6.18	6.14	6.63	6.49	7.04	6.97	7.51	7.20	7.77	8.34
46249.2	5.00	5.41	5.74	6.18	6.14	6.63	6.48	7.03	6.96	7.51	7.19	7.76	8.34
46255.1	4.99	5.40	5.74	6.17	6.13	6.62	6.48	7.03	6.96	7.50	7.19	7.76	8.33
46260.9	4.99	5.40	5.73	6.17	6.12	6.61	6.47	7.02	6.95	7.50	7.18	7.75	8.33
46266.8	4.98	5.39	5.72	6.16	6.12	6.61	6.47	7.01	6.94	7.49	7.17	7.75	8.33
46272.7	4.97	5.38	5.72	6.15	6.11	6.60	6.46	7.01	6.94	7.49	7.17	7.74	8.32
46278.6	4.97	5.38	5.71	6.15	6.11	6.60	6.46	7.00	6.93	7.48	7.16	7.74	8.32
46284.5	4.96	5.37	5.71	6.14	6.10	6.59	6.45	7.00	6.93	7.47	7.16	7.73	8.31
46290.4	4.96	5.37	5.70	6.14	6.09	6.58	6.44	6.99	6.92	7.47	7.15	7.73	8.31
46296.3	4.95	5.36	5.69	6.13	6.09	6.58	6.44	6.99	6.92	7.46	7.15	7.72	8.30
46302.2	4.94	5.35	5.69	6.12	6.08	6.57	6.43	6.98	6.91	7.46	7.14	7.71	8.30
46308.1	4.94	5.35	5.68	6.12	6.07	6.57	6.42	6.97	6.90	7.45	7.13	7.71	8.29
46314.0	4.93	5.34	5.67	6.11	6.07	6.56	6.42	6.97	6.90	7.45	7.13	7.70	8.29
46319.9	4.92	5.33	5.66	6.10	6.06	6.55	6.41	6.95	6.88	7.43	7.11	7.69	8.27
46325.8	4.91	5.32	5.65	6.09	6.05	6.53	6.39	6.94	6.87	7.42	7.10	7.67	8.25

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
46331.7	4.90	5.31	5.64	6.08	6.03	6.52	6.38	6.93	6.86	7.40	7.08	7.66	8.24
46337.6	4.89	5.30	5.63	6.06	6.02	6.51	6.37	6.91	6.84	7.39	7.07	7.64	8.22
46343.5	4.88	5.29	5.62	6.05	6.01	6.50	6.35	6.90	6.83	7.37	7.05	7.62	8.20
46349.4	4.87	5.28	5.61	6.04	6.00	6.48	6.34	6.88	6.81	7.35	7.04	7.61	8.18
46355.3	4.86	5.27	5.60	6.03	5.98	6.47	6.33	6.87	6.80	7.34	7.02	7.59	8.16
46361.2	4.85	5.26	5.58	6.01	5.97	6.45	6.31	6.85	6.78	7.32	7.01	7.57	8.14
46367.1	4.84	5.25	5.57	6.00	5.96	6.44	6.30	6.84	6.77	7.30	6.99	7.55	8.13
46372.9	4.83	5.24	5.56	5.99	5.94	6.42	6.28	6.82	6.75	7.29	6.97	7.54	8.10
46378.8	4.82	5.22	5.54	5.97	5.93	6.41	6.27	6.80	6.73	7.27	6.96	7.52	8.08
46384.7	4.81	5.21	5.53	5.96	5.91	6.39	6.25	6.79	6.72	7.25	6.94	7.50	8.06
46390.6	4.80	5.20	5.52	5.94	5.90	6.37	6.24	6.77	6.70	7.23	6.92	7.48	8.04
46396.5	4.79	5.19	5.50	5.93	5.88	6.36	6.22	6.75	6.68	7.21	6.90	7.46	8.02
46402.4	4.77	5.17	5.49	5.91	5.87	6.34	6.20	6.73	6.66	7.19	6.88	7.44	8.00
46408.3	4.76	5.16	5.47	5.89	5.85	6.32	6.18	6.71	6.64	7.17	6.86	7.41	7.97
46414.2	4.75	5.14	5.46	5.88	5.83	6.30	6.17	6.69	6.62	7.15	6.84	7.39	7.95
46420.1	4.73	5.13	5.44	5.86	5.81	6.29	6.15	6.67	6.60	7.13	6.82	7.37	7.92
46426.0	4.72	5.11	5.42	5.84	5.80	6.27	6.13	6.65	6.58	7.10	6.80	7.35	7.90
46432.0	4.72	5.11	5.42	5.84	5.79	6.26	6.12	6.65	6.58	7.10	6.80	7.34	7.89
46438.0	4.71	5.11	5.42	5.83	5.79	6.26	6.12	6.64	6.57	7.09	6.79	7.33	7.88
46444.0	4.71	5.11	5.41	5.83	5.78	6.25	6.11	6.63	6.56	7.08	6.78	7.32	7.87
46450.0	4.71	5.10	5.41	5.82	5.78	6.24	6.11	6.63	6.56	7.08	6.78	7.32	7.86
46456.0	4.71	5.10	5.40	5.82	5.77	6.24	6.10	6.62	6.55	7.07	6.77	7.31	7.85
46462.0	4.71	5.10	5.40	5.81	5.77	6.23	6.10	6.62	6.55	7.07	6.76	7.30	7.85
46468.0	4.70	5.09	5.40	5.81	5.76	6.23	6.09	6.61	6.54	7.06	6.76	7.30	7.84
46474.0	4.70	5.09	5.39	5.80	5.76	6.22	6.09	6.61	6.54	7.05	6.75	7.29	7.83
46480.0	4.70	5.09	5.39	5.80	5.76	6.22	6.08	6.60	6.53	7.05	6.75	7.28	7.82
46486.0	4.70	5.09	5.39	5.80	5.75	6.21	6.08	6.59	6.52	7.04	6.74	7.28	7.82
46492.0	4.69	5.08	5.38	5.79	5.75	6.21	6.07	6.59	6.52	7.03	6.73	7.27	7.81
46498.0	4.69	5.08	5.38	5.79	5.74	6.20	6.07	6.58	6.51	7.03	6.73	7.26	7.80
46504.0	4.69	5.08	5.37	5.78	5.74	6.20	6.06	6.58	6.51	7.02	6.72	7.26	7.80
46510.0	4.68	5.07	5.37	5.78	5.73	6.19	6.06	6.57	6.50	7.02	6.72	7.25	7.79
46516.0	4.68	5.07	5.37	5.77	5.73	6.19	6.05	6.57	6.50	7.01	6.71	7.25	7.79
46522.0	4.68	5.06	5.36	5.77	5.72	6.18	6.05	6.56	6.49	7.00	6.71	7.24	7.78
46528.0	4.67	5.06	5.36	5.76	5.72	6.18	6.04	6.56	6.49	7.00	6.70	7.23	7.78
46534.0	4.67	5.06	5.35	5.76	5.71	6.17	6.04	6.55	6.48	6.99	6.69	7.23	7.77
46540.0	4.67	5.05	5.35	5.76	5.71	6.17	6.03	6.55	6.47	6.99	6.69	7.22	7.76
46545.8	4.66	5.04	5.34	5.74	5.70	6.16	6.02	6.53	6.46	6.97	6.68	7.21	7.75
46551.6	4.65	5.04	5.33	5.73	5.69	6.15	6.01	6.52	6.45	6.96	6.66	7.19	7.74
46557.4	4.64	5.03	5.32	5.72	5.68	6.13	6.00	6.51	6.44	6.95	6.65	7.18	7.72
46563.2	4.63	5.02	5.31	5.71	5.67	6.12	5.99	6.50	6.43	6.93	6.64	7.16	7.71
46568.9	4.62	5.01	5.30	5.70	5.66	6.11	5.97	6.48	6.41	6.92	6.62	7.15	7.69
46574.7	4.62	5.00	5.29	5.69	5.65	6.10	5.96	6.47	6.40	6.90	6.61	7.14	7.68
46580.5	4.61	4.99	5.28	5.68	5.63	6.09	5.95	6.46	6.39	6.89	6.60	7.12	7.66
46586.3	4.60	4.98	5.27	5.67	5.62	6.08	5.94	6.45	6.37	6.88	6.59	7.11	7.64
46592.1	4.59	4.97	5.26	5.66	5.61	6.06	5.93	6.43	6.36	6.86	6.57	7.09	7.63
46597.9	4.58	4.97	5.25	5.65	5.60	6.05	5.92	6.42	6.35	6.85	6.56	7.08	7.61

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
46603.7	4.57	4.96	5.24	5.64	5.59	6.04	5.90	6.41	6.34	6.83	6.54	7.06	7.60
46609.5	4.57	4.95	5.23	5.63	5.58	6.03	5.89	6.39	6.32	6.82	6.53	7.05	7.58
46615.3	4.56	4.94	5.22	5.62	5.57	6.02	5.88	6.38	6.31	6.81	6.52	7.03	7.57
46621.1	4.55	4.93	5.21	5.60	5.56	6.00	5.87	6.37	6.30	6.79	6.50	7.02	7.55
46626.8	4.54	4.92	5.20	5.59	5.55	5.99	5.86	6.35	6.28	6.78	6.49	7.00	7.53
46632.6	4.53	4.91	5.19	5.58	5.54	5.98	5.84	6.34	6.27	6.76	6.48	6.99	7.52
46638.4	4.53	4.90	5.18	5.57	5.53	5.97	5.83	6.33	6.26	6.75	6.46	6.97	7.50
46644.2	4.52	4.90	5.17	5.56	5.51	5.95	5.82	6.31	6.24	6.73	6.45	6.95	7.48
46650.0	4.51	4.89	5.16	5.55	5.50	5.94	5.81	6.30	6.23	6.72	6.43	6.94	7.46
46655.8	4.51	4.88	5.15	5.54	5.50	5.94	5.80	6.29	6.22	6.71	6.43	6.93	7.46
46661.6	4.50	4.88	5.15	5.54	5.49	5.93	5.79	6.28	6.21	6.70	6.42	6.92	7.45
46667.4	4.49	4.87	5.14	5.53	5.48	5.92	5.79	6.28	6.21	6.69	6.41	6.91	7.44
46673.2	4.49	4.86	5.14	5.52	5.48	5.91	5.78	6.27	6.20	6.69	6.40	6.91	7.43
46678.9	4.48	4.86	5.13	5.52	5.47	5.91	5.77	6.26	6.19	6.68	6.40	6.90	7.43
46684.7	4.48	4.85	5.12	5.51	5.46	5.90	5.77	6.26	6.18	6.67	6.39	6.89	7.42
46690.5	4.47	4.85	5.12	5.50	5.46	5.89	5.76	6.25	6.18	6.66	6.38	6.88	7.41
46696.3	4.47	4.84	5.11	5.50	5.45	5.89	5.75	6.24	6.17	6.66	6.37	6.88	7.41
46702.1	4.46	4.84	5.10	5.49	5.44	5.88	5.74	6.23	6.16	6.65	6.37	6.87	7.40
46707.9	4.46	4.83	5.10	5.48	5.44	5.87	5.74	6.23	6.16	6.64	6.36	6.86	7.39
46713.7	4.45	4.82	5.09	5.48	5.43	5.87	5.73	6.22	6.15	6.64	6.35	6.86	7.39
46719.5	4.45	4.82	5.09	5.47	5.42	5.86	5.72	6.21	6.14	6.63	6.34	6.85	7.38
46725.3	4.44	4.81	5.08	5.47	5.42	5.85	5.72	6.21	6.13	6.62	6.34	6.84	7.37
46731.1	4.43	4.81	5.07	5.46	5.41	5.85	5.71	6.20	6.13	6.61	6.33	6.83	7.36
46736.8	4.43	4.80	5.07	5.45	5.40	5.84	5.70	6.19	6.12	6.61	6.32	6.83	7.36
46742.6	4.42	4.80	5.06	5.45	5.40	5.83	5.70	6.19	6.11	6.60	6.32	6.82	7.35
46748.4	4.42	4.79	5.05	5.44	5.39	5.83	5.69	6.18	6.11	6.59	6.31	6.81	7.34
46754.2	4.41	4.79	5.05	5.43	5.38	5.82	5.68	6.17	6.10	6.59	6.30	6.81	7.34
46760.0	4.41	4.78	5.04	5.43	5.38	5.81	5.68	6.16	6.09	6.58	6.30	6.80	7.33
46765.8	4.40	4.78	5.04	5.42	5.37	5.81	5.67	6.16	6.09	6.57	6.29	6.79	7.32
46771.5	4.40	4.77	5.03	5.42	5.37	5.80	5.67	6.15	6.08	6.57	6.28	6.79	7.32
46777.3	4.40	4.77	5.03	5.41	5.36	5.80	5.66	6.15	6.08	6.56	6.28	6.78	7.31
46783.1	4.39	4.76	5.02	5.41	5.36	5.79	5.66	6.14	6.07	6.56	6.27	6.77	7.31
46788.8	4.39	4.76	5.02	5.40	5.35	5.79	5.65	6.14	6.06	6.55	6.27	6.77	7.30
46794.6	4.38	4.75	5.01	5.40	5.35	5.78	5.64	6.13	6.06	6.54	6.26	6.76	7.29
46800.4	4.38	4.75	5.01	5.39	5.34	5.77	5.64	6.13	6.05	6.54	6.25	6.75	7.29
46806.2	4.37	4.75	5.00	5.39	5.34	5.77	5.63	6.12	6.05	6.53	6.25	6.75	7.28
46811.9	4.37	4.74	5.00	5.38	5.33	5.76	5.63	6.11	6.04	6.53	6.24	6.74	7.27
46817.7	4.37	4.74	4.99	5.38	5.33	5.76	5.62	6.11	6.04	6.52	6.24	6.74	7.27
46823.5	4.36	4.73	4.99	5.37	5.32	5.75	5.62	6.10	6.03	6.51	6.23	6.73	7.26
46829.2	4.36	4.73	4.98	5.37	5.31	5.75	5.61	6.10	6.02	6.51	6.23	6.72	7.26
46835.0	4.35	4.72	4.98	5.36	5.31	5.74	5.61	6.09	6.02	6.50	6.22	6.72	7.25
46835.0	4.35	4.72	4.98	5.36	5.31	5.74	5.61	6.09	6.02	6.50	6.22	6.72	7.25
46857.0	4.35	4.71	4.96	5.33	5.28	5.71	5.57	6.05	5.98	6.45	6.18	6.67	7.19
46879.0	4.30	4.66	4.91	5.28	5.23	5.65	5.52	6.00	5.92	6.40	6.12	6.61	7.13
46903.0	4.05	4.40	4.62	4.98	4.92	5.32	5.19	5.64	5.57	6.01	5.75	6.20	6.70
46929.0	4.07	4.41	4.63	4.98	4.92	5.32	5.18	5.64	5.56	6.00	5.74	6.19	6.68

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
46955.0	4.07	4.42	4.63	4.98	4.92	5.31	5.18	5.62	5.55	5.99	5.73	6.18	6.67
46981.0	4.00	4.36	4.57	4.93	4.87	5.27	5.13	5.58	5.51	5.96	5.69	6.14	6.64
46981.0	4.00	4.36	4.57	4.93	4.87	5.27	5.13	5.58	5.51	5.96	5.69	6.14	6.64
46986.8	4.00	4.35	4.56	4.92	4.86	5.26	5.13	5.58	5.50	5.95	5.69	6.14	6.64
46992.6	3.99	4.35	4.56	4.92	4.85	5.26	5.12	5.57	5.50	5.95	5.68	6.13	6.63
46998.3	3.99	4.34	4.55	4.91	4.85	5.25	5.11	5.57	5.49	5.94	5.68	6.13	6.63
47004.1	3.98	4.34	4.54	4.91	4.84	5.25	5.11	5.56	5.49	5.94	5.67	6.13	6.63
47009.9	3.98	4.33	4.54	4.90	4.84	5.24	5.10	5.56	5.48	5.93	5.66	6.12	6.62
47015.7	3.97	4.33	4.53	4.90	4.83	5.24	5.10	5.55	5.48	5.93	5.66	6.12	6.62
47021.4	3.97	4.32	4.53	4.89	4.83	5.23	5.09	5.55	5.47	5.92	5.66	6.11	6.61
47027.2	3.96	4.32	4.52	4.89	4.82	5.23	5.09	5.54	5.47	5.92	5.65	6.11	6.61
47033.0	3.96	4.31	4.52	4.88	4.81	5.22	5.08	5.54	5.46	5.91	5.65	6.10	6.61
47038.8	3.96	4.31	4.51	4.88	4.81	5.22	5.08	5.53	5.46	5.91	5.64	6.10	6.60
47044.6	3.95	4.30	4.51	4.87	4.80	5.21	5.07	5.53	5.45	5.90	5.64	6.09	6.60
47050.3	3.95	4.30	4.50	4.87	4.80	5.21	5.07	5.53	5.45	5.90	5.63	6.09	6.60
47056.1	3.94	4.30	4.50	4.86	4.80	5.20	5.06	5.52	5.44	5.90	5.63	6.09	6.59
47061.9	3.94	4.29	4.49	4.86	4.79	5.20	5.06	5.52	5.44	5.89	5.62	6.08	6.59
47067.7	3.93	4.29	4.49	4.85	4.79	5.19	5.05	5.51	5.44	5.89	5.62	6.08	6.59
47073.4	3.93	4.28	4.48	4.85	4.78	5.19	5.05	5.51	5.43	5.88	5.61	6.07	6.58
47079.2	3.92	4.28	4.48	4.84	4.78	5.19	5.04	5.51	5.43	5.88	5.61	6.07	6.58
47085.0	3.92	4.27	4.48	4.84	4.77	5.18	5.04	5.50	5.42	5.88	5.61	6.07	6.58
47090.9	3.91	4.27	4.47	4.83	4.77	5.17	5.03	5.49	5.42	5.87	5.60	6.06	6.57
47096.8	3.91	4.26	4.46	4.83	4.76	5.17	5.03	5.49	5.41	5.86	5.59	6.05	6.57
47102.7	3.91	4.26	4.46	4.82	4.75	5.16	5.02	5.48	5.40	5.86	5.59	6.05	6.56
47108.6	3.90	4.25	4.45	4.82	4.75	5.15	5.01	5.48	5.40	5.85	5.58	6.04	6.55
47114.4	3.89	4.25	4.44	4.81	4.74	5.15	5.01	5.47	5.39	5.84	5.57	6.03	6.55
47120.3	3.89	4.24	4.44	4.80	4.73	5.14	5.00	5.46	5.38	5.84	5.57	6.03	6.54
47126.2	3.88	4.23	4.43	4.80	4.72	5.14	4.99	5.46	5.38	5.83	5.56	6.02	6.53
47132.1	3.88	4.23	4.42	4.79	4.72	5.13	4.99	5.45	5.37	5.83	5.55	6.02	6.53
47138.0	3.87	4.22	4.41	4.78	4.71	5.12	4.98	5.44	5.36	5.82	5.55	6.01	6.52
47143.9	3.86	4.22	4.41	4.78	4.70	5.12	4.97	5.44	5.35	5.81	5.54	6.00	6.52
47149.8	3.85	4.21	4.40	4.77	4.70	5.11	4.96	5.43	5.35	5.81	5.53	6.00	6.51
47155.7	3.85	4.20	4.39	4.76	4.69	5.10	4.96	5.42	5.34	5.80	5.53	5.99	6.51
47161.6	3.84	4.20	4.39	4.76	4.68	5.10	4.95	5.42	5.33	5.79	5.52	5.98	6.50
47167.4	3.83	4.19	4.38	4.75	4.68	5.09	4.94	5.41	5.33	5.79	5.51	5.98	6.49
47173.3	3.82	4.18	4.37	4.74	4.67	5.08	4.94	5.40	5.32	5.78	5.51	5.97	6.49
47179.2	3.82	4.18	4.36	4.74	4.66	5.08	4.93	5.40	5.31	5.77	5.50	5.96	6.48
47185.1	3.81	4.17	4.36	4.73	4.65	5.07	4.92	5.39	5.31	5.77	5.49	5.96	6.48
47191.0	3.80	4.16	4.35	4.72	4.65	5.06	4.92	5.39	5.30	5.76	5.49	5.95	6.47
47196.8	3.80	4.16	4.34	4.72	4.64	5.06	4.91	5.38	5.29	5.75	5.48	5.94	6.46
47202.6	3.79	4.15	4.34	4.71	4.63	5.05	4.90	5.37	5.28	5.74	5.47	5.93	6.45
47208.3	3.79	4.15	4.33	4.70	4.62	5.04	4.89	5.36	5.27	5.74	5.46	5.92	6.44
47214.1	3.78	4.14	4.32	4.69	4.61	5.03	4.88	5.35	5.27	5.73	5.45	5.91	6.43
47219.9	3.78	4.13	4.31	4.68	4.60	5.02	4.87	5.34	5.26	5.72	5.44	5.90	6.42
47225.7	3.77	4.12	4.30	4.67	4.59	5.01	4.86	5.33	5.25	5.71	5.43	5.89	6.41
47231.4	3.76	4.12	4.29	4.66	4.58	5.00	4.85	5.32	5.24	5.70	5.42	5.88	6.40

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
47237.2	3.75	4.11	4.28	4.66	4.57	4.99	4.84	5.31	5.23	5.69	5.41	5.87	6.39
47243.0	3.74	4.10	4.27	4.65	4.56	4.98	4.83	5.30	5.22	5.68	5.40	5.86	6.38
47248.8	3.73	4.09	4.26	4.64	4.55	4.97	4.82	5.29	5.21	5.67	5.39	5.85	6.37
47254.6	3.73	4.08	4.25	4.63	4.54	4.96	4.81	5.28	5.20	5.66	5.38	5.84	6.36
47260.3	3.72	4.07	4.24	4.62	4.53	4.95	4.80	5.27	5.18	5.64	5.37	5.83	6.35
47266.1	3.71	4.06	4.23	4.61	4.52	4.94	4.79	5.26	5.17	5.63	5.36	5.82	6.34
47271.9	3.69	4.05	4.22	4.60	4.51	4.93	4.78	5.25	5.16	5.62	5.35	5.81	6.33
47277.7	3.68	4.04	4.21	4.59	4.50	4.92	4.77	5.24	5.15	5.61	5.34	5.80	6.32
47283.4	3.67	4.03	4.20	4.58	4.49	4.91	4.75	5.23	5.14	5.60	5.32	5.78	6.30
47289.2	3.66	4.02	4.19	4.57	4.48	4.90	4.74	5.22	5.13	5.59	5.31	5.77	6.29
47295.0	3.65	4.01	4.17	4.55	4.47	4.89	4.73	5.21	5.12	5.58	5.30	5.76	6.28
47300.8	3.64	4.01	4.17	4.55	4.46	4.88	4.72	5.20	5.11	5.57	5.29	5.75	6.27
47306.6	3.63	4.00	4.16	4.54	4.45	4.87	4.71	5.19	5.10	5.56	5.28	5.74	6.26
47312.3	3.62	3.99	4.15	4.53	4.44	4.86	4.70	5.18	5.09	5.55	5.27	5.73	6.25
47318.1	3.61	3.98	4.14	4.52	4.43	4.85	4.69	5.17	5.08	5.54	5.26	5.72	6.24
47323.9	3.60	3.97	4.13	4.51	4.42	4.84	4.68	5.16	5.07	5.53	5.25	5.71	6.23
47329.7	3.59	3.96	4.12	4.50	4.41	4.83	4.67	5.15	5.06	5.52	5.24	5.70	6.22
47335.4	3.59	3.96	4.11	4.49	4.40	4.82	4.66	5.14	5.05	5.51	5.23	5.69	6.21
47341.2	3.58	3.95	4.10	4.48	4.39	4.81	4.65	5.13	5.04	5.50	5.22	5.68	6.20
47347.0	3.57	3.94	4.09	4.47	4.38	4.80	4.64	5.12	5.03	5.49	5.21	5.67	6.19
47352.8	3.56	3.93	4.08	4.46	4.37	4.79	4.63	5.11	5.02	5.48	5.20	5.66	6.18
47358.6	3.55	3.92	4.07	4.45	4.36	4.78	4.62	5.10	5.01	5.47	5.19	5.65	6.17
47364.3	3.54	3.91	4.06	4.44	4.35	4.78	4.61	5.09	5.00	5.46	5.18	5.64	6.16
47370.1	3.53	3.91	4.05	4.43	4.34	4.77	4.60	5.08	4.98	5.45	5.17	5.62	6.15
47375.9	3.52	3.90	4.04	4.43	4.33	4.76	4.59	5.07	4.97	5.44	5.16	5.61	6.14
47381.7	3.51	3.89	4.03	4.42	4.31	4.75	4.58	5.06	4.96	5.43	5.15	5.60	6.13
47387.4	3.50	3.88	4.02	4.41	4.30	4.74	4.57	5.05	4.95	5.42	5.14	5.59	6.12
47393.2	3.49	3.87	4.01	4.40	4.29	4.73	4.56	5.04	4.94	5.41	5.13	5.58	6.11
47399.0	3.48	3.86	3.99	4.39	4.28	4.72	4.55	5.03	4.93	5.40	5.12	5.57	6.10
47405.0	3.47	3.85	3.98	4.38	4.27	4.71	4.54	5.02	4.92	5.39	5.11	5.56	6.09
47411.0	3.45	3.85	3.97	4.37	4.26	4.70	4.53	5.01	4.91	5.38	5.10	5.56	6.08
47417.0	3.44	3.84	3.96	4.36	4.25	4.69	4.52	5.01	4.91	5.37	5.09	5.55	6.08
47423.0	3.43	3.83	3.95	4.35	4.24	4.68	4.51	5.00	4.90	5.36	5.08	5.54	6.07
47429.0	3.42	3.82	3.94	4.34	4.23	4.67	4.50	4.99	4.89	5.36	5.07	5.53	6.06
47435.0	3.40	3.81	3.93	4.33	4.22	4.66	4.49	4.98	4.88	5.35	5.06	5.52	6.06
47441.0	3.39	3.80	3.92	4.32	4.21	4.65	4.48	4.97	4.87	5.34	5.06	5.52	6.05
47447.0	3.38	3.79	3.90	4.31	4.20	4.64	4.47	4.96	4.86	5.33	5.05	5.51	6.04
47453.0	3.36	3.78	3.89	4.30	4.19	4.64	4.45	4.95	4.85	5.32	5.04	5.50	6.04
47459.0	3.35	3.76	3.88	4.29	4.17	4.63	4.44	4.94	4.84	5.32	5.03	5.49	6.03
47465.0	3.33	3.75	3.86	4.28	4.16	4.62	4.43	4.94	4.83	5.31	5.02	5.48	6.02
47471.0	3.31	3.74	3.85	4.27	4.15	4.61	4.42	4.93	4.82	5.30	5.01	5.47	6.02
47477.0	3.30	3.73	3.84	4.26	4.14	4.60	4.41	4.92	4.81	5.29	5.00	5.47	6.01
47483.0	3.28	3.72	3.82	4.25	4.12	4.58	4.40	4.91	4.80	5.28	4.99	5.46	6.00
47489.0	3.26	3.70	3.81	4.24	4.11	4.57	4.38	4.90	4.79	5.27	4.98	5.45	6.00
47495.0	3.24	3.69	3.79	4.22	4.09	4.56	4.37	4.89	4.78	5.26	4.97	5.44	5.99
47501.0	3.22	3.68	3.77	4.21	4.08	4.55	4.36	4.88	4.77	5.26	4.96	5.43	5.98

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
47506.8	3.20	3.67	3.76	4.21	4.07	4.55	4.35	4.87	4.76	5.25	4.96	5.43	5.98
47512.7	3.19	3.66	3.75	4.20	4.07	4.54	4.35	4.87	4.76	5.25	4.95	5.43	5.98
47518.5	3.18	3.66	3.75	4.20	4.06	4.54	4.34	4.87	4.75	5.25	4.95	5.42	5.98
47524.4	3.17	3.65	3.74	4.19	4.05	4.53	4.33	4.86	4.75	5.24	4.94	5.42	5.98
47530.2	3.16	3.64	3.73	4.19	4.04	4.53	4.33	4.86	4.74	5.24	4.94	5.42	5.97
47536.1	3.15	3.64	3.72	4.18	4.04	4.53	4.32	4.86	4.74	5.24	4.94	5.42	5.97
47541.9	3.14	3.63	3.71	4.18	4.03	4.52	4.32	4.85	4.74	5.23	4.93	5.41	5.97
47547.7	3.13	3.63	3.71	4.17	4.03	4.52	4.31	4.85	4.73	5.23	4.93	5.41	5.97
47553.6	3.12	3.62	3.70	4.17	4.02	4.51	4.31	4.85	4.73	5.23	4.93	5.41	5.97
47559.4	3.11	3.61	3.69	4.16	4.01	4.51	4.30	4.84	4.72	5.23	4.92	5.40	5.97
47565.3	3.10	3.61	3.68	4.16	4.01	4.51	4.30	4.84	4.72	5.22	4.92	5.40	5.96
47571.1	3.09	3.60	3.68	4.15	4.00	4.50	4.29	4.84	4.72	5.22	4.92	5.40	5.96
47576.9	3.08	3.60	3.67	4.15	4.00	4.50	4.29	4.83	4.71	5.22	4.91	5.40	5.96
47582.8	3.07	3.59	3.66	4.14	3.99	4.49	4.28	4.83	4.71	5.22	4.91	5.39	5.96
47588.6	3.06	3.59	3.65	4.14	3.98	4.49	4.28	4.83	4.71	5.21	4.91	5.39	5.96
47594.5	3.05	3.58	3.65	4.13	3.98	4.49	4.27	4.82	4.70	5.21	4.90	5.39	5.96
47600.3	3.04	3.58	3.64	4.13	3.97	4.48	4.27	4.82	4.70	5.21	4.90	5.39	5.96
47606.2	3.02	3.57	3.63	4.13	3.97	4.48	4.26	4.82	4.70	5.21	4.90	5.39	5.95
47612.0	3.01	3.57	3.63	4.12	3.96	4.48	4.26	4.82	4.69	5.20	4.89	5.38	5.95
47618.0	3.00	3.56	3.62	4.12	3.96	4.47	4.25	4.81	4.69	5.20	4.89	5.38	5.95
47624.0	2.99	3.56	3.61	4.11	3.95	4.47	4.25	4.81	4.68	5.20	4.89	5.38	5.95
47630.0	2.99	3.55	3.61	4.11	3.95	4.47	4.24	4.81	4.68	5.20	4.89	5.38	5.95
47636.0	2.98	3.55	3.60	4.10	3.94	4.46	4.24	4.80	4.68	5.20	4.88	5.38	5.95
47642.0	2.97	3.54	3.59	4.10	3.93	4.46	4.24	4.80	4.68	5.19	4.88	5.37	5.95
47648.0	2.96	3.54	3.59	4.10	3.93	4.46	4.23	4.80	4.67	5.19	4.88	5.37	5.95
47654.0	2.96	3.53	3.58	4.09	3.92	4.45	4.23	4.80	4.67	5.19	4.88	5.37	5.95
47660.0	2.95	3.53	3.57	4.09	3.92	4.45	4.22	4.79	4.67	5.19	4.87	5.37	5.95
47666.0	2.94	3.52	3.57	4.09	3.91	4.45	4.22	4.79	4.66	5.19	4.87	5.37	5.95
47672.0	2.93	3.52	3.56	4.08	3.91	4.44	4.22	4.79	4.66	5.19	4.87	5.37	5.95
47678.0	2.93	3.52	3.56	4.08	3.91	4.44	4.21	4.79	4.66	5.18	4.87	5.37	5.95
47684.0	2.92	3.51	3.55	4.08	3.90	4.44	4.21	4.79	4.66	5.18	4.87	5.36	5.95
47690.0	2.91	3.51	3.55	4.07	3.90	4.44	4.21	4.78	4.66	5.18	4.86	5.36	5.95
47696.0	2.91	3.50	3.54	4.07	3.89	4.43	4.20	4.78	4.65	5.18	4.86	5.36	5.95
47702.0	2.90	3.50	3.54	4.07	3.89	4.43	4.20	4.78	4.65	5.18	4.86	5.36	5.94
47708.0	2.89	3.50	3.53	4.06	3.89	4.43	4.20	4.78	4.65	5.18	4.86	5.36	5.94
47714.0	2.89	3.49	3.53	4.06	3.88	4.43	4.19	4.78	4.65	5.18	4.86	5.36	5.94
47720.0	2.88	3.49	3.52	4.06	3.88	4.43	4.19	4.78	4.65	5.17	4.85	5.36	5.94
47726.0	2.87	3.49	3.52	4.06	3.87	4.42	4.19	4.77	4.64	5.17	4.85	5.36	5.94
47732.0	2.87	3.48	3.51	4.05	3.87	4.42	4.18	4.77	4.64	5.17	4.85	5.35	5.94
47738.0	2.86	3.48	3.50	4.05	3.86	4.42	4.18	4.77	4.63	5.17	4.84	5.35	5.94
47744.0	2.86	3.47	3.50	4.04	3.86	4.41	4.17	4.76	4.63	5.16	4.84	5.34	5.93
47750.0	2.85	3.47	3.49	4.04	3.85	4.41	4.17	4.76	4.62	5.16	4.84	5.34	5.93
47756.0	2.85	3.46	3.49	4.03	3.85	4.40	4.16	4.75	4.62	5.15	4.83	5.34	5.92
47762.0	2.84	3.46	3.48	4.03	3.84	4.40	4.16	4.75	4.62	5.15	4.83	5.33	5.92
47768.0	2.84	3.46	3.48	4.02	3.84	4.39	4.15	4.74	4.61	5.14	4.82	5.33	5.92
47774.0	2.84	3.45	3.47	4.02	3.83	4.39	4.15	4.74	4.61	5.14	4.82	5.32	5.91

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
47780.0	2.84	3.45	3.47	4.02	3.83	4.39	4.14	4.74	4.60	5.14	4.81	5.32	5.91
47786.0	2.83	3.45	3.47	4.01	3.82	4.38	4.14	4.73	4.60	5.13	4.81	5.32	5.90
47792.0	2.83	3.45	3.46	4.01	3.82	4.38	4.13	4.73	4.59	5.13	4.81	5.31	5.90
47798.0	2.83	3.44	3.46	4.00	3.81	4.37	4.13	4.73	4.59	5.13	4.80	5.31	5.90
47804.0	2.83	3.44	3.45	4.00	3.81	4.37	4.13	4.72	4.59	5.12	4.80	5.30	5.89
47810.0	2.82	3.44	3.45	4.00	3.81	4.37	4.12	4.72	4.58	5.12	4.79	5.30	5.89
47816.0	2.82	3.44	3.44	4.00	3.80	4.36	4.12	4.71	4.58	5.11	4.79	5.30	5.89
47822.0	2.82	3.43	3.44	3.99	3.80	4.36	4.11	4.71	4.57	5.11	4.79	5.29	5.88
47828.0	2.81	3.43	3.44	3.99	3.79	4.36	4.11	4.71	4.57	5.11	4.78	5.29	5.88
47834.0	2.81	3.42	3.43	3.99	3.79	4.35	4.11	4.70	4.57	5.10	4.78	5.28	5.87
47839.9	2.80	3.42	3.42	3.97	3.78	4.34	4.09	4.69	4.56	5.09	4.77	5.27	5.86
47845.8	2.79	3.41	3.41	3.96	3.76	4.33	4.08	4.68	4.54	5.08	4.75	5.26	5.85
47851.7	2.78	3.40	3.40	3.95	3.75	4.32	4.07	4.67	4.53	5.06	4.74	5.24	5.83
47857.6	2.77	3.39	3.38	3.94	3.74	4.31	4.06	4.65	4.51	5.05	4.73	5.23	5.81
47863.5	2.76	3.38	3.37	3.93	3.72	4.29	4.04	4.64	4.50	5.03	4.71	5.21	5.79
47869.5	2.75	3.38	3.36	3.92	3.71	4.28	4.03	4.62	4.48	5.02	4.69	5.19	5.77
47875.4	2.74	3.37	3.35	3.91	3.70	4.27	4.01	4.61	4.47	5.00	4.68	5.17	5.75
47881.3	2.73	3.36	3.34	3.89	3.69	4.25	4.00	4.59	4.45	4.98	4.66	5.15	5.73
47887.2	2.72	3.35	3.33	3.88	3.67	4.24	3.98	4.58	4.43	4.96	4.64	5.13	5.71
47893.1	2.71	3.34	3.32	3.87	3.66	4.22	3.97	4.56	4.42	4.94	4.62	5.11	5.68
47899.0	2.70	3.34	3.30	3.86	3.65	4.21	3.95	4.54	4.40	4.92	4.60	5.08	5.66
47899.0	2.70	3.34	3.30	3.86	3.65	4.21	3.95	4.54	4.40	4.92	4.60	5.08	5.66
47917.9	2.67	3.31	3.27	3.83	3.61	4.18	3.92	4.51	4.36	4.88	4.57	5.04	5.60
47936.8	2.63	3.28	3.23	3.79	3.57	4.13	3.87	4.46	4.31	4.81	4.51	4.97	5.52
47955.6	2.59	3.25	3.17	3.73	3.51	4.06	3.80	4.38	4.23	4.72	4.42	4.87	5.41
47974.5	2.51	3.18	3.07	3.64	3.39	3.95	3.68	4.26	4.10	4.60	4.29	4.73	5.27
47989.5	2.22	2.92	2.72	3.30	3.02	3.56	3.27	3.80	3.61	4.11	3.78	4.20	4.62
48008.7	2.22	2.94	2.73	3.33	3.04	3.58	3.29	3.82	3.63	4.13	3.80	4.21	4.63
48027.9	2.22	2.94	2.72	3.34	3.04	3.59	3.30	3.84	3.65	4.14	3.81	4.22	4.64
48047.1	2.22	2.94	2.72	3.34	3.04	3.60	3.31	3.85	3.66	4.16	3.82	4.23	4.65
48066.4	2.22	2.94	2.72	3.34	3.03	3.60	3.31	3.85	3.66	4.17	3.83	4.24	4.66
48085.6	2.22	2.94	2.71	3.34	3.03	3.60	3.30	3.85	3.66	4.17	3.83	4.25	4.68
48104.8	2.22	2.94	2.71	3.34	3.03	3.60	3.30	3.86	3.66	4.18	3.83	4.26	4.70
48124.0	2.22	2.94	2.71	3.34	3.03	3.61	3.30	3.86	3.66	4.19	3.83	4.27	4.72
48124.0	2.22	2.94	2.71	3.34	3.03	3.61	3.30	3.86	3.66	4.19	3.83	4.27	4.72
48129.8	2.21	2.94	2.71	3.33	3.02	3.60	3.29	3.86	3.66	4.19	3.83	4.26	4.73
48135.7	2.21	2.93	2.70	3.33	3.01	3.59	3.29	3.85	3.65	4.19	3.83	4.26	4.73
48141.5	2.20	2.93	2.69	3.32	3.00	3.59	3.28	3.85	3.64	4.18	3.82	4.25	4.72
48147.3	2.19	2.92	2.68	3.32	2.99	3.58	3.27	3.84	3.63	4.17	3.81	4.24	4.71
48153.2	2.19	2.92	2.68	3.31	2.98	3.57	3.26	3.83	3.62	4.16	3.80	4.23	4.70
48159.0	2.18	2.91	2.67	3.30	2.97	3.56	3.25	3.82	3.61	4.15	3.79	4.22	4.69
48164.8	2.17	2.91	2.66	3.29	2.96	3.56	3.24	3.81	3.60	4.14	3.78	4.21	4.68
48170.7	2.17	2.90	2.65	3.29	2.96	3.55	3.23	3.80	3.59	4.14	3.77	4.20	4.67
48176.5	2.16	2.90	2.64	3.28	2.95	3.54	3.22	3.80	3.58	4.13	3.76	4.19	4.66
48182.3	2.15	2.89	2.63	3.27	2.94	3.53	3.21	3.79	3.57	4.12	3.75	4.18	4.65
48188.2	2.15	2.89	2.62	3.26	2.93	3.52	3.20	3.78	3.56	4.11	3.73	4.17	4.63

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
48194.0	2.14	2.88	2.62	3.26	2.91	3.51	3.19	3.77	3.55	4.09	3.72	4.16	4.62
48199.8	2.13	2.88	2.61	3.25	2.90	3.51	3.18	3.76	3.54	4.08	3.71	4.15	4.60
48205.7	2.12	2.87	2.60	3.24	2.89	3.50	3.16	3.75	3.53	4.07	3.70	4.14	4.59
48211.5	2.12	2.87	2.59	3.23	2.88	3.49	3.15	3.74	3.51	4.06	3.69	4.13	4.57
48217.3	2.11	2.86	2.58	3.23	2.87	3.48	3.14	3.73	3.50	4.05	3.68	4.11	4.56
48223.2	2.10	2.85	2.57	3.22	2.86	3.47	3.13	3.72	3.49	4.04	3.66	4.10	4.55
48229.0	2.09	2.85	2.55	3.21	2.85	3.46	3.12	3.71	3.48	4.03	3.65	4.09	4.53
48234.9	2.09	2.85	2.55	3.21	2.84	3.46	3.11	3.70	3.47	4.02	3.65	4.08	4.53
48240.9	2.08	2.84	2.55	3.20	2.84	3.45	3.11	3.70	3.47	4.02	3.64	4.08	4.53
48246.9	2.08	2.84	2.54	3.20	2.83	3.45	3.10	3.70	3.46	4.02	3.64	4.08	4.52
48252.8	2.08	2.84	2.54	3.20	2.83	3.45	3.10	3.69	3.46	4.01	3.63	4.07	4.52
48258.8	2.08	2.84	2.54	3.19	2.83	3.44	3.09	3.69	3.45	4.01	3.63	4.07	4.52
48264.7	2.08	2.84	2.53	3.19	2.82	3.44	3.09	3.69	3.45	4.01	3.62	4.07	4.52
48270.6	2.07	2.84	2.53	3.19	2.82	3.44	3.09	3.69	3.45	4.01	3.62	4.06	4.51
48276.6	2.07	2.84	2.53	3.19	2.82	3.44	3.08	3.68	3.44	4.00	3.62	4.06	4.51
48282.6	2.07	2.83	2.53	3.19	2.81	3.43	3.08	3.68	3.44	4.00	3.61	4.06	4.51
48288.5	2.07	2.83	2.52	3.18	2.81	3.43	3.08	3.68	3.44	4.00	3.61	4.05	4.51
48294.4	2.07	2.83	2.52	3.18	2.81	3.43	3.07	3.68	3.43	4.00	3.61	4.05	4.50
48300.4	2.06	2.83	2.52	3.18	2.80	3.43	3.07	3.67	3.43	3.99	3.61	4.05	4.50
48306.4	2.06	2.83	2.51	3.18	2.80	3.43	3.07	3.67	3.43	3.99	3.60	4.05	4.50
48312.3	2.06	2.83	2.51	3.18	2.80	3.42	3.06	3.67	3.43	3.99	3.60	4.05	4.50
48318.3	2.06	2.83	2.51	3.17	2.79	3.42	3.06	3.67	3.42	3.99	3.60	4.04	4.50
48324.2	2.06	2.83	2.51	3.17	2.79	3.42	3.06	3.67	3.42	3.99	3.60	4.04	4.50
48330.1	2.06	2.82	2.50	3.17	2.79	3.42	3.05	3.67	3.42	3.99	3.59	4.04	4.49
48336.1	2.06	2.82	2.50	3.17	2.78	3.42	3.05	3.66	3.41	3.98	3.59	4.04	4.49
48342.1	2.05	2.82	2.50	3.16	2.78	3.41	3.04	3.66	3.41	3.98	3.59	4.03	4.48
48348.0	2.05	2.82	2.50	3.16	2.77	3.41	3.04	3.65	3.41	3.97	3.59	4.02	4.48
48354.0	2.05	2.82	2.49	3.16	2.76	3.40	3.02	3.65	3.39	3.97	3.57	4.02	4.47
48360.0	2.04	2.81	2.48	3.15	2.75	3.39	3.01	3.64	3.38	3.96	3.56	4.01	4.46
48366.0	2.04	2.81	2.47	3.14	2.74	3.39	3.00	3.63	3.37	3.95	3.54	4.00	4.45
48372.0	2.03	2.80	2.46	3.13	2.73	3.38	2.99	3.62	3.35	3.94	3.53	3.98	4.43
48378.0	2.03	2.80	2.46	3.13	2.72	3.37	2.98	3.61	3.34	3.93	3.52	3.97	4.42
48384.0	2.02	2.79	2.45	3.12	2.71	3.36	2.97	3.60	3.33	3.91	3.51	3.95	4.40
48390.0	2.02	2.79	2.44	3.11	2.70	3.35	2.96	3.59	3.31	3.90	3.49	3.94	4.39
48396.0	2.01	2.78	2.43	3.10	2.69	3.34	2.94	3.57	3.30	3.89	3.48	3.92	4.37
48402.0	2.00	2.78	2.42	3.09	2.68	3.32	2.93	3.56	3.28	3.87	3.46	3.91	4.35
48408.0	2.00	2.77	2.41	3.08	2.67	3.31	2.92	3.55	3.27	3.86	3.44	3.89	4.34
48414.0	1.99	2.77	2.40	3.07	2.65	3.30	2.90	3.53	3.25	3.84	3.43	3.87	4.32
48420.0	1.98	2.76	2.39	3.06	2.64	3.29	2.89	3.52	3.24	3.83	3.41	3.85	4.30
48426.0	1.98	2.75	2.37	3.05	2.63	3.27	2.87	3.50	3.22	3.81	3.39	3.83	4.28
48432.0	1.97	2.75	2.36	3.04	2.61	3.26	2.85	3.49	3.20	3.79	3.37	3.81	4.26
48438.0	1.96	2.74	2.35	3.03	2.60	3.25	2.84	3.47	3.18	3.77	3.35	3.79	4.23
48444.0	1.95	2.73	2.34	3.02	2.58	3.23	2.82	3.45	3.16	3.75	3.33	3.76	4.21
48450.0	1.94	2.72	2.32	3.00	2.56	3.21	2.80	3.43	3.13	3.73	3.31	3.74	4.18
48456.0	1.93	2.72	2.31	2.99	2.55	3.20	2.78	3.41	3.11	3.70	3.28	3.71	4.15
48462.0	1.92	2.71	2.29	2.97	2.53	3.18	2.75	3.39	3.09	3.68	3.25	3.68	4.12

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
48468.0	1.91	2.70	2.27	2.96	2.51	3.16	2.73	3.37	3.06	3.65	3.23	3.65	4.08
48473.9	1.91	2.70	2.27	2.95	2.50	3.15	2.72	3.36	3.05	3.64	3.22	3.64	4.07
48479.8	1.91	2.69	2.26	2.95	2.49	3.15	2.71	3.35	3.04	3.63	3.21	3.63	4.06
48485.7	1.90	2.69	2.26	2.94	2.48	3.14	2.71	3.35	3.03	3.63	3.20	3.62	4.05
48491.6	1.90	2.69	2.25	2.94	2.48	3.14	2.70	3.34	3.02	3.62	3.19	3.60	4.04
48497.5	1.90	2.68	2.25	2.93	2.47	3.13	2.69	3.33	3.01	3.61	3.18	3.59	4.02
48503.4	1.89	2.68	2.24	2.93	2.46	3.12	2.68	3.33	3.01	3.60	3.17	3.58	4.01
48509.3	1.89	2.68	2.23	2.93	2.46	3.12	2.67	3.32	3.00	3.59	3.16	3.57	4.00
48515.2	1.89	2.68	2.23	2.92	2.45	3.11	2.67	3.31	2.99	3.58	3.15	3.56	3.99
48521.1	1.88	2.67	2.22	2.92	2.44	3.11	2.66	3.30	2.98	3.57	3.14	3.55	3.98
48527.0	1.88	2.67	2.22	2.91	2.43	3.10	2.65	3.30	2.97	3.57	3.13	3.54	3.97
48532.9	1.88	2.67	2.21	2.91	2.43	3.09	2.64	3.29	2.96	3.56	3.12	3.53	3.95
48538.8	1.87	2.67	2.20	2.90	2.42	3.09	2.63	3.28	2.95	3.55	3.11	3.52	3.94
48544.7	1.87	2.66	2.20	2.90	2.41	3.08	2.63	3.27	2.94	3.54	3.10	3.51	3.93
48550.6	1.87	2.66	2.19	2.89	2.41	3.08	2.62	3.27	2.93	3.53	3.09	3.50	3.92
48556.5	1.86	2.66	2.19	2.89	2.40	3.07	2.61	3.26	2.92	3.52	3.08	3.49	3.91
48562.4	1.86	2.65	2.18	2.88	2.39	3.06	2.60	3.25	2.91	3.51	3.07	3.48	3.89
48568.3	1.85	2.65	2.18	2.88	2.38	3.06	2.59	3.24	2.90	3.50	3.06	3.46	3.88
48574.2	1.85	2.65	2.17	2.87	2.38	3.05	2.59	3.24	2.89	3.50	3.05	3.45	3.87
48580.1	1.85	2.65	2.16	2.87	2.37	3.04	2.58	3.23	2.88	3.49	3.04	3.44	3.86
48586.0	1.84	2.64	2.16	2.86	2.36	3.04	2.57	3.22	2.88	3.48	3.03	3.43	3.85
48592.0	1.84	2.65	2.16	2.87	2.36	3.04	2.57	3.23	2.88	3.48	3.03	3.44	3.85
48598.0	1.84	2.65	2.16	2.87	2.36	3.04	2.57	3.23	2.88	3.49	3.04	3.44	3.86
48604.0	1.84	2.65	2.16	2.87	2.37	3.05	2.57	3.23	2.88	3.49	3.04	3.45	3.87
48610.0	1.84	2.65	2.16	2.87	2.37	3.05	2.57	3.24	2.89	3.50	3.04	3.45	3.87
48616.0	1.84	2.65	2.16	2.88	2.37	3.05	2.58	3.24	2.89	3.50	3.05	3.46	3.88
48622.0	1.84	2.65	2.16	2.88	2.37	3.06	2.58	3.25	2.89	3.51	3.05	3.46	3.89
48628.0	1.84	2.65	2.16	2.88	2.37	3.06	2.58	3.25	2.89	3.51	3.05	3.47	3.89
48634.0	1.84	2.65	2.16	2.88	2.37	3.06	2.58	3.25	2.89	3.52	3.05	3.47	3.90
48640.0	1.84	2.65	2.16	2.88	2.37	3.06	2.58	3.26	2.90	3.52	3.06	3.47	3.90
48646.0	1.84	2.65	2.16	2.88	2.37	3.07	2.58	3.26	2.90	3.53	3.06	3.48	3.91
48652.0	1.84	2.66	2.16	2.89	2.37	3.07	2.58	3.26	2.90	3.53	3.06	3.48	3.91
48658.0	1.84	2.66	2.16	2.89	2.37	3.07	2.58	3.26	2.90	3.53	3.06	3.49	3.92
48664.0	1.84	2.66	2.16	2.89	2.37	3.07	2.58	3.27	2.90	3.54	3.07	3.49	3.92
48670.0	1.84	2.66	2.16	2.89	2.37	3.07	2.59	3.27	2.91	3.54	3.07	3.49	3.93
48676.0	1.84	2.66	2.16	2.89	2.37	3.08	2.59	3.27	2.91	3.54	3.07	3.50	3.93
48682.0	1.84	2.66	2.16	2.89	2.37	3.08	2.59	3.27	2.91	3.55	3.07	3.50	3.94
48688.0	1.84	2.66	2.16	2.89	2.37	3.08	2.59	3.28	2.91	3.55	3.08	3.50	3.94
48694.0	1.84	2.66	2.16	2.90	2.37	3.08	2.59	3.28	2.91	3.55	3.08	3.51	3.95
48700.0	1.84	2.66	2.16	2.90	2.37	3.08	2.59	3.28	2.91	3.56	3.08	3.51	3.95
48706.0	1.84	2.66	2.16	2.90	2.37	3.08	2.59	3.28	2.92	3.56	3.08	3.51	3.96
48711.8	1.83	2.66	2.15	2.89	2.36	3.08	2.58	3.27	2.90	3.55	3.07	3.50	3.94
48717.5	1.83	2.65	2.14	2.88	2.36	3.07	2.57	3.26	2.89	3.53	3.06	3.48	3.93
48723.3	1.82	2.65	2.14	2.88	2.35	3.06	2.56	3.25	2.88	3.52	3.04	3.47	3.92
48729.0	1.82	2.64	2.13	2.87	2.33	3.05	2.55	3.24	2.86	3.51	3.03	3.45	3.90
48734.8	1.81	2.64	2.12	2.86	2.32	3.04	2.53	3.23	2.85	3.49	3.01	3.43	3.88

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
48740.6	1.81	2.64	2.11	2.85	2.31	3.03	2.52	3.21	2.83	3.48	2.99	3.41	3.86
48746.3	1.80	2.63	2.10	2.84	2.30	3.02	2.51	3.20	2.82	3.46	2.98	3.39	3.84
48752.1	1.79	2.63	2.09	2.84	2.29	3.00	2.49	3.18	2.80	3.44	2.96	3.37	3.81
48757.9	1.79	2.62	2.08	2.83	2.27	2.99	2.48	3.17	2.78	3.43	2.94	3.35	3.79
48763.6	1.78	2.61	2.07	2.82	2.26	2.98	2.46	3.15	2.76	3.41	2.92	3.33	3.76
48769.4	1.77	2.61	2.06	2.81	2.25	2.96	2.44	3.14	2.74	3.39	2.89	3.30	3.73
48775.1	1.77	2.60	2.04	2.79	2.23	2.95	2.43	3.12	2.72	3.36	2.87	3.27	3.69
48780.9	1.76	2.60	2.03	2.78	2.22	2.93	2.41	3.10	2.69	3.34	2.84	3.24	3.66
48786.7	1.75	2.59	2.02	2.77	2.20	2.92	2.39	3.08	2.67	3.31	2.82	3.21	3.62
48792.4	1.74	2.58	2.00	2.76	2.18	2.90	2.36	3.05	2.64	3.28	2.79	3.17	3.58
48798.2	1.73	2.57	1.99	2.74	2.16	2.88	2.34	3.03	2.61	3.25	2.76	3.13	3.53
48804.0	1.73	2.56	1.97	2.73	2.14	2.86	2.32	3.01	2.59	3.22	2.72	3.09	3.49
48809.7	1.72	2.56	1.95	2.71	2.12	2.84	2.29	2.98	2.56	3.19	2.69	3.05	3.44
48815.5	1.70	2.55	1.94	2.70	2.10	2.82	2.27	2.95	2.52	3.15	2.66	3.01	3.39
48821.2	1.69	2.54	1.92	2.68	2.07	2.79	2.24	2.92	2.49	3.12	2.62	2.97	3.34
48827.0	1.68	2.53	1.90	2.66	2.05	2.77	2.21	2.89	2.45	3.08	2.58	2.92	3.29
48833.0	1.68	2.53	1.90	2.66	2.05	2.77	2.21	2.90	2.45	3.09	2.58	2.93	3.30
48838.9	1.69	2.53	1.90	2.67	2.05	2.78	2.21	2.90	2.46	3.09	2.59	2.93	3.30
48844.9	1.69	2.53	1.90	2.67	2.05	2.79	2.22	2.91	2.46	3.10	2.59	2.94	3.31
48850.8	1.69	2.54	1.91	2.67	2.06	2.79	2.22	2.92	2.47	3.10	2.60	2.94	3.31
48856.8	1.69	2.54	1.91	2.68	2.06	2.79	2.22	2.92	2.47	3.11	2.60	2.95	3.32
48862.7	1.69	2.54	1.91	2.68	2.06	2.80	2.22	2.93	2.47	3.12	2.60	2.95	3.32
48868.7	1.69	2.54	1.91	2.68	2.06	2.80	2.23	2.93	2.47	3.12	2.61	2.96	3.33
48874.7	1.69	2.54	1.91	2.69	2.06	2.81	2.23	2.93	2.48	3.13	2.61	2.96	3.33
48880.6	1.69	2.54	1.91	2.69	2.06	2.81	2.23	2.94	2.48	3.13	2.61	2.96	3.33
48886.6	1.69	2.55	1.91	2.69	2.07	2.81	2.23	2.94	2.48	3.14	2.61	2.97	3.34
48892.5	1.69	2.55	1.91	2.69	2.07	2.81	2.23	2.95	2.48	3.14	2.62	2.97	3.34
48898.5	1.69	2.55	1.91	2.70	2.07	2.82	2.23	2.95	2.49	3.14	2.62	2.97	3.35
48904.4	1.69	2.55	1.91	2.70	2.07	2.82	2.23	2.95	2.49	3.15	2.62	2.98	3.35
48910.4	1.69	2.55	1.91	2.70	2.07	2.82	2.23	2.95	2.49	3.15	2.62	2.98	3.36
48916.3	1.69	2.55	1.91	2.70	2.07	2.82	2.23	2.96	2.49	3.16	2.62	2.98	3.36
48922.3	1.69	2.55	1.91	2.70	2.07	2.83	2.23	2.96	2.49	3.16	2.62	2.99	3.36
48928.3	1.69	2.55	1.91	2.70	2.07	2.83	2.23	2.96	2.49	3.16	2.63	2.99	3.37
48934.2	1.69	2.55	1.91	2.70	2.07	2.83	2.23	2.96	2.49	3.16	2.63	2.99	3.37
48940.2	1.69	2.55	1.91	2.71	2.07	2.83	2.23	2.97	2.49	3.17	2.63	2.99	3.37
48946.1	1.69	2.55	1.91	2.71	2.07	2.83	2.23	2.97	2.49	3.17	2.63	2.99	3.37
48952.1	1.69	2.55	1.91	2.71	2.06	2.83	2.23	2.97	2.49	3.17	2.63	2.99	3.38
48958.0	1.69	2.55	1.91	2.71	2.06	2.83	2.23	2.97	2.49	3.17	2.63	3.00	3.38
48964.0	1.69	2.55	1.91	2.71	2.06	2.83	2.23	2.97	2.49	3.17	2.63	3.00	3.38
48969.9	1.68	2.55	1.90	2.71	2.06	2.83	2.23	2.97	2.49	3.17	2.62	2.99	3.37
48975.8	1.68	2.55	1.90	2.70	2.06	2.83	2.22	2.96	2.48	3.16	2.62	2.98	3.36
48981.7	1.68	2.55	1.90	2.70	2.05	2.83	2.22	2.96	2.48	3.16	2.61	2.98	3.35
48987.6	1.68	2.55	1.90	2.70	2.05	2.82	2.21	2.96	2.47	3.15	2.61	2.97	3.35
48993.5	1.68	2.55	1.89	2.70	2.05	2.82	2.21	2.95	2.46	3.15	2.60	2.96	3.34
48999.5	1.68	2.55	1.89	2.70	2.04	2.82	2.20	2.95	2.46	3.14	2.59	2.95	3.32
49005.4	1.68	2.55	1.89	2.69	2.04	2.81	2.20	2.94	2.45	3.13	2.58	2.94	3.31

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
49011.3	1.67	2.55	1.88	2.69	2.03	2.81	2.19	2.94	2.44	3.13	2.57	2.93	3.30
49017.2	1.67	2.55	1.88	2.69	2.03	2.80	2.19	2.93	2.44	3.12	2.57	2.92	3.29
49023.1	1.67	2.55	1.88	2.69	2.03	2.80	2.19	2.93	2.43	3.11	2.56	2.91	3.28
49029.0	1.67	2.54	1.88	2.69	2.02	2.80	2.18	2.92	2.43	3.11	2.56	2.90	3.27
49034.9	1.67	2.54	1.88	2.68	2.02	2.80	2.18	2.92	2.42	3.10	2.55	2.90	3.26
49040.8	1.67	2.54	1.87	2.68	2.02	2.79	2.18	2.92	2.42	3.10	2.55	2.89	3.25
49046.7	1.67	2.54	1.87	2.68	2.02	2.79	2.17	2.91	2.42	3.09	2.54	2.88	3.25
49052.6	1.66	2.54	1.87	2.68	2.01	2.79	2.17	2.91	2.41	3.09	2.54	2.88	3.24
49058.5	1.66	2.54	1.87	2.68	2.01	2.79	2.17	2.91	2.41	3.09	2.53	2.87	3.24
49064.5	1.66	2.54	1.87	2.68	2.01	2.79	2.16	2.91	2.40	3.08	2.53	2.87	3.23
49070.4	1.66	2.54	1.86	2.68	2.01	2.78	2.16	2.90	2.40	3.08	2.53	2.86	3.22
49076.3	1.66	2.54	1.86	2.67	2.00	2.78	2.16	2.90	2.40	3.08	2.52	2.86	3.22
49082.2	1.66	2.54	1.86	2.67	2.00	2.78	2.16	2.90	2.39	3.07	2.52	2.85	3.21
49088.1	1.66	2.54	1.86	2.67	2.00	2.78	2.15	2.90	2.39	3.07	2.51	2.85	3.20
49094.0	1.66	2.54	1.86	2.67	2.00	2.78	2.15	2.89	2.39	3.07	2.51	2.84	3.20
49094.0	1.66	2.54	1.86	2.67	2.00	2.78	2.15	2.89	2.39	3.07	2.51	2.84	3.20
49113.0	1.65	2.53	1.85	2.66	1.98	2.77	2.13	2.88	2.37	3.05	2.49	2.82	3.17
49132.0	1.65	2.53	1.84	2.66	1.97	2.76	2.12	2.87	2.35	3.03	2.46	2.79	3.13
49151.0	1.64	2.53	1.83	2.65	1.96	2.75	2.11	2.86	2.33	3.02	2.45	2.77	3.11
49170.0	1.64	2.52	1.82	2.65	1.95	2.74	2.10	2.85	2.32	3.01	2.44	2.75	3.09
49189.0	1.63	2.52	1.81	2.64	1.94	2.74	2.09	2.84	2.31	3.00	2.42	2.74	3.08
49205.0	1.47	2.40	1.61	2.47	1.72	2.54	1.84	2.62	2.02	2.73	2.12	2.40	2.69
49224.2	1.47	2.39	1.60	2.46	1.70	2.53	1.82	2.60	2.00	2.71	2.10	2.37	2.66
49243.4	1.46	2.39	1.59	2.46	1.69	2.51	1.79	2.58	1.97	2.69	2.07	2.34	2.63
49262.6	1.45	2.38	1.58	2.45	1.67	2.50	1.77	2.57	1.95	2.67	2.04	2.31	2.61
49281.8	1.45	2.38	1.56	2.44	1.65	2.49	1.75	2.55	1.92	2.65	2.01	2.28	2.57
49301.0	1.44	2.38	1.55	2.43	1.64	2.47	1.73	2.53	1.90	2.62	1.98	2.24	2.53
49301.0	1.44	2.38	1.55	2.43	1.64	2.47	1.73	2.53	1.90	2.62	1.98	2.24	2.53
49307.0	1.44	2.37	1.55	2.43	1.64	2.47	1.73	2.53	1.89	2.62	1.98	2.24	2.52
49313.0	1.44	2.37	1.55	2.43	1.63	2.47	1.73	2.53	1.89	2.62	1.98	2.23	2.51
49319.0	1.44	2.37	1.55	2.42	1.63	2.47	1.73	2.53	1.89	2.62	1.97	2.23	2.51
49325.0	1.44	2.37	1.55	2.42	1.63	2.47	1.72	2.52	1.88	2.61	1.97	2.22	2.50
49331.0	1.44	2.37	1.54	2.42	1.63	2.47	1.72	2.52	1.88	2.61	1.96	2.22	2.50
49337.0	1.44	2.37	1.54	2.42	1.63	2.47	1.72	2.52	1.87	2.61	1.96	2.22	2.49
49343.0	1.43	2.37	1.54	2.42	1.62	2.47	1.72	2.52	1.87	2.61	1.96	2.21	2.49
49349.0	1.43	2.37	1.54	2.42	1.62	2.47	1.71	2.52	1.87	2.61	1.95	2.21	2.48
49355.0	1.43	2.37	1.54	2.42	1.62	2.47	1.71	2.52	1.86	2.60	1.95	2.20	2.47
49361.0	1.43	2.37	1.54	2.42	1.62	2.46	1.71	2.52	1.86	2.60	1.94	2.20	2.46
49367.0	1.43	2.37	1.54	2.42	1.62	2.46	1.71	2.52	1.86	2.60	1.94	2.19	2.45
49373.0	1.43	2.37	1.54	2.42	1.62	2.46	1.71	2.51	1.86	2.60	1.94	2.18	2.45
49379.0	1.43	2.37	1.53	2.42	1.61	2.46	1.70	2.51	1.85	2.60	1.93	2.17	2.44
49385.0	1.43	2.37	1.53	2.42	1.61	2.46	1.70	2.51	1.85	2.60	1.93	2.17	2.44
49391.0	1.43	2.37	1.53	2.42	1.61	2.46	1.70	2.51	1.85	2.59	1.93	2.17	2.43
49397.0	1.43	2.37	1.53	2.42	1.61	2.46	1.70	2.51	1.85	2.59	1.93	2.16	2.43
49402.9	1.43	2.37	1.53	2.42	1.61	2.46	1.70	2.51	1.85	2.59	1.93	2.17	2.43
49408.8	1.43	2.37	1.53	2.42	1.61	2.46	1.70	2.51	1.85	2.60	1.93	2.17	2.43

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
49414.6	1.43	2.37	1.53	2.42	1.61	2.46	1.70	2.51	1.85	2.60	1.93	2.17	2.43
49420.5	1.43	2.37	1.53	2.42	1.61	2.46	1.70	2.52	1.85	2.60	1.93	2.17	2.43
49426.4	1.43	2.37	1.53	2.42	1.61	2.46	1.70	2.52	1.85	2.60	1.93	2.17	2.43
49432.3	1.43	2.37	1.53	2.42	1.61	2.47	1.70	2.52	1.85	2.60	1.93	2.16	2.43
49438.2	1.43	2.37	1.53	2.42	1.61	2.47	1.70	2.52	1.85	2.60	1.93	2.16	2.43
49444.1	1.43	2.37	1.53	2.42	1.61	2.47	1.70	2.52	1.84	2.60	1.92	2.16	2.43
49449.9	1.43	2.37	1.53	2.42	1.61	2.47	1.70	2.52	1.84	2.60	1.92	2.16	2.42
49455.8	1.43	2.37	1.53	2.42	1.61	2.47	1.70	2.52	1.84	2.60	1.92	2.16	2.42
49461.7	1.43	2.37	1.53	2.42	1.61	2.47	1.69	2.52	1.84	2.60	1.92	2.15	2.41
49467.6	1.43	2.37	1.53	2.42	1.61	2.46	1.69	2.52	1.84	2.60	1.92	2.15	2.41
49473.5	1.43	2.37	1.53	2.42	1.60	2.46	1.69	2.52	1.84	2.60	1.91	2.15	2.40
49479.4	1.43	2.37	1.53	2.42	1.60	2.46	1.69	2.52	1.83	2.60	1.91	2.14	2.40
49485.2	1.43	2.37	1.52	2.42	1.60	2.46	1.69	2.51	1.83	2.59	1.91	2.14	2.40
49491.1	1.43	2.37	1.52	2.42	1.60	2.46	1.69	2.51	1.83	2.59	1.91	2.14	2.39
49497.0	1.43	2.37	1.52	2.42	1.60	2.46	1.68	2.51	1.83	2.59	1.90	2.13	2.39
49502.8	1.42	2.37	1.52	2.42	1.59	2.46	1.68	2.51	1.82	2.59	1.89	2.12	2.38
49508.5	1.42	2.37	1.51	2.41	1.59	2.45	1.67	2.50	1.81	2.58	1.89	2.11	2.36
49514.3	1.42	2.37	1.51	2.41	1.58	2.45	1.66	2.50	1.80	2.57	1.88	2.10	2.35
49520.1	1.42	2.37	1.51	2.41	1.58	2.45	1.66	2.49	1.79	2.56	1.87	2.09	2.33
49525.8	1.42	2.36	1.50	2.40	1.57	2.44	1.65	2.49	1.78	2.56	1.86	2.07	2.32
49531.6	1.41	2.36	1.50	2.40	1.57	2.44	1.64	2.48	1.77	2.55	1.85	2.06	2.30
49537.4	1.41	2.36	1.50	2.40	1.56	2.43	1.64	2.47	1.77	2.54	1.84	2.05	2.29
49543.1	1.41	2.36	1.49	2.39	1.56	2.43	1.63	2.47	1.76	2.53	1.83	2.03	2.27
49548.9	1.41	2.36	1.49	2.39	1.55	2.42	1.62	2.46	1.75	2.52	1.81	2.02	2.25
49554.6	1.40	2.36	1.48	2.39	1.55	2.42	1.62	2.45	1.74	2.51	1.80	2.00	2.23
49560.4	1.40	2.35	1.48	2.38	1.54	2.41	1.61	2.45	1.73	2.50	1.79	1.99	2.22
49566.2	1.40	2.35	1.47	2.38	1.53	2.41	1.60	2.44	1.72	2.50	1.78	1.98	2.20
49571.9	1.40	2.35	1.47	2.38	1.53	2.40	1.59	2.44	1.71	2.49	1.77	1.96	2.18
49577.7	1.40	2.35	1.47	2.37	1.52	2.40	1.59	2.43	1.70	2.48	1.76	1.94	2.16
49583.5	1.39	2.35	1.46	2.37	1.52	2.39	1.58	2.42	1.69	2.47	1.75	1.93	2.14
49589.2	1.39	2.35	1.46	2.37	1.51	2.39	1.57	2.41	1.67	2.46	1.73	1.91	2.12
49595.0	1.39	2.34	1.45	2.36	1.50	2.38	1.56	2.41	1.66	2.45	1.72	1.90	2.10
49600.8	1.39	2.34	1.45	2.36	1.50	2.38	1.56	2.40	1.66	2.45	1.71	1.89	2.09
49606.6	1.39	2.34	1.45	2.36	1.50	2.38	1.55	2.40	1.65	2.44	1.71	1.88	2.08
49612.4	1.38	2.34	1.44	2.36	1.49	2.38	1.55	2.40	1.65	2.44	1.70	1.87	2.07
49618.2	1.38	2.34	1.44	2.36	1.49	2.38	1.54	2.40	1.64	2.43	1.69	1.86	2.06
49623.9	1.38	2.34	1.44	2.36	1.48	2.37	1.54	2.39	1.63	2.43	1.69	1.85	2.04
49629.7	1.38	2.34	1.44	2.35	1.48	2.37	1.53	2.39	1.63	2.43	1.68	1.84	2.03
49635.5	1.38	2.34	1.43	2.35	1.48	2.37	1.53	2.39	1.62	2.42	1.67	1.83	2.02
49641.3	1.38	2.34	1.43	2.35	1.47	2.37	1.52	2.38	1.61	2.42	1.66	1.82	2.01
49647.1	1.37	2.34	1.43	2.35	1.47	2.36	1.52	2.38	1.60	2.41	1.65	1.81	1.99
49652.9	1.37	2.34	1.42	2.35	1.46	2.36	1.51	2.38	1.60	2.41	1.64	1.80	1.98
49658.7	1.37	2.33	1.42	2.35	1.46	2.36	1.50	2.37	1.59	2.40	1.63	1.78	1.96
49664.5	1.37	2.33	1.42	2.34	1.45	2.36	1.50	2.37	1.58	2.40	1.62	1.77	1.95
49670.3	1.37	2.33	1.41	2.34	1.45	2.35	1.49	2.37	1.57	2.39	1.61	1.76	1.93
49676.1	1.37	2.33	1.41	2.34	1.44	2.35	1.49	2.36	1.56	2.39	1.60	1.74	1.92

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
49681.8	1.36	2.33	1.40	2.34	1.44	2.35	1.48	2.36	1.55	2.38	1.59	1.73	1.90
49687.6	1.36	2.33	1.40	2.34	1.43	2.34	1.47	2.35	1.54	2.37	1.58	1.72	1.88
49693.4	1.36	2.33	1.40	2.33	1.43	2.34	1.46	2.35	1.53	2.37	1.57	1.70	1.86
49699.2	1.36	2.33	1.39	2.33	1.42	2.34	1.46	2.35	1.52	2.36	1.56	1.68	1.84
49705.0	1.36	2.33	1.39	2.33	1.42	2.33	1.45	2.34	1.51	2.35	1.55	1.67	1.82
49705.0	1.36	2.33	1.39	2.33	1.42	2.33	1.45	2.34	1.51	2.35	1.55	1.67	1.82
49711.0	1.36	2.33	1.39	2.33	1.42	2.34	1.45	2.34	1.51	2.36	1.55	1.67	1.82
49717.0	1.36	2.33	1.39	2.33	1.42	2.34	1.45	2.35	1.52	2.36	1.55	1.67	1.82
49723.0	1.36	2.33	1.39	2.33	1.42	2.34	1.46	2.35	1.52	2.37	1.56	1.67	1.83
49729.0	1.36	2.33	1.39	2.34	1.42	2.34	1.46	2.35	1.52	2.37	1.56	1.68	1.83
49735.0	1.36	2.33	1.40	2.34	1.43	2.35	1.46	2.36	1.53	2.37	1.56	1.68	1.83
49741.0	1.36	2.33	1.40	2.34	1.43	2.35	1.46	2.36	1.53	2.38	1.57	1.68	1.83
49747.0	1.36	2.33	1.40	2.34	1.43	2.35	1.47	2.36	1.53	2.38	1.57	1.69	1.84
49753.0	1.36	2.33	1.40	2.34	1.43	2.35	1.47	2.37	1.54	2.39	1.57	1.69	1.84
49759.0	1.37	2.34	1.40	2.35	1.44	2.36	1.47	2.37	1.54	2.39	1.58	1.70	1.85
49765.0	1.37	2.34	1.41	2.35	1.44	2.36	1.48	2.37	1.55	2.40	1.58	1.71	1.86
49771.0	1.37	2.34	1.41	2.35	1.44	2.36	1.48	2.38	1.55	2.40	1.59	1.71	1.86
49777.0	1.37	2.34	1.41	2.35	1.45	2.37	1.49	2.38	1.56	2.41	1.60	1.72	1.87
49783.0	1.37	2.34	1.41	2.35	1.45	2.37	1.49	2.39	1.56	2.41	1.60	1.73	1.88
49789.0	1.37	2.34	1.42	2.36	1.45	2.37	1.49	2.39	1.57	2.42	1.61	1.74	1.89
49795.0	1.37	2.34	1.42	2.36	1.46	2.38	1.50	2.39	1.57	2.42	1.61	1.74	1.90
49800.7	1.37	2.34	1.42	2.36	1.45	2.37	1.49	2.39	1.57	2.42	1.61	1.73	1.89
49806.4	1.37	2.34	1.41	2.36	1.45	2.37	1.49	2.39	1.56	2.42	1.60	1.73	1.88
49812.2	1.37	2.34	1.41	2.35	1.45	2.37	1.49	2.39	1.56	2.41	1.59	1.72	1.87
49817.9	1.37	2.34	1.41	2.35	1.44	2.37	1.48	2.38	1.55	2.41	1.59	1.71	1.85
49823.6	1.37	2.34	1.41	2.35	1.44	2.36	1.48	2.38	1.54	2.40	1.58	1.70	1.84
49829.3	1.37	2.34	1.40	2.35	1.44	2.36	1.47	2.38	1.54	2.40	1.57	1.69	1.83
49835.1	1.36	2.34	1.40	2.35	1.43	2.36	1.47	2.37	1.53	2.40	1.57	1.68	1.82
49840.8	1.36	2.34	1.40	2.35	1.43	2.36	1.46	2.37	1.52	2.39	1.56	1.67	1.81
49846.5	1.36	2.33	1.40	2.35	1.43	2.36	1.46	2.37	1.52	2.39	1.55	1.66	1.79
49852.2	1.36	2.33	1.39	2.34	1.42	2.35	1.45	2.36	1.51	2.38	1.54	1.65	1.78
49857.9	1.36	2.33	1.39	2.34	1.42	2.35	1.45	2.36	1.50	2.38	1.54	1.64	1.77
49863.7	1.36	2.33	1.39	2.34	1.41	2.35	1.44	2.36	1.50	2.37	1.53	1.63	1.75
49869.4	1.36	2.33	1.39	2.34	1.41	2.35	1.44	2.35	1.49	2.37	1.52	1.62	1.74
49875.1	1.35	2.33	1.38	2.34	1.41	2.34	1.43	2.35	1.48	2.37	1.51	1.61	1.72
49880.8	1.35	2.33	1.38	2.34	1.40	2.34	1.43	2.35	1.48	2.36	1.50	1.59	1.71
49886.6	1.35	2.33	1.38	2.33	1.40	2.34	1.42	2.34	1.47	2.36	1.49	1.58	1.69
49892.3	1.35	2.33	1.37	2.33	1.39	2.34	1.42	2.34	1.46	2.35	1.49	1.57	1.68
49898.0	1.35	2.33	1.37	2.33	1.39	2.33	1.41	2.34	1.45	2.35	1.48	1.56	1.66
49904.0	1.35	2.33	1.37	2.33	1.39	2.34	1.41	2.34	1.45	2.35	1.48	1.56	1.66
49910.0	1.35	2.33	1.37	2.33	1.39	2.34	1.41	2.34	1.45	2.35	1.48	1.56	1.66
49916.0	1.35	2.33	1.37	2.33	1.39	2.34	1.41	2.34	1.45	2.35	1.48	1.56	1.66
49922.0	1.35	2.33	1.37	2.33	1.39	2.34	1.41	2.34	1.46	2.36	1.48	1.56	1.66
49928.0	1.35	2.33	1.37	2.33	1.39	2.34	1.41	2.35	1.46	2.36	1.48	1.56	1.66
49934.0	1.35	2.33	1.37	2.34	1.39	2.34	1.41	2.35	1.46	2.36	1.48	1.56	1.66
49940.0	1.35	2.33	1.37	2.34	1.39	2.34	1.41	2.35	1.46	2.36	1.48	1.56	1.66

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
49946.0	1.35	2.33	1.37	2.34	1.39	2.34	1.41	2.35	1.46	2.36	1.48	1.56	1.66
49952.0	1.35	2.33	1.37	2.34	1.39	2.34	1.41	2.35	1.46	2.36	1.48	1.56	1.66
49958.0	1.35	2.33	1.37	2.34	1.39	2.34	1.41	2.35	1.46	2.36	1.48	1.56	1.66
49964.0	1.35	2.33	1.37	2.34	1.39	2.35	1.41	2.35	1.46	2.37	1.48	1.56	1.66
49970.0	1.35	2.33	1.37	2.34	1.39	2.35	1.41	2.35	1.46	2.37	1.48	1.56	1.65
49976.0	1.35	2.33	1.37	2.34	1.39	2.35	1.41	2.35	1.45	2.37	1.48	1.55	1.65
49982.0	1.35	2.33	1.37	2.34	1.39	2.35	1.41	2.36	1.45	2.37	1.48	1.55	1.65
49988.0	1.35	2.33	1.37	2.34	1.39	2.35	1.41	2.36	1.45	2.37	1.48	1.55	1.65
49994.0	1.35	2.33	1.37	2.34	1.39	2.35	1.41	2.36	1.45	2.37	1.48	1.55	1.65
50000.0	1.35	2.33	1.37	2.34	1.39	2.35	1.41	2.36	1.45	2.37	1.48	1.55	1.65
50005.9	1.35	2.33	1.37	2.34	1.39	2.35	1.41	2.36	1.45	2.37	1.47	1.55	1.64
50011.8	1.35	2.33	1.37	2.34	1.39	2.35	1.41	2.36	1.45	2.37	1.47	1.54	1.63
50017.8	1.35	2.33	1.37	2.34	1.39	2.35	1.41	2.35	1.44	2.37	1.47	1.54	1.63
50023.7	1.35	2.33	1.37	2.34	1.38	2.35	1.41	2.35	1.44	2.37	1.46	1.53	1.62
50029.6	1.35	2.33	1.37	2.34	1.38	2.35	1.40	2.35	1.44	2.37	1.46	1.53	1.61
50035.5	1.35	2.33	1.37	2.34	1.38	2.34	1.40	2.35	1.44	2.36	1.46	1.52	1.61
50041.5	1.34	2.33	1.36	2.34	1.38	2.34	1.40	2.35	1.43	2.36	1.45	1.52	1.60
50047.4	1.34	2.33	1.36	2.34	1.38	2.34	1.40	2.35	1.43	2.36	1.45	1.51	1.59
50053.3	1.34	2.33	1.36	2.34	1.38	2.34	1.39	2.35	1.43	2.36	1.45	1.51	1.59
50059.2	1.34	2.33	1.36	2.34	1.38	2.34	1.39	2.35	1.42	2.36	1.44	1.50	1.58
50065.2	1.34	2.33	1.36	2.34	1.37	2.34	1.39	2.35	1.42	2.36	1.44	1.50	1.58
50071.1	1.34	2.33	1.36	2.34	1.37	2.34	1.39	2.35	1.42	2.36	1.43	1.49	1.57
50077.0	1.34	2.33	1.36	2.33	1.37	2.34	1.39	2.35	1.41	2.35	1.43	1.49	1.56
50082.9	1.34	2.33	1.36	2.33	1.37	2.34	1.38	2.34	1.41	2.35	1.43	1.48	1.56
50088.8	1.34	2.33	1.36	2.33	1.37	2.34	1.38	2.34	1.41	2.35	1.42	1.48	1.55
50094.8	1.34	2.33	1.35	2.33	1.37	2.34	1.38	2.34	1.41	2.35	1.42	1.47	1.54
50100.7	1.34	2.33	1.35	2.33	1.36	2.34	1.38	2.34	1.40	2.35	1.42	1.47	1.54
50106.6	1.34	2.33	1.35	2.33	1.36	2.34	1.38	2.34	1.40	2.35	1.41	1.46	1.53
50112.5	1.34	2.33	1.35	2.33	1.36	2.34	1.37	2.34	1.40	2.35	1.41	1.46	1.52
50118.5	1.34	2.33	1.35	2.33	1.36	2.34	1.37	2.34	1.39	2.35	1.41	1.45	1.51
50124.4	1.34	2.33	1.35	2.33	1.36	2.33	1.37	2.34	1.39	2.35	1.40	1.45	1.51
50130.3	1.34	2.33	1.35	2.33	1.36	2.33	1.37	2.34	1.39	2.34	1.40	1.44	1.50
50136.2	1.34	2.33	1.35	2.33	1.36	2.33	1.37	2.34	1.39	2.34	1.40	1.44	1.49
50142.2	1.34	2.33	1.35	2.33	1.35	2.33	1.36	2.34	1.38	2.34	1.39	1.43	1.49
50148.1	1.33	2.33	1.34	2.33	1.35	2.33	1.36	2.34	1.38	2.34	1.39	1.43	1.48
50154.0	1.33	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.38	2.34	1.39	1.42	1.47
50159.9	1.33	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.38	2.34	1.39	1.42	1.47
50165.8	1.33	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.37	2.34	1.38	1.42	1.47
50171.7	1.33	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.37	2.34	1.38	1.41	1.46
50177.5	1.33	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.37	2.34	1.38	1.41	1.46
50183.4	1.33	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.37	2.34	1.38	1.41	1.45
50189.3	1.33	2.33	1.34	2.33	1.35	2.33	1.35	2.33	1.37	2.34	1.38	1.41	1.45
50195.2	1.33	2.33	1.34	2.33	1.35	2.33	1.35	2.33	1.37	2.34	1.37	1.40	1.44
50201.1	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.37	2.34	1.37	1.40	1.44
50207.0	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.36	2.34	1.37	1.40	1.44
50212.8	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.37	1.40	1.43

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 1: In-channel (1D) results - maximum water level (mRL)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
50218.7	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.37	1.39	1.43
50224.6	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.37	1.39	1.42
50230.5	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.36	1.39	1.42
50236.4	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.36	1.38	1.42
50242.3	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.36	2.33	1.36	1.38	1.41
50248.2	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.36	1.38	1.41
50254.0	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.36	1.38	1.40
50259.9	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.36	1.37	1.40
50265.8	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.35	1.37	1.40
50271.7	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.35	1.37	1.39
50277.6	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.35	1.37	1.39
50283.5	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.35	2.33	1.35	1.36	1.39
50289.3	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.35	1.36	1.38
50295.2	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.35	1.36	1.38
50301.1	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.35	1.36	1.38
50307.0	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.34	1.36	1.37
50312.8	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	2.33	1.34	1.35	1.37
50318.7	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	1.35	1.37
50324.5	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	1.35	1.37
50330.4	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	1.35	1.36
50336.2	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	1.35	1.36
50342.1	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	1.35	1.36
50347.9	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	1.35	1.36
50353.8	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.34	2.33	1.34	1.35	1.36
50359.6	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.34	1.34	1.35
50365.5	1.33	2.32	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.34	1.34	1.35
50371.3	1.33	2.32	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.34	1.34	1.35
50377.2	1.33	2.32	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.33	1.34	1.35
50383.0	1.33	2.32	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.33	1.34	1.35
50388.8	1.33	2.32	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.33	1.34	1.35
50394.7	1.33	2.32	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.33	1.34	1.34
50400.5	1.33	2.32	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.33	1.34	1.34
50406.4	1.33	2.32	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.33	1.33	1.34
50412.2	1.33	2.32	1.33	2.33	1.33	2.33	1.33	2.33	1.33	2.33	1.33	1.33	1.34
50418.1	1.33	2.32	1.33	2.32	1.33	2.33	1.33	2.33	1.33	2.33	1.33	1.33	1.34
50423.9	1.33	2.32	1.33	2.32	1.33	2.33	1.33	2.33	1.33	2.33	1.33	1.33	1.33
50429.8	1.33	2.32	1.33	2.32	1.33	2.32	1.33	2.33	1.33	2.33	1.33	1.33	1.33
50435.6	1.32	2.32	1.33	2.32	1.33	2.32	1.33	2.33	1.33	2.33	1.33	1.33	1.33
50441.5	1.32	2.32	1.33	2.32	1.33	2.32	1.33	2.32	1.33	2.33	1.33	1.33	1.33
50447.3	1.32	2.32	1.32	2.32	1.33	2.32	1.33	2.32	1.33	2.32	1.33	1.33	1.33
50453.2	1.32	2.32	1.32	2.32	1.32	2.32	1.32	2.32	1.33	2.32	1.33	1.33	1.33
50459.0	1.32	2.32	1.32	2.32	1.32	2.32	1.32	2.32	1.32	2.32	1.32	1.32	1.32

Notes

1. Water levels are provided in vertical datum WVD-53. Results provided for Hutt River only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
16918.0	3.28	3.46	3.64	3.86	3.85	4.10	4.04	4.32	4.28	4.59	4.40	4.76	5.20
16921.0	3.27	3.45	3.63	3.85	3.84	4.09	4.03	4.31	4.27	4.57	4.39	4.75	5.19
16923.9	3.26	3.44	3.62	3.84	3.83	4.08	4.02	4.29	4.25	4.56	4.37	4.74	5.17
16926.9	3.25	3.43	3.60	3.83	3.82	4.07	4.01	4.28	4.24	4.55	4.36	4.72	5.16
16929.8	3.24	3.42	3.59	3.82	3.80	4.05	3.99	4.27	4.23	4.53	4.35	4.71	5.14
16932.8	3.22	3.41	3.58	3.81	3.79	4.04	3.98	4.26	4.22	4.52	4.34	4.70	5.13
16935.7	3.21	3.40	3.57	3.80	3.78	4.03	3.97	4.24	4.21	4.51	4.32	4.68	5.11
16938.7	3.20	3.39	3.56	3.78	3.77	4.02	3.96	4.23	4.19	4.50	4.31	4.67	5.10
16941.6	3.19	3.37	3.55	3.77	3.76	4.01	3.95	4.22	4.18	4.48	4.30	4.66	5.09
16944.6	3.17	3.36	3.54	3.76	3.75	4.00	3.94	4.21	4.17	4.47	4.29	4.65	5.07
16947.5	3.16	3.35	3.53	3.75	3.73	3.98	3.92	4.20	4.16	4.46	4.28	4.63	5.06
16950.5	3.14	3.34	3.51	3.74	3.72	3.97	3.91	4.18	4.15	4.45	4.26	4.62	5.05
16953.4	3.13	3.33	3.50	3.73	3.71	3.96	3.90	4.17	4.13	4.44	4.25	4.61	5.03
16956.4	3.11	3.31	3.49	3.71	3.70	3.95	3.89	4.16	4.12	4.42	4.24	4.60	5.02
16959.3	3.10	3.30	3.48	3.70	3.69	3.94	3.88	4.15	4.11	4.41	4.23	4.58	5.01
16962.3	3.08	3.29	3.46	3.69	3.67	3.92	3.86	4.14	4.10	4.40	4.22	4.57	5.00
16965.2	3.07	3.27	3.45	3.68	3.66	3.91	3.85	4.13	4.09	4.39	4.21	4.56	4.99
16968.2	3.05	3.26	3.44	3.66	3.65	3.90	3.84	4.11	4.08	4.38	4.19	4.55	4.97
16971.1	3.04	3.25	3.43	3.65	3.64	3.89	3.83	4.10	4.06	4.37	4.18	4.54	4.96
16974.1	3.02	3.23	3.41	3.64	3.63	3.88	3.82	4.09	4.05	4.35	4.17	4.53	4.95
16977.0	3.01	3.22	3.40	3.63	3.61	3.86	3.80	4.08	4.04	4.34	4.16	4.52	4.94
16980.0	2.99	3.20	3.39	3.62	3.60	3.85	3.79	4.07	4.03	4.33	4.15	4.51	4.93
16983.0	2.97	3.19	3.37	3.60	3.59	3.84	3.78	4.06	4.02	4.32	4.14	4.49	4.92
16985.9	2.96	3.17	3.36	3.59	3.58	3.83	3.77	4.04	4.01	4.31	4.12	4.48	4.91
16988.9	2.94	3.16	3.35	3.58	3.56	3.82	3.76	4.03	3.99	4.30	4.11	4.47	4.90
16991.8	2.92	3.15	3.34	3.56	3.55	3.80	3.74	4.02	3.98	4.29	4.10	4.46	4.89
16994.8	2.91	3.13	3.32	3.55	3.54	3.79	3.73	4.01	3.97	4.28	4.09	4.45	4.88
16997.7	2.89	3.12	3.31	3.54	3.53	3.78	3.72	4.00	3.96	4.26	4.08	4.44	4.86
17000.7	2.88	3.10	3.29	3.53	3.51	3.77	3.71	3.99	3.95	4.25	4.07	4.43	4.85
17003.6	2.86	3.09	3.28	3.51	3.50	3.76	3.69	3.97	3.93	4.24	4.05	4.42	4.84
17006.6	2.84	3.07	3.27	3.50	3.49	3.74	3.68	3.96	3.92	4.23	4.04	4.41	4.83
17009.5	2.83	3.06	3.25	3.49	3.47	3.73	3.67	3.95	3.91	4.22	4.03	4.40	4.83
17012.5	2.81	3.04	3.24	3.48	3.46	3.72	3.66	3.94	3.90	4.21	4.02	4.39	4.82
17015.4	2.79	3.03	3.23	3.46	3.45	3.71	3.64	3.93	3.89	4.20	4.01	4.38	4.81
17018.4	2.78	3.01	3.21	3.45	3.44	3.69	3.63	3.92	3.88	4.19	4.00	4.37	4.80
17021.3	2.76	3.00	3.20	3.44	3.42	3.68	3.62	3.90	3.86	4.18	3.99	4.35	4.79
17024.3	2.74	2.98	3.19	3.42	3.41	3.67	3.61	3.89	3.85	4.17	3.97	4.34	4.78
17027.2	2.73	2.97	3.17	3.41	3.40	3.66	3.59	3.88	3.84	4.15	3.96	4.33	4.77
17030.2	2.71	2.95	3.16	3.40	3.38	3.65	3.58	3.87	3.83	4.14	3.95	4.32	4.76
17033.1	2.69	2.94	3.14	3.38	3.37	3.63	3.57	3.86	3.82	4.13	3.94	4.31	4.74
17036.1	2.68	2.92	3.13	3.37	3.36	3.62	3.56	3.84	3.80	4.12	3.93	4.30	4.72
17039.0	2.66	2.91	3.12	3.36	3.34	3.61	3.54	3.83	3.79	4.11	3.92	4.28	4.71
17042.0	2.65	2.89	3.10	3.35	3.33	3.60	3.53	3.82	3.78	4.10	3.91	4.27	4.69
17044.9	2.66	2.90	3.11	3.36	3.34	3.61	3.54	3.83	3.79	4.11	3.92	4.28	4.70
17047.9	2.66	2.91	3.12	3.37	3.35	3.62	3.55	3.84	3.80	4.12	3.93	4.29	4.70
17050.8	2.67	2.92	3.13	3.38	3.36	3.63	3.56	3.85	3.81	4.13	3.94	4.29	4.71

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17053.8	2.68	2.93	3.14	3.39	3.37	3.64	3.58	3.86	3.82	4.13	3.94	4.30	4.71
17056.8	2.69	2.94	3.15	3.40	3.38	3.65	3.59	3.87	3.83	4.13	3.95	4.30	4.70
17059.7	2.70	2.95	3.16	3.41	3.40	3.66	3.60	3.88	3.84	4.14	3.96	4.31	4.70
17062.7	2.71	2.96	3.17	3.42	3.41	3.67	3.61	3.88	3.84	4.14	3.96	4.31	4.70
17065.6	2.72	2.97	3.18	3.43	3.42	3.68	3.62	3.89	3.85	4.14	3.97	4.31	4.70
17068.6	2.73	2.98	3.19	3.44	3.42	3.68	3.62	3.89	3.85	4.14	3.97	4.31	4.70
17071.5	2.73	2.99	3.21	3.45	3.43	3.69	3.63	3.90	3.86	4.15	3.97	4.30	4.69
17074.4	2.74	3.00	3.22	3.46	3.45	3.70	3.64	3.91	3.87	4.16	3.98	4.31	4.66
17077.4	2.75	3.01	3.23	3.47	3.46	3.72	3.65	3.92	3.88	4.17	4.00	4.32	4.69
17080.3	2.76	3.02	3.24	3.49	3.47	3.73	3.67	3.93	3.90	4.18	4.01	4.33	4.70
17083.3	2.78	3.03	3.25	3.50	3.48	3.74	3.68	3.95	3.91	4.19	4.02	4.35	4.72
17086.3	2.79	3.04	3.27	3.51	3.50	3.76	3.70	3.96	3.93	4.21	4.04	4.36	4.74
17089.2	2.80	3.05	3.28	3.53	3.51	3.77	3.71	3.98	3.94	4.22	4.05	4.37	4.74
17092.2	2.81	3.06	3.29	3.54	3.53	3.79	3.73	3.99	3.96	4.24	4.07	4.39	4.77
17095.1	2.82	3.08	3.31	3.56	3.54	3.81	3.75	4.02	3.98	4.26	4.09	4.41	4.78
17098.1	2.83	3.09	3.32	3.58	3.56	3.83	3.77	4.04	4.01	4.29	4.12	4.44	4.82
17101.0	2.84	3.10	3.33	3.60	3.58	3.85	3.79	4.07	4.03	4.32	4.14	4.47	4.84
17103.9	2.86	3.11	3.35	3.61	3.60	3.87	3.81	4.10	4.06	4.36	4.17	4.50	4.86
17106.9	2.87	3.13	3.36	3.63	3.61	3.89	3.83	4.12	4.08	4.38	4.20	4.52	4.88
17109.8	2.88	3.14	3.38	3.65	3.63	3.91	3.84	4.14	4.10	4.41	4.22	4.53	4.92
17112.8	2.89	3.15	3.39	3.66	3.65	3.93	3.86	4.15	4.11	4.43	4.24	4.56	4.92
17115.8	2.91	3.17	3.41	3.68	3.66	3.94	3.88	4.17	4.13	4.45	4.26	4.60	4.93
17118.7	2.92	3.18	3.42	3.70	3.68	3.96	3.90	4.19	4.15	4.47	4.28	4.61	4.99
17121.7	2.94	3.20	3.44	3.72	3.70	3.98	3.92	4.21	4.17	4.49	4.30	4.62	5.05
17124.6	2.95	3.21	3.46	3.74	3.72	4.00	3.94	4.23	4.19	4.51	4.32	4.67	5.07
17127.6	2.97	3.23	3.47	3.75	3.74	4.02	3.96	4.26	4.22	4.53	4.34	4.72	5.09
17130.5	2.98	3.25	3.49	3.77	3.76	4.04	3.98	4.28	4.24	4.55	4.36	4.73	5.14
17133.4	3.00	3.27	3.51	3.79	3.78	4.07	4.00	4.30	4.26	4.58	4.39	4.76	5.16
17136.4	3.01	3.28	3.53	3.82	3.80	4.09	4.02	4.32	4.28	4.60	4.41	4.78	5.19
17139.3	3.03	3.30	3.55	3.84	3.82	4.11	4.04	4.35	4.31	4.63	4.43	4.80	5.21
17142.3	3.05	3.32	3.57	3.86	3.84	4.13	4.07	4.37	4.33	4.65	4.46	4.83	5.24
17145.3	3.06	3.34	3.59	3.88	3.86	4.16	4.09	4.40	4.36	4.68	4.49	4.86	5.26
17148.2	3.08	3.36	3.61	3.90	3.89	4.18	4.12	4.42	4.38	4.71	4.51	4.88	5.29
17151.2	3.10	3.38	3.63	3.93	3.91	4.21	4.14	4.45	4.41	4.73	4.54	4.91	5.32
17154.1	3.12	3.40	3.66	3.95	3.93	4.24	4.17	4.48	4.44	4.76	4.57	4.94	5.35
17157.1	3.14	3.43	3.68	3.98	3.96	4.26	4.19	4.51	4.47	4.79	4.60	4.97	5.38
17160.0	3.16	3.45	3.70	4.00	3.99	4.29	4.22	4.54	4.50	4.82	4.63	5.00	5.41
17162.9	3.16	3.45	3.70	4.00	3.98	4.29	4.22	4.54	4.49	4.82	4.62	5.00	5.41
17165.9	3.16	3.44	3.70	4.00	3.98	4.29	4.21	4.53	4.49	4.82	4.62	5.00	5.41
17168.8	3.15	3.44	3.69	3.99	3.98	4.28	4.21	4.53	4.49	4.82	4.62	5.00	5.41
17171.8	3.15	3.44	3.69	3.99	3.97	4.28	4.21	4.53	4.48	4.81	4.62	5.00	5.41
17174.8	3.15	3.44	3.69	3.99	3.97	4.28	4.20	4.52	4.48	4.81	4.61	4.99	5.41
17177.7	3.15	3.43	3.69	3.99	3.97	4.27	4.20	4.52	4.48	4.81	4.61	4.99	5.41
17180.7	3.15	3.43	3.68	3.98	3.96	4.27	4.20	4.52	4.47	4.81	4.61	4.99	5.41
17183.6	3.15	3.43	3.68	3.98	3.96	4.27	4.20	4.52	4.47	4.81	4.61	4.99	5.41
17186.6	3.15	3.43	3.68	3.98	3.96	4.26	4.19	4.51	4.47	4.80	4.60	4.99	5.41

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17189.5	3.15	3.43	3.68	3.97	3.96	4.26	4.19	4.51	4.47	4.80	4.60	4.99	5.41
17192.4	3.15	3.43	3.68	3.97	3.95	4.26	4.19	4.51	4.46	4.80	4.60	4.99	5.41
17195.4	3.15	3.43	3.67	3.97	3.95	4.26	4.19	4.51	4.46	4.80	4.60	4.98	5.41
17198.3	3.15	3.42	3.67	3.97	3.95	4.25	4.18	4.50	4.46	4.80	4.59	4.98	5.41
17201.3	3.15	3.42	3.67	3.97	3.95	4.25	4.18	4.50	4.46	4.80	4.59	4.98	5.41
17204.3	3.15	3.42	3.67	3.97	3.95	4.25	4.18	4.50	4.46	4.79	4.59	4.98	5.40
17207.2	3.15	3.42	3.67	3.96	3.95	4.25	4.18	4.50	4.45	4.79	4.59	4.98	5.40
17210.2	3.15	3.42	3.67	3.96	3.94	4.25	4.18	4.50	4.45	4.79	4.59	4.98	5.41
17213.1	3.15	3.42	3.67	3.96	3.94	4.24	4.18	4.50	4.45	4.79	4.59	4.98	5.41
17216.1	3.16	3.43	3.67	3.96	3.94	4.24	4.18	4.50	4.45	4.79	4.59	4.98	5.41
17219.0	3.16	3.43	3.67	3.96	3.94	4.24	4.17	4.49	4.45	4.79	4.58	4.98	5.42
17221.9	3.16	3.43	3.67	3.96	3.94	4.24	4.17	4.49	4.45	4.79	4.58	4.98	5.42
17224.9	3.17	3.43	3.67	3.96	3.94	4.24	4.17	4.49	4.45	4.79	4.58	4.98	5.42
17227.8	3.17	3.43	3.67	3.96	3.94	4.24	4.17	4.49	4.45	4.79	4.58	4.98	5.43
17230.8	3.17	3.44	3.67	3.96	3.94	4.24	4.17	4.49	4.45	4.79	4.58	4.97	5.41
17233.8	3.18	3.44	3.67	3.96	3.94	4.24	4.17	4.49	4.44	4.78	4.58	4.97	5.39
17236.7	3.19	3.44	3.68	3.96	3.94	4.24	4.17	4.49	4.44	4.78	4.57	4.96	5.38
17239.7	3.19	3.45	3.68	3.96	3.94	4.24	4.17	4.49	4.44	4.77	4.57	4.95	5.37
17242.6	3.20	3.45	3.68	3.96	3.94	4.24	4.17	4.48	4.44	4.77	4.57	4.94	5.36
17245.6	3.21	3.46	3.69	3.96	3.95	4.23	4.17	4.48	4.44	4.76	4.57	4.94	5.35
17248.5	3.22	3.46	3.69	3.97	3.95	4.23	4.17	4.48	4.44	4.76	4.57	4.94	5.34
17251.4	3.23	3.47	3.69	3.97	3.95	4.24	4.17	4.48	4.44	4.76	4.57	4.94	5.34
17254.4	3.24	3.48	3.70	3.97	3.95	4.24	4.18	4.48	4.44	4.76	4.57	4.94	5.35
17257.3	3.25	3.49	3.70	3.97	3.96	4.24	4.18	4.48	4.44	4.77	4.57	4.94	5.35
17260.3	3.27	3.50	3.71	3.98	3.96	4.24	4.18	4.49	4.45	4.77	4.58	4.94	5.35
17263.3	3.28	3.51	3.72	3.98	3.97	4.25	4.18	4.49	4.45	4.77	4.58	4.95	5.36
17266.2	3.30	3.52	3.73	3.99	3.97	4.25	4.19	4.50	4.45	4.78	4.58	4.95	5.36
17269.2	3.32	3.53	3.73	3.99	3.98	4.25	4.19	4.50	4.46	4.78	4.59	4.95	5.37
17272.1	3.34	3.54	3.74	4.00	3.98	4.25	4.20	4.50	4.46	4.78	4.59	4.96	5.37
17275.1	3.37	3.56	3.76	4.01	3.99	4.26	4.20	4.51	4.46	4.79	4.60	4.96	5.38
17278.0	3.39	3.58	3.77	4.01	4.00	4.26	4.20	4.51	4.47	4.79	4.60	4.97	5.38
17281.0	3.35	3.54	3.73	3.98	3.96	4.23	4.17	4.47	4.43	4.75	4.56	4.93	5.34
17283.9	3.32	3.51	3.69	3.94	3.92	4.19	4.13	4.44	4.39	4.72	4.52	4.89	5.30
17286.9	3.28	3.47	3.66	3.90	3.89	4.15	4.10	4.40	4.36	4.68	4.49	4.86	5.27
17289.9	3.25	3.44	3.62	3.87	3.85	4.12	4.06	4.37	4.32	4.65	4.46	4.83	5.25
17292.9	3.21	3.40	3.59	3.83	3.82	4.08	4.03	4.33	4.29	4.63	4.42	4.81	5.23
17295.8	3.17	3.36	3.55	3.80	3.78	4.05	3.99	4.30	4.25	4.59	4.39	4.78	5.21
17298.8	3.13	3.33	3.52	3.76	3.75	4.01	3.96	4.26	4.22	4.56	4.36	4.76	5.18
17301.8	3.10	3.29	3.48	3.73	3.71	3.98	3.92	4.23	4.19	4.53	4.32	4.73	5.16
17304.8	3.06	3.25	3.45	3.70	3.68	3.95	3.89	4.20	4.15	4.50	4.29	4.70	5.13
17307.7	3.02	3.22	3.41	3.66	3.65	3.91	3.86	4.17	4.12	4.47	4.26	4.66	5.11
17310.7	2.98	3.18	3.38	3.63	3.61	3.88	3.82	4.13	4.09	4.44	4.23	4.63	5.08
17313.7	2.95	3.15	3.34	3.59	3.58	3.85	3.79	4.10	4.06	4.41	4.20	4.60	5.06
17316.7	2.91	3.11	3.31	3.56	3.54	3.82	3.76	4.07	4.03	4.38	4.16	4.57	5.04
17319.6	2.87	3.08	3.27	3.53	3.51	3.78	3.73	4.04	3.99	4.34	4.13	4.54	5.01
17322.6	2.83	3.04	3.24	3.50	3.48	3.75	3.69	4.01	3.96	4.31	4.10	4.51	4.99

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17325.6	2.80	3.01	3.21	3.46	3.45	3.72	3.66	3.98	3.93	4.29	4.07	4.49	4.96
17328.6	2.76	2.97	3.17	3.43	3.41	3.69	3.63	3.95	3.90	4.26	4.04	4.46	4.94
17331.5	2.73	2.94	3.14	3.40	3.38	3.66	3.60	3.92	3.87	4.23	4.01	4.43	4.91
17334.5	2.69	2.90	3.11	3.37	3.35	3.63	3.57	3.89	3.84	4.20	3.98	4.40	4.88
17337.5	2.66	2.87	3.07	3.33	3.32	3.60	3.54	3.86	3.81	4.17	3.95	4.37	4.86
17340.4	2.62	2.84	3.04	3.30	3.29	3.57	3.51	3.83	3.78	4.14	3.92	4.34	4.83
17343.4	2.59	2.80	3.01	3.27	3.26	3.54	3.48	3.80	3.75	4.11	3.89	4.31	4.80
17346.4	2.56	2.77	2.98	3.24	3.23	3.51	3.45	3.77	3.72	4.08	3.86	4.29	4.78
17349.4	2.52	2.74	2.95	3.21	3.20	3.48	3.42	3.74	3.69	4.05	3.84	4.26	4.75
17352.3	2.49	2.71	2.92	3.18	3.16	3.45	3.39	3.71	3.66	4.03	3.81	4.23	4.72
17355.3	2.46	2.68	2.89	3.15	3.14	3.42	3.36	3.68	3.64	4.00	3.78	4.20	4.70
17358.3	2.43	2.65	2.86	3.12	3.11	3.39	3.33	3.65	3.61	3.97	3.75	4.18	4.67
17361.3	2.40	2.62	2.83	3.09	3.08	3.36	3.30	3.63	3.58	3.94	3.72	4.15	4.65
17364.2	2.37	2.59	2.80	3.07	3.05	3.33	3.27	3.60	3.55	3.92	3.70	4.12	4.62
17367.2	2.34	2.56	2.77	3.04	3.02	3.30	3.24	3.57	3.52	3.89	3.67	4.10	4.60
17370.2	2.31	2.53	2.74	3.01	2.99	3.28	3.22	3.54	3.50	3.86	3.64	4.07	4.57
17373.2	2.29	2.50	2.71	2.98	2.96	3.25	3.19	3.52	3.47	3.83	3.61	4.04	4.55
17376.1	2.26	2.48	2.69	2.95	2.94	3.22	3.16	3.49	3.44	3.81	3.59	4.02	4.52
17379.1	2.23	2.45	2.66	2.93	2.91	3.20	3.14	3.46	3.42	3.78	3.56	3.99	4.50
17382.1	2.21	2.42	2.63	2.90	2.88	3.17	3.11	3.44	3.39	3.76	3.53	3.97	4.47
17385.1	2.18	2.40	2.61	2.88	2.86	3.14	3.08	3.41	3.36	3.73	3.51	3.94	4.45
17388.0	2.15	2.37	2.58	2.85	2.83	3.12	3.06	3.38	3.34	3.70	3.48	3.91	4.42
17391.0	2.13	2.35	2.56	2.82	2.81	3.09	3.03	3.36	3.31	3.68	3.45	3.89	4.39
17393.8	2.12	2.34	2.56	2.83	2.81	3.09	3.03	3.36	3.31	3.68	3.46	3.89	4.39
17396.6	2.12	2.34	2.56	2.83	2.81	3.10	3.04	3.36	3.32	3.69	3.46	3.90	4.40
17399.4	2.13	2.35	2.57	2.84	2.82	3.11	3.05	3.38	3.33	3.69	3.47	3.90	4.40
17402.2	2.13	2.36	2.58	2.85	2.84	3.12	3.06	3.39	3.34	3.71	3.49	3.92	4.41
17405.0	2.15	2.38	2.60	2.87	2.85	3.14	3.08	3.40	3.36	3.72	3.50	3.93	4.43
17407.8	2.18	2.40	2.62	2.89	2.87	3.15	3.09	3.42	3.37	3.74	3.52	3.94	4.44
17410.6	2.20	2.42	2.64	2.91	2.89	3.17	3.11	3.43	3.39	3.75	3.53	3.95	4.44
17413.4	2.22	2.45	2.66	2.93	2.91	3.19	3.13	3.45	3.40	3.76	3.54	3.96	4.44
17416.2	2.25	2.47	2.68	2.94	2.92	3.20	3.14	3.46	3.42	3.78	3.56	3.98	4.47
17419.0	2.28	2.49	2.70	2.96	2.94	3.21	3.16	3.48	3.43	3.79	3.57	4.00	4.50
17421.8	2.25	2.45	2.65	2.90	2.89	3.15	3.10	3.41	3.36	3.72	3.50	3.92	4.41
17424.7	2.21	2.42	2.61	2.85	2.84	3.10	3.04	3.35	3.30	3.65	3.44	3.85	4.32
17427.5	2.18	2.38	2.57	2.81	2.79	3.04	2.99	3.29	3.24	3.58	3.38	3.77	4.25
17430.4	2.16	2.35	2.53	2.76	2.75	2.99	2.94	3.23	3.19	3.52	3.32	3.70	4.16
17433.2	2.13	2.32	2.50	2.72	2.71	2.95	2.90	3.18	3.14	3.46	3.26	3.64	4.09
17436.1	2.11	2.29	2.47	2.69	2.67	2.90	2.86	3.13	3.09	3.40	3.21	3.58	4.01
17438.9	2.09	2.27	2.44	2.65	2.64	2.86	2.82	3.08	3.04	3.34	3.16	3.52	3.94
17441.8	2.07	2.24	2.41	2.62	2.60	2.82	2.78	3.03	3.00	3.29	3.11	3.46	3.88
17444.6	2.05	2.22	2.38	2.59	2.57	2.78	2.74	2.99	2.96	3.24	3.07	3.41	3.82
17447.4	2.03	2.20	2.36	2.56	2.54	2.75	2.71	2.95	2.92	3.20	3.03	3.36	3.76
17450.3	2.02	2.18	2.33	2.53	2.52	2.71	2.68	2.91	2.88	3.16	2.99	3.31	3.70
17453.1	2.00	2.16	2.31	2.50	2.49	2.68	2.65	2.88	2.84	3.11	2.95	3.27	3.64
17456.0	1.99	2.15	2.29	2.48	2.47	2.65	2.62	2.85	2.81	3.08	2.92	3.23	3.59

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17458.8	1.98	2.13	2.28	2.45	2.44	2.63	2.59	2.81	2.78	3.04	2.88	3.19	3.54
17461.7	1.97	2.12	2.26	2.43	2.42	2.60	2.57	2.78	2.75	3.00	2.85	3.15	3.50
17464.5	1.96	2.11	2.24	2.41	2.40	2.58	2.54	2.75	2.72	2.97	2.82	3.11	3.45
17467.3	1.95	2.10	2.23	2.40	2.39	2.55	2.52	2.73	2.70	2.94	2.79	3.08	3.41
17470.2	1.95	2.09	2.22	2.38	2.37	2.53	2.50	2.70	2.67	2.91	2.77	3.04	3.37
17473.0	1.94	2.08	2.21	2.36	2.35	2.51	2.49	2.68	2.65	2.88	2.74	3.01	3.33
17475.9	1.94	2.07	2.19	2.35	2.34	2.49	2.47	2.66	2.63	2.85	2.72	2.98	3.30
17478.7	1.94	2.07	2.19	2.34	2.33	2.48	2.45	2.64	2.61	2.83	2.70	2.95	3.26
17481.6	1.94	2.06	2.18	2.33	2.32	2.46	2.44	2.62	2.59	2.81	2.68	2.93	3.23
17484.4	1.94	2.06	2.17	2.32	2.31	2.45	2.42	2.60	2.57	2.78	2.66	2.90	3.20
17487.3	1.94	2.06	2.17	2.31	2.30	2.44	2.41	2.58	2.56	2.76	2.64	2.88	3.17
17490.1	1.95	2.06	2.16	2.30	2.29	2.43	2.40	2.57	2.54	2.74	2.62	2.86	3.14
17492.9	1.96	2.06	2.16	2.29	2.28	2.42	2.39	2.55	2.53	2.72	2.61	2.84	3.11
17495.8	1.96	2.06	2.16	2.29	2.28	2.41	2.38	2.54	2.52	2.71	2.59	2.82	3.08
17498.6	1.97	2.07	2.16	2.28	2.27	2.40	2.38	2.53	2.51	2.69	2.58	2.80	3.06
17501.5	1.99	2.07	2.16	2.28	2.27	2.39	2.37	2.52	2.50	2.68	2.57	2.78	3.04
17504.3	2.00	2.08	2.16	2.27	2.27	2.39	2.36	2.51	2.49	2.66	2.56	2.76	3.01
17507.2	2.02	2.09	2.17	2.27	2.27	2.39	2.36	2.50	2.48	2.65	2.55	2.75	2.99
17510.0	2.03	2.10	2.17	2.27	2.27	2.39	2.36	2.49	2.47	2.64	2.54	2.73	2.97
17512.9	2.03	2.10	2.17	2.27	2.27	2.39	2.36	2.49	2.47	2.64	2.54	2.73	2.97
17515.8	2.03	2.09	2.17	2.27	2.26	2.39	2.35	2.49	2.47	2.64	2.54	2.73	2.97
17518.8	2.02	2.09	2.17	2.27	2.26	2.39	2.35	2.49	2.47	2.64	2.54	2.73	2.97
17521.7	2.02	2.09	2.16	2.27	2.26	2.39	2.35	2.49	2.47	2.64	2.54	2.74	2.97
17524.6	2.02	2.09	2.16	2.27	2.26	2.39	2.35	2.49	2.47	2.64	2.54	2.74	2.97
17527.6	2.01	2.08	2.16	2.26	2.26	2.38	2.35	2.49	2.47	2.64	2.54	2.74	2.97
17530.5	2.01	2.08	2.16	2.26	2.26	2.38	2.35	2.49	2.47	2.64	2.54	2.74	2.97
17533.4	2.01	2.08	2.15	2.26	2.25	2.38	2.35	2.49	2.47	2.64	2.54	2.74	2.97
17536.3	2.01	2.08	2.15	2.26	2.25	2.38	2.35	2.49	2.47	2.64	2.54	2.74	2.97
17539.3	2.00	2.07	2.15	2.26	2.25	2.38	2.35	2.49	2.47	2.64	2.54	2.74	2.97
17542.2	2.00	2.07	2.15	2.26	2.25	2.38	2.34	2.49	2.47	2.64	2.53	2.74	2.97
17545.1	2.00	2.07	2.15	2.25	2.25	2.38	2.34	2.49	2.47	2.64	2.53	2.74	2.97
17548.0	1.99	2.06	2.14	2.25	2.25	2.38	2.34	2.49	2.46	2.64	2.53	2.73	2.97
17550.9	1.99	2.06	2.14	2.25	2.24	2.38	2.34	2.49	2.46	2.64	2.53	2.73	2.97
17553.9	1.99	2.06	2.14	2.25	2.24	2.38	2.34	2.49	2.46	2.64	2.53	2.73	2.97
17556.8	1.98	2.06	2.14	2.25	2.24	2.38	2.34	2.49	2.46	2.64	2.53	2.73	2.97
17559.7	1.98	2.05	2.14	2.25	2.24	2.38	2.34	2.49	2.46	2.64	2.53	2.73	2.97
17562.7	1.98	2.05	2.13	2.25	2.24	2.38	2.34	2.48	2.46	2.64	2.53	2.73	2.97
17565.6	1.97	2.05	2.13	2.25	2.24	2.38	2.34	2.48	2.46	2.64	2.53	2.73	2.97
17568.5	1.97	2.05	2.13	2.24	2.24	2.37	2.34	2.48	2.46	2.64	2.53	2.73	2.96
17571.4	1.97	2.04	2.13	2.24	2.23	2.37	2.34	2.48	2.46	2.63	2.53	2.73	2.96
17574.3	1.96	2.04	2.12	2.24	2.23	2.37	2.33	2.48	2.46	2.63	2.53	2.73	2.96
17577.3	1.96	2.04	2.12	2.24	2.23	2.37	2.33	2.48	2.46	2.63	2.53	2.73	2.96
17580.2	1.96	2.04	2.12	2.24	2.23	2.37	2.33	2.48	2.46	2.63	2.53	2.73	2.96
17583.1	1.96	2.03	2.12	2.24	2.23	2.37	2.33	2.48	2.46	2.63	2.53	2.73	2.96
17586.1	1.95	2.03	2.12	2.24	2.23	2.37	2.33	2.48	2.46	2.63	2.53	2.72	2.96
17589.0	1.95	2.03	2.11	2.23	2.23	2.37	2.33	2.48	2.46	2.63	2.53	2.72	2.95

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17591.9	1.95	2.03	2.11	2.23	2.23	2.37	2.33	2.48	2.46	2.63	2.53	2.72	2.95
17594.8	1.94	2.02	2.11	2.23	2.22	2.37	2.33	2.48	2.46	2.62	2.52	2.72	2.95
17597.8	1.94	2.02	2.11	2.23	2.22	2.37	2.33	2.48	2.46	2.62	2.52	2.72	2.94
17600.7	1.94	2.02	2.11	2.23	2.22	2.36	2.32	2.47	2.45	2.62	2.52	2.71	2.94
17603.6	1.93	2.02	2.10	2.22	2.22	2.36	2.32	2.46	2.44	2.61	2.51	2.70	2.92
17606.5	1.93	2.01	2.10	2.22	2.21	2.35	2.31	2.46	2.44	2.60	2.50	2.69	2.91
17609.4	1.93	2.01	2.10	2.21	2.21	2.34	2.30	2.45	2.43	2.59	2.49	2.68	2.89
17612.4	1.92	2.01	2.10	2.21	2.20	2.34	2.30	2.44	2.42	2.58	2.49	2.68	2.88
17615.3	1.92	2.01	2.09	2.21	2.20	2.34	2.30	2.44	2.42	2.58	2.48	2.67	2.87
17618.2	1.92	2.00	2.09	2.21	2.20	2.33	2.30	2.44	2.42	2.58	2.48	2.66	2.87
17621.2	1.91	2.00	2.09	2.20	2.19	2.33	2.29	2.43	2.41	2.57	2.48	2.65	2.86
17624.1	1.91	2.00	2.08	2.20	2.19	2.32	2.29	2.43	2.41	2.56	2.47	2.65	2.85
17627.0	1.91	1.99	2.08	2.19	2.19	2.32	2.28	2.42	2.40	2.55	2.46	2.64	2.85
17629.9	1.90	1.99	2.08	2.20	2.19	2.32	2.29	2.43	2.41	2.55	2.47	2.65	2.85
17632.8	1.90	1.99	2.08	2.20	2.19	2.33	2.29	2.43	2.41	2.56	2.47	2.65	2.86
17635.6	1.90	1.99	2.08	2.20	2.19	2.33	2.30	2.43	2.41	2.56	2.47	2.65	2.86
17638.5	1.89	1.99	2.09	2.21	2.20	2.34	2.30	2.44	2.42	2.57	2.48	2.66	2.87
17641.4	1.89	1.99	2.09	2.21	2.21	2.35	2.31	2.45	2.43	2.58	2.49	2.67	2.88
17644.3	1.89	1.99	2.09	2.22	2.21	2.36	2.32	2.46	2.44	2.59	2.50	2.67	2.88
17647.2	1.89	1.99	2.10	2.23	2.22	2.36	2.33	2.47	2.45	2.59	2.51	2.68	2.88
17650.0	1.89	2.00	2.10	2.23	2.23	2.37	2.33	2.48	2.46	2.61	2.52	2.69	2.89
17652.9	1.89	2.00	2.11	2.24	2.24	2.38	2.34	2.49	2.47	2.62	2.53	2.70	2.89
17655.8	1.89	2.00	2.12	2.25	2.24	2.40	2.36	2.50	2.48	2.63	2.54	2.72	2.91
17658.7	1.89	2.01	2.12	2.26	2.25	2.41	2.37	2.52	2.50	2.65	2.56	2.73	2.94
17661.6	1.89	2.01	2.13	2.27	2.26	2.42	2.38	2.53	2.51	2.67	2.58	2.75	2.95
17664.5	1.90	2.02	2.14	2.28	2.28	2.44	2.39	2.55	2.53	2.68	2.59	2.77	2.97
17667.3	1.90	2.03	2.15	2.30	2.29	2.45	2.41	2.57	2.55	2.70	2.61	2.79	2.99
17670.2	1.90	2.03	2.16	2.31	2.30	2.47	2.42	2.59	2.56	2.72	2.63	2.81	3.01
17673.1	1.91	2.04	2.17	2.32	2.31	2.48	2.44	2.60	2.58	2.75	2.65	2.83	3.04
17676.0	1.92	2.05	2.18	2.34	2.33	2.50	2.46	2.63	2.60	2.77	2.67	2.86	3.06
17678.9	1.92	2.06	2.19	2.35	2.34	2.52	2.47	2.65	2.62	2.79	2.69	2.88	3.09
17681.7	1.93	2.07	2.21	2.37	2.36	2.54	2.49	2.67	2.64	2.82	2.71	2.91	3.12
17684.6	1.94	2.08	2.22	2.39	2.38	2.56	2.51	2.69	2.67	2.84	2.74	2.94	3.16
17687.5	1.95	2.10	2.24	2.41	2.40	2.58	2.54	2.72	2.69	2.87	2.76	2.97	3.19
17690.4	1.96	2.11	2.25	2.43	2.42	2.61	2.56	2.74	2.72	2.90	2.79	3.00	3.22
17693.3	1.97	2.12	2.27	2.45	2.44	2.63	2.58	2.77	2.74	2.93	2.82	3.03	3.26
17696.1	1.98	2.14	2.29	2.47	2.46	2.66	2.61	2.80	2.77	2.96	2.85	3.07	3.30
17699.0	2.00	2.16	2.31	2.50	2.48	2.69	2.63	2.83	2.80	3.00	2.88	3.10	3.34
17701.9	2.01	2.17	2.33	2.52	2.51	2.72	2.66	2.86	2.83	3.03	2.92	3.14	3.38
17704.8	2.02	2.19	2.35	2.55	2.54	2.75	2.69	2.90	2.87	3.07	2.95	3.18	3.43
17707.7	2.04	2.21	2.38	2.57	2.56	2.78	2.72	2.94	2.91	3.12	2.99	3.23	3.48
17710.5	2.06	2.24	2.40	2.61	2.59	2.82	2.75	2.98	2.95	3.16	3.03	3.28	3.53
17713.4	2.08	2.26	2.43	2.64	2.62	2.85	2.79	3.01	2.98	3.21	3.07	3.33	3.58
17716.3	2.10	2.28	2.46	2.67	2.66	2.89	2.83	3.06	3.03	3.26	3.12	3.38	3.64
17719.2	2.12	2.31	2.49	2.71	2.69	2.93	2.86	3.10	3.07	3.31	3.16	3.44	3.70
17722.1	2.15	2.34	2.52	2.74	2.73	2.97	2.91	3.15	3.12	3.36	3.21	3.50	3.77

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17725.0	2.17	2.37	2.56	2.78	2.77	3.02	2.95	3.20	3.16	3.41	3.26	3.55	3.84
17727.8	2.20	2.40	2.60	2.83	2.81	3.07	3.00	3.25	3.22	3.47	3.32	3.62	3.92
17730.7	2.23	2.44	2.64	2.87	2.86	3.12	3.05	3.31	3.27	3.53	3.38	3.68	3.99
17733.6	2.26	2.48	2.68	2.92	2.91	3.17	3.10	3.37	3.33	3.60	3.44	3.75	4.07
17736.5	2.29	2.52	2.72	2.97	2.96	3.23	3.16	3.43	3.39	3.67	3.50	3.82	4.16
17739.4	2.33	2.56	2.77	3.03	3.01	3.30	3.22	3.50	3.46	3.74	3.57	3.90	4.25
17742.2	2.37	2.61	2.83	3.09	3.07	3.36	3.28	3.57	3.53	3.82	3.65	3.99	4.34
17745.1	2.42	2.66	2.88	3.15	3.13	3.43	3.35	3.65	3.61	3.91	3.73	4.08	4.44
17748.0	2.46	2.71	2.94	3.22	3.20	3.51	3.43	3.73	3.69	4.00	3.81	4.17	4.55
17750.9	2.46	2.71	2.94	3.22	3.20	3.51	3.43	3.73	3.69	4.00	3.81	4.17	4.54
17753.9	2.47	2.71	2.94	3.22	3.20	3.51	3.43	3.73	3.69	4.00	3.81	4.17	4.54
17756.8	2.47	2.71	2.94	3.22	3.21	3.51	3.43	3.73	3.69	4.00	3.81	4.17	4.54
17759.8	2.47	2.71	2.94	3.22	3.21	3.52	3.43	3.74	3.69	4.00	3.82	4.17	4.55
17762.8	2.47	2.71	2.94	3.23	3.21	3.52	3.43	3.74	3.70	4.00	3.82	4.18	4.57
17765.7	2.48	2.71	2.94	3.23	3.21	3.52	3.44	3.75	3.71	4.03	3.84	4.21	4.62
17768.7	2.48	2.72	2.95	3.23	3.21	3.53	3.44	3.76	3.72	4.05	3.85	4.24	4.67
17771.6	2.48	2.72	2.95	3.23	3.21	3.53	3.45	3.77	3.72	4.06	3.86	4.25	4.68
17774.6	2.48	2.72	2.95	3.23	3.22	3.53	3.45	3.77	3.72	4.06	3.86	4.25	4.68
17777.5	2.49	2.72	2.95	3.24	3.22	3.54	3.45	3.77	3.73	4.06	3.86	4.25	4.68
17780.4	2.49	2.73	2.96	3.24	3.22	3.54	3.45	3.77	3.73	4.06	3.86	4.25	4.68
17783.4	2.49	2.73	2.96	3.24	3.22	3.54	3.45	3.77	3.73	4.06	3.86	4.25	4.68
17786.3	2.49	2.73	2.96	3.24	3.22	3.54	3.45	3.77	3.73	4.06	3.86	4.25	4.68
17789.3	2.50	2.73	2.96	3.24	3.23	3.54	3.46	3.77	3.73	4.06	3.86	4.25	4.67
17792.3	2.50	2.74	2.96	3.24	3.23	3.54	3.45	3.77	3.73	4.06	3.86	4.25	4.67
17795.2	2.50	2.74	2.97	3.24	3.23	3.54	3.45	3.76	3.72	4.05	3.85	4.24	4.67
17798.2	2.50	2.74	2.97	3.24	3.23	3.53	3.45	3.76	3.72	4.05	3.85	4.24	4.66
17801.1	2.51	2.74	2.96	3.24	3.22	3.52	3.44	3.75	3.71	4.04	3.84	4.23	4.65
17804.1	2.51	2.74	2.96	3.23	3.21	3.51	3.43	3.74	3.70	4.03	3.83	4.22	4.64
17807.0	2.51	2.74	2.96	3.23	3.21	3.51	3.43	3.73	3.69	4.02	3.82	4.21	4.64
17809.9	2.51	2.74	2.96	3.23	3.21	3.51	3.43	3.73	3.69	4.02	3.82	4.21	4.63
17812.9	2.51	2.74	2.96	3.22	3.21	3.50	3.42	3.73	3.68	4.01	3.81	4.20	4.62
17815.8	2.52	2.74	2.96	3.22	3.20	3.50	3.42	3.72	3.68	4.00	3.81	4.19	4.62
17818.8	2.52	2.74	2.96	3.22	3.20	3.49	3.41	3.71	3.67	4.00	3.80	4.19	4.61
17821.8	2.52	2.74	2.96	3.21	3.20	3.49	3.41	3.71	3.67	3.99	3.80	4.18	4.61
17824.7	2.52	2.74	2.95	3.21	3.19	3.48	3.40	3.70	3.66	3.99	3.79	4.17	4.60
17827.7	2.52	2.74	2.95	3.20	3.19	3.48	3.40	3.70	3.65	3.98	3.78	4.17	4.60
17830.6	2.53	2.74	2.95	3.20	3.18	3.47	3.39	3.69	3.65	3.97	3.78	4.16	4.59
17833.6	2.53	2.74	2.95	3.20	3.18	3.47	3.39	3.69	3.65	3.97	3.77	4.16	4.58
17836.5	2.53	2.74	2.95	3.20	3.18	3.47	3.39	3.69	3.64	3.97	3.77	4.15	4.57
17839.4	2.53	2.75	2.95	3.20	3.18	3.47	3.39	3.68	3.64	3.96	3.77	4.15	4.57
17842.4	2.54	2.75	2.95	3.20	3.18	3.47	3.39	3.68	3.64	3.96	3.77	4.15	4.56
17845.3	2.54	2.75	2.95	3.20	3.18	3.47	3.39	3.68	3.64	3.96	3.77	4.14	4.56
17848.3	2.54	2.75	2.95	3.20	3.18	3.47	3.39	3.68	3.64	3.96	3.76	4.14	4.56
17851.3	2.55	2.75	2.95	3.20	3.18	3.46	3.39	3.68	3.64	3.96	3.76	4.14	4.55
17854.2	2.55	2.75	2.95	3.19	3.18	3.46	3.38	3.68	3.63	3.95	3.76	4.14	4.55
17857.2	2.55	2.75	2.94	3.19	3.17	3.46	3.38	3.67	3.63	3.95	3.76	4.13	4.54

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17860.1	2.54	2.74	2.94	3.18	3.17	3.45	3.37	3.66	3.62	3.94	3.75	4.12	4.54
17863.1	2.54	2.74	2.93	3.18	3.16	3.44	3.37	3.66	3.62	3.93	3.74	4.12	4.53
17866.0	2.54	2.74	2.93	3.18	3.16	3.44	3.36	3.66	3.62	3.93	3.74	4.12	4.53
17868.9	2.54	2.74	2.93	3.17	3.16	3.44	3.36	3.66	3.62	3.94	3.74	4.12	4.53
17871.7	2.54	2.73	2.92	3.17	3.15	3.43	3.36	3.65	3.61	3.93	3.74	4.12	4.53
17874.6	2.53	2.72	2.91	3.16	3.14	3.42	3.35	3.64	3.60	3.92	3.72	4.11	4.53
17877.5	2.52	2.71	2.90	3.15	3.13	3.41	3.33	3.63	3.59	3.91	3.71	4.10	4.52
17880.3	2.52	2.70	2.89	3.14	3.12	3.40	3.32	3.61	3.57	3.90	3.70	4.09	4.51
17883.2	2.51	2.70	2.89	3.13	3.12	3.40	3.32	3.61	3.57	3.89	3.70	4.09	4.52
17886.1	2.51	2.70	2.89	3.13	3.11	3.40	3.32	3.61	3.57	3.90	3.70	4.09	4.52
17888.9	2.50	2.69	2.88	3.12	3.11	3.39	3.31	3.61	3.57	3.89	3.70	4.08	4.51
17891.8	2.49	2.68	2.87	3.12	3.10	3.38	3.31	3.60	3.56	3.88	3.69	4.08	4.51
17894.7	2.49	2.67	2.86	3.11	3.09	3.37	3.30	3.59	3.55	3.87	3.68	4.06	4.50
17897.6	2.48	2.67	2.86	3.10	3.08	3.36	3.29	3.58	3.54	3.86	3.67	4.05	4.48
17900.4	2.48	2.66	2.85	3.10	3.08	3.36	3.29	3.58	3.54	3.86	3.66	4.05	4.49
17903.3	2.47	2.66	2.85	3.09	3.08	3.36	3.29	3.58	3.53	3.86	3.67	4.06	4.49
17906.2	2.47	2.66	2.85	3.09	3.07	3.36	3.28	3.58	3.53	3.86	3.66	4.05	4.49
17909.0	2.46	2.65	2.84	3.08	3.07	3.35	3.28	3.57	3.53	3.85	3.66	4.04	4.48
17911.9	2.46	2.64	2.83	3.08	3.06	3.34	3.27	3.56	3.52	3.84	3.64	4.03	4.47
17914.8	2.45	2.64	2.83	3.07	3.06	3.33	3.26	3.55	3.51	3.83	3.63	4.02	4.45
17917.6	2.45	2.63	2.82	3.07	3.05	3.33	3.25	3.55	3.50	3.83	3.63	4.02	4.46
17920.5	2.44	2.63	2.82	3.06	3.05	3.33	3.25	3.55	3.50	3.83	3.63	4.02	4.46
17923.4	2.44	2.63	2.82	3.06	3.05	3.33	3.25	3.55	3.50	3.83	3.63	4.02	4.46
17926.2	2.44	2.63	2.82	3.06	3.05	3.33	3.25	3.54	3.50	3.83	3.63	4.02	4.46
17929.1	2.43	2.62	2.81	3.06	3.04	3.32	3.25	3.54	3.50	3.82	3.62	4.01	4.45
17932.0	2.43	2.62	2.81	3.05	3.04	3.32	3.24	3.53	3.49	3.81	3.62	4.01	4.44
17934.8	2.43	2.62	2.81	3.05	3.04	3.31	3.24	3.53	3.49	3.81	3.61	4.00	4.44
17937.7	2.43	2.62	2.81	3.05	3.04	3.31	3.24	3.53	3.49	3.81	3.62	4.01	4.45
17940.6	2.43	2.61	2.81	3.05	3.04	3.31	3.24	3.53	3.49	3.81	3.62	4.01	4.45
17943.4	2.42	2.61	2.81	3.05	3.03	3.31	3.24	3.53	3.49	3.81	3.62	4.01	4.45
17946.3	2.42	2.61	2.80	3.05	3.03	3.31	3.24	3.52	3.48	3.80	3.61	4.00	4.44
17949.2	2.42	2.61	2.80	3.04	3.03	3.31	3.23	3.52	3.48	3.80	3.60	3.99	4.43
17952.1	2.42	2.61	2.80	3.04	3.03	3.30	3.23	3.51	3.47	3.79	3.60	3.99	4.44
17954.9	2.42	2.61	2.80	3.04	3.02	3.30	3.23	3.52	3.48	3.80	3.60	3.99	4.44
17957.8	2.41	2.60	2.80	3.04	3.02	3.30	3.23	3.52	3.48	3.80	3.60	3.99	4.44
17960.7	2.41	2.60	2.80	3.04	3.02	3.30	3.23	3.51	3.47	3.80	3.59	3.99	4.45
17963.5	2.41	2.60	2.79	3.03	3.02	3.29	3.22	3.50	3.46	3.78	3.58	3.98	4.44
17966.4	2.40	2.59	2.78	3.02	3.01	3.28	3.21	3.49	3.45	3.77	3.57	3.97	4.42
17969.3	2.40	2.59	2.78	3.01	3.00	3.26	3.19	3.47	3.43	3.75	3.55	3.95	4.40
17972.1	2.40	2.58	2.77	3.01	2.99	3.25	3.18	3.46	3.42	3.73	3.54	3.93	4.38
17975.0	2.40	2.58	2.77	3.00	2.99	3.25	3.18	3.45	3.42	3.72	3.53	3.93	4.38
17977.9	2.39	2.58	2.77	3.00	2.98	3.24	3.18	3.44	3.41	3.71	3.52	3.92	4.37
17980.8	2.39	2.57	2.76	2.98	2.97	3.22	3.16	3.42	3.39	3.69	3.50	3.89	4.35
17983.7	2.38	2.56	2.74	2.96	2.95	3.20	3.13	3.40	3.36	3.66	3.47	3.87	4.33
17986.6	2.37	2.55	2.72	2.94	2.92	3.17	3.11	3.37	3.33	3.64	3.45	3.84	4.30
17989.5	2.36	2.53	2.70	2.91	2.90	3.15	3.08	3.34	3.30	3.61	3.42	3.81	4.28

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
17992.4	2.35	2.52	2.69	2.91	2.89	3.13	3.07	3.32	3.29	3.59	3.40	3.79	4.25
17995.3	2.35	2.52	2.69	2.90	2.89	3.12	3.06	3.31	3.27	3.58	3.39	3.77	4.23
17998.2	2.34	2.51	2.68	2.89	2.88	3.12	3.06	3.30	3.27	3.57	3.38	3.76	4.22
18001.1	2.34	2.51	2.68	2.89	2.88	3.11	3.05	3.30	3.26	3.56	3.38	3.75	4.21
18003.9	2.33	2.50	2.67	2.88	2.87	3.11	3.05	3.29	3.26	3.55	3.37	3.74	4.19
18006.8	2.33	2.50	2.67	2.88	2.87	3.10	3.04	3.29	3.25	3.54	3.36	3.73	4.18
18009.7	2.32	2.49	2.66	2.87	2.86	3.10	3.04	3.28	3.24	3.54	3.36	3.72	4.16
18012.6	2.32	2.49	2.66	2.87	2.85	3.09	3.03	3.27	3.24	3.53	3.35	3.71	4.14
18015.5	2.31	2.48	2.65	2.86	2.85	3.08	3.02	3.27	3.23	3.52	3.35	3.70	4.13
18018.4	2.31	2.48	2.65	2.86	2.84	3.08	3.02	3.26	3.23	3.52	3.34	3.70	4.12
18021.3	2.30	2.47	2.64	2.85	2.84	3.07	3.01	3.26	3.22	3.51	3.34	3.70	4.12
18024.2	2.30	2.47	2.64	2.85	2.83	3.07	3.01	3.25	3.21	3.51	3.33	3.69	4.10
18027.1	2.29	2.46	2.63	2.84	2.83	3.06	3.00	3.24	3.20	3.49	3.31	3.66	4.07
18030.0	2.29	2.46	2.62	2.83	2.82	3.04	2.99	3.22	3.19	3.46	3.29	3.64	4.04
18032.9	2.28	2.45	2.62	2.83	2.81	3.04	2.98	3.21	3.18	3.46	3.29	3.63	4.03
18035.8	2.28	2.44	2.61	2.82	2.81	3.03	2.98	3.21	3.17	3.45	3.28	3.63	4.02
18038.7	2.27	2.44	2.61	2.81	2.80	3.03	2.97	3.20	3.17	3.45	3.27	3.62	4.01
18041.6	2.27	2.43	2.60	2.81	2.80	3.02	2.96	3.19	3.16	3.44	3.27	3.61	4.00
18044.5	2.26	2.43	2.60	2.80	2.79	3.01	2.96	3.19	3.15	3.43	3.26	3.60	3.98
18047.4	2.26	2.42	2.59	2.80	2.78	3.01	2.95	3.18	3.15	3.42	3.25	3.59	3.96
18050.3	2.25	2.42	2.58	2.79	2.78	3.00	2.94	3.17	3.14	3.42	3.25	3.58	3.95
18053.2	2.25	2.41	2.58	2.78	2.77	2.99	2.94	3.17	3.13	3.41	3.24	3.57	3.93
18056.1	2.24	2.40	2.57	2.78	2.76	2.99	2.93	3.16	3.12	3.40	3.23	3.56	3.91
18058.9	2.23	2.40	2.56	2.77	2.76	2.98	2.92	3.15	3.12	3.38	3.22	3.54	3.89
18061.8	2.23	2.39	2.56	2.76	2.75	2.97	2.92	3.14	3.11	3.37	3.21	3.52	3.87
18064.7	2.22	2.38	2.55	2.76	2.75	2.97	2.91	3.13	3.10	3.36	3.20	3.51	3.84
18067.6	2.22	2.38	2.55	2.75	2.74	2.96	2.91	3.13	3.09	3.35	3.19	3.50	3.83
18070.5	2.21	2.37	2.54	2.75	2.73	2.95	2.90	3.12	3.08	3.34	3.19	3.48	3.81
18073.4	2.20	2.37	2.53	2.74	2.73	2.95	2.89	3.11	3.08	3.33	3.18	3.47	3.80
18076.3	2.20	2.36	2.53	2.73	2.72	2.94	2.88	3.10	3.07	3.32	3.17	3.46	3.78
18079.2	2.19	2.35	2.52	2.73	2.71	2.93	2.88	3.10	3.06	3.31	3.16	3.44	3.75
18082.1	2.19	2.35	2.51	2.72	2.70	2.92	2.87	3.09	3.05	3.29	3.15	3.42	3.72
18085.0	2.18	2.34	2.50	2.71	2.69	2.91	2.86	3.07	3.04	3.27	3.13	3.39	3.68
18088.0	2.21	2.38	2.54	2.74	2.73	2.94	2.89	3.10	3.07	3.29	3.16	3.42	3.70
18090.9	2.25	2.41	2.58	2.77	2.76	2.97	2.92	3.12	3.09	3.31	3.18	3.43	3.71
18093.9	2.29	2.45	2.61	2.81	2.80	2.99	2.95	3.14	3.11	3.32	3.20	3.44	3.70
18096.8	2.33	2.49	2.65	2.84	2.83	3.02	2.98	3.16	3.13	3.34	3.22	3.45	3.71
18099.8	2.36	2.52	2.68	2.87	2.86	3.04	3.00	3.18	3.15	3.35	3.24	3.46	3.72
18102.8	2.39	2.54	2.70	2.88	2.87	3.05	3.01	3.19	3.16	3.36	3.24	3.47	3.74
18105.7	2.42	2.56	2.71	2.89	2.88	3.06	3.02	3.19	3.17	3.36	3.25	3.48	3.76
18108.7	2.46	2.60	2.75	2.92	2.91	3.09	3.05	3.22	3.19	3.39	3.27	3.51	3.78
18111.6	2.48	2.64	2.78	2.96	2.95	3.12	3.08	3.25	3.22	3.42	3.30	3.53	3.81
18114.6	2.50	2.66	2.80	2.97	2.96	3.13	3.10	3.26	3.23	3.43	3.32	3.55	3.82
18117.5	2.50	2.66	2.81	2.97	2.96	3.13	3.10	3.27	3.24	3.44	3.32	3.55	3.84
18120.5	2.51	2.67	2.81	2.97	2.96	3.13	3.10	3.26	3.24	3.44	3.32	3.56	3.85
18123.5	2.51	2.66	2.81	2.97	2.96	3.13	3.09	3.27	3.23	3.44	3.32	3.56	3.85

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
18126.4	2.51	2.66	2.82	2.98	2.97	3.13	3.10	3.27	3.25	3.45	3.33	3.57	3.87
18129.4	2.51	2.66	2.81	2.99	2.98	3.14	3.11	3.28	3.26	3.47	3.34	3.58	3.89
18132.3	2.52	2.67	2.83	3.01	3.00	3.16	3.13	3.30	3.28	3.48	3.36	3.60	3.90
18135.3	2.52	2.68	2.84	3.03	3.02	3.18	3.15	3.32	3.29	3.50	3.38	3.61	3.92
18138.3	2.53	2.69	2.85	3.04	3.03	3.20	3.18	3.34	3.31	3.51	3.39	3.62	3.92
18141.2	2.53	2.70	2.86	3.05	3.03	3.21	3.18	3.35	3.32	3.52	3.41	3.63	3.94
18144.2	2.54	2.71	2.87	3.06	3.05	3.23	3.20	3.37	3.34	3.54	3.43	3.65	3.95
18147.1	2.54	2.72	2.88	3.07	3.06	3.24	3.21	3.39	3.36	3.56	3.45	3.67	3.97
18150.1	2.54	2.72	2.89	3.08	3.07	3.26	3.22	3.41	3.38	3.58	3.47	3.69	3.98
18153.0	2.54	2.72	2.90	3.09	3.08	3.26	3.23	3.42	3.39	3.59	3.48	3.70	3.99
18156.0	2.54	2.73	2.90	3.09	3.08	3.27	3.23	3.42	3.39	3.60	3.48	3.71	4.00
18159.0	2.54	2.73	2.90	3.09	3.08	3.26	3.23	3.42	3.39	3.60	3.48	3.71	4.00
18161.9	2.54	2.72	2.89	3.09	3.08	3.26	3.23	3.41	3.38	3.60	3.47	3.71	4.01
18164.9	2.54	2.72	2.89	3.08	3.07	3.26	3.23	3.40	3.37	3.59	3.47	3.72	4.02
18167.8	2.55	2.72	2.89	3.09	3.08	3.26	3.23	3.41	3.38	3.60	3.47	3.73	4.04
18170.8	2.55	2.73	2.90	3.09	3.08	3.27	3.24	3.42	3.39	3.61	3.48	3.74	4.06
18173.8	2.55	2.73	2.90	3.09	3.08	3.27	3.24	3.42	3.39	3.62	3.49	3.75	4.08
18176.7	2.55	2.73	2.90	3.09	3.08	3.27	3.23	3.43	3.40	3.63	3.49	3.76	4.10
18179.7	2.55	2.73	2.90	3.09	3.08	3.29	3.24	3.46	3.43	3.67	3.53	3.80	4.15
18182.6	2.55	2.73	2.90	3.10	3.08	3.31	3.25	3.49	3.46	3.70	3.56	3.84	4.19
18185.6	2.56	2.74	2.90	3.10	3.08	3.32	3.25	3.50	3.47	3.71	3.57	3.85	4.20
18188.5	2.56	2.74	2.90	3.10	3.08	3.32	3.25	3.50	3.47	3.72	3.57	3.86	4.21
18191.5	2.56	2.74	2.91	3.10	3.09	3.33	3.26	3.50	3.47	3.72	3.57	3.87	4.21
18194.5	2.56	2.74	2.91	3.11	3.09	3.33	3.26	3.51	3.48	3.73	3.58	3.87	4.22
18197.4	2.57	2.75	2.91	3.11	3.10	3.33	3.26	3.51	3.48	3.73	3.58	3.88	4.22
18200.4	2.57	2.75	2.92	3.11	3.10	3.33	3.26	3.51	3.48	3.73	3.58	3.88	4.23
18203.3	2.57	2.76	2.92	3.12	3.10	3.34	3.27	3.52	3.49	3.74	3.59	3.88	4.23
18206.3	2.58	2.76	2.93	3.12	3.11	3.34	3.27	3.52	3.49	3.74	3.59	3.89	4.24
18209.3	2.58	2.76	2.93	3.13	3.11	3.35	3.28	3.53	3.49	3.75	3.59	3.89	4.25
18212.2	2.58	2.77	2.94	3.13	3.12	3.35	3.28	3.52	3.49	3.75	3.60	3.89	4.25
18215.2	2.59	2.77	2.94	3.13	3.12	3.35	3.28	3.52	3.49	3.75	3.59	3.89	4.25
18218.1	2.59	2.78	2.94	3.13	3.12	3.35	3.28	3.52	3.49	3.75	3.59	3.90	4.25
18221.1	2.59	2.78	2.95	3.13	3.12	3.35	3.28	3.52	3.49	3.75	3.59	3.90	4.26
18224.0	2.60	2.79	2.95	3.13	3.12	3.35	3.28	3.53	3.49	3.75	3.59	3.90	4.26
18227.0	2.60	2.79	2.95	3.14	3.12	3.35	3.28	3.53	3.50	3.76	3.60	3.91	4.27
18229.9	2.58	2.77	2.93	3.12	3.10	3.33	3.26	3.51	3.48	3.73	3.58	3.88	4.24
18232.8	2.57	2.75	2.92	3.10	3.08	3.31	3.24	3.49	3.45	3.71	3.55	3.86	4.21
18235.7	2.55	2.74	2.90	3.08	3.07	3.29	3.22	3.47	3.43	3.69	3.53	3.84	4.19
18238.6	2.54	2.72	2.88	3.06	3.05	3.27	3.20	3.45	3.41	3.67	3.51	3.81	4.16
18241.5	2.52	2.71	2.87	3.04	3.03	3.25	3.19	3.43	3.40	3.65	3.49	3.79	4.14
18244.4	2.51	2.69	2.85	3.03	3.02	3.24	3.17	3.41	3.38	3.63	3.48	3.77	4.12
18247.3	2.50	2.68	2.84	3.01	3.00	3.22	3.16	3.39	3.36	3.61	3.46	3.75	4.10
18250.2	2.48	2.67	2.83	3.00	2.99	3.21	3.14	3.38	3.34	3.59	3.44	3.73	4.07
18253.1	2.47	2.66	2.81	2.99	2.98	3.19	3.13	3.36	3.33	3.57	3.43	3.72	4.06
18256.0	2.46	2.65	2.80	2.98	2.96	3.18	3.11	3.35	3.32	3.56	3.41	3.70	4.04
18258.9	2.45	2.64	2.79	2.96	2.95	3.17	3.10	3.33	3.30	3.55	3.40	3.69	4.02

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
18261.8	2.44	2.63	2.78	2.95	2.94	3.16	3.09	3.32	3.29	3.53	3.39	3.67	4.01
18264.7	2.44	2.62	2.77	2.94	2.93	3.15	3.08	3.31	3.28	3.52	3.38	3.66	3.99
18267.6	2.43	2.61	2.77	2.94	2.92	3.14	3.07	3.30	3.27	3.51	3.36	3.65	3.98
18270.5	2.42	2.60	2.76	2.93	2.92	3.13	3.06	3.29	3.26	3.50	3.36	3.64	3.97
18273.4	2.42	2.60	2.75	2.92	2.91	3.12	3.06	3.28	3.25	3.49	3.35	3.63	3.96
18276.3	2.41	2.59	2.75	2.91	2.90	3.11	3.05	3.28	3.25	3.48	3.34	3.62	3.95
18279.2	2.40	2.59	2.74	2.91	2.90	3.11	3.04	3.27	3.24	3.47	3.33	3.61	3.93
18282.1	2.40	2.58	2.74	2.90	2.89	3.10	3.04	3.26	3.23	3.47	3.32	3.60	3.93
18285.0	2.39	2.58	2.73	2.90	2.89	3.09	3.03	3.26	3.23	3.46	3.32	3.60	3.92
18287.9	2.39	2.58	2.73	2.89	2.88	3.09	3.03	3.25	3.22	3.45	3.31	3.59	3.91
18290.8	2.39	2.57	2.72	2.89	2.88	3.09	3.02	3.25	3.22	3.45	3.31	3.58	3.90
18293.7	2.38	2.57	2.72	2.89	2.88	3.08	3.02	3.24	3.21	3.45	3.30	3.58	3.90
18296.6	2.38	2.57	2.72	2.89	2.87	3.08	3.02	3.24	3.21	3.44	3.30	3.58	3.89
18299.5	2.38	2.57	2.71	2.88	2.87	3.08	3.02	3.24	3.21	3.44	3.30	3.57	3.89
18302.4	2.38	2.57	2.71	2.88	2.87	3.08	3.02	3.24	3.21	3.44	3.30	3.57	3.88
18305.3	2.38	2.57	2.71	2.88	2.87	3.08	3.02	3.24	3.21	3.44	3.30	3.57	3.88
18308.2	2.38	2.57	2.71	2.88	2.87	3.08	3.02	3.24	3.21	3.44	3.30	3.57	3.89
18311.1	2.39	2.57	2.71	2.89	2.88	3.08	3.02	3.24	3.21	3.44	3.30	3.58	3.90
18314.0	2.39	2.57	2.72	2.89	2.88	3.08	3.02	3.24	3.21	3.44	3.30	3.58	3.91
18316.9	2.40	2.58	2.72	2.89	2.88	3.09	3.02	3.25	3.22	3.45	3.31	3.59	3.92
18319.8	2.40	2.58	2.73	2.90	2.88	3.09	3.03	3.25	3.22	3.45	3.31	3.59	3.92
18322.7	2.41	2.59	2.73	2.90	2.89	3.09	3.03	3.25	3.22	3.46	3.31	3.59	3.92
18325.6	2.42	2.60	2.74	2.91	2.90	3.10	3.04	3.26	3.23	3.46	3.32	3.60	3.93
18328.5	2.43	2.61	2.75	2.91	2.90	3.11	3.05	3.27	3.24	3.47	3.33	3.61	3.93
18331.4	2.44	2.62	2.76	2.92	2.91	3.11	3.05	3.27	3.24	3.48	3.33	3.61	3.94
18334.3	2.45	2.63	2.77	2.93	2.92	3.12	3.06	3.28	3.25	3.48	3.34	3.62	3.95
18337.2	2.46	2.64	2.78	2.94	2.93	3.13	3.07	3.29	3.26	3.49	3.35	3.63	3.95
18340.1	2.48	2.65	2.79	2.95	2.94	3.14	3.08	3.30	3.27	3.50	3.36	3.64	3.96
18343.0	2.50	2.67	2.81	2.97	2.95	3.15	3.09	3.31	3.28	3.51	3.37	3.64	3.97
18345.9	2.49	2.67	2.80	2.96	2.95	3.15	3.09	3.31	3.28	3.51	3.37	3.64	3.97
18348.9	2.49	2.66	2.80	2.96	2.95	3.15	3.09	3.31	3.28	3.51	3.37	3.65	3.97
18351.8	2.48	2.66	2.80	2.96	2.95	3.15	3.09	3.31	3.28	3.51	3.37	3.65	3.97
18354.8	2.48	2.65	2.80	2.96	2.95	3.15	3.09	3.31	3.28	3.51	3.37	3.65	3.97
18357.7	2.48	2.65	2.79	2.96	2.95	3.15	3.09	3.31	3.28	3.51	3.37	3.65	3.98
18360.7	2.47	2.64	2.79	2.95	2.94	3.14	3.08	3.30	3.27	3.51	3.37	3.65	3.97
18363.6	2.47	2.63	2.78	2.95	2.94	3.14	3.08	3.30	3.27	3.50	3.36	3.64	3.97
18366.6	2.46	2.62	2.78	2.94	2.93	3.14	3.08	3.30	3.27	3.50	3.36	3.64	3.97
18369.5	2.46	2.62	2.77	2.94	2.93	3.13	3.07	3.29	3.26	3.50	3.36	3.64	3.97
18372.5	2.45	2.61	2.76	2.93	2.92	3.13	3.07	3.29	3.26	3.50	3.35	3.64	3.96
18375.4	2.44	2.60	2.75	2.93	2.92	3.13	3.06	3.29	3.26	3.49	3.35	3.63	3.96
18378.4	2.44	2.59	2.74	2.92	2.91	3.12	3.06	3.29	3.26	3.49	3.35	3.63	3.96
18381.3	2.43	2.58	2.73	2.92	2.90	3.12	3.06	3.28	3.25	3.49	3.35	3.63	3.96
18384.3	2.43	2.57	2.72	2.91	2.90	3.12	3.05	3.28	3.25	3.49	3.34	3.63	3.96
18387.2	2.43	2.57	2.71	2.90	2.89	3.11	3.05	3.28	3.25	3.48	3.34	3.63	3.96
18390.2	2.42	2.56	2.71	2.90	2.89	3.10	3.04	3.27	3.24	3.48	3.33	3.62	3.96
18393.1	2.42	2.56	2.70	2.89	2.88	3.10	3.03	3.26	3.23	3.47	3.33	3.62	3.95

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
18396.1	2.41	2.55	2.69	2.88	2.87	3.09	3.02	3.25	3.22	3.46	3.32	3.60	3.94
18399.0	2.40	2.54	2.68	2.87	2.86	3.08	3.01	3.24	3.21	3.45	3.30	3.59	3.93
18401.9	2.40	2.54	2.67	2.86	2.85	3.06	3.00	3.23	3.20	3.44	3.29	3.58	3.91
18404.9	2.39	2.53	2.66	2.85	2.84	3.05	2.99	3.22	3.19	3.42	3.28	3.57	3.90
18407.8	2.39	2.52	2.66	2.84	2.83	3.04	2.98	3.21	3.18	3.41	3.27	3.55	3.88
18410.8	2.38	2.52	2.65	2.83	2.82	3.03	2.97	3.19	3.16	3.40	3.26	3.54	3.86
18413.7	2.38	2.51	2.64	2.82	2.80	3.02	2.95	3.18	3.15	3.39	3.24	3.53	3.85
18416.7	2.37	2.51	2.63	2.80	2.79	3.01	2.94	3.17	3.14	3.38	3.23	3.52	3.84
18419.6	2.37	2.50	2.63	2.80	2.79	3.00	2.93	3.16	3.13	3.37	3.23	3.51	3.83
18422.6	2.36	2.50	2.62	2.79	2.78	2.99	2.93	3.15	3.12	3.36	3.22	3.50	3.82
18425.5	2.36	2.49	2.62	2.78	2.77	2.98	2.92	3.15	3.12	3.35	3.21	3.49	3.81
18428.5	2.35	2.49	2.61	2.78	2.77	2.98	2.91	3.14	3.11	3.34	3.20	3.48	3.80
18431.4	2.34	2.48	2.61	2.77	2.76	2.97	2.91	3.13	3.10	3.33	3.19	3.47	3.79
18434.4	2.34	2.48	2.60	2.76	2.75	2.96	2.90	3.12	3.09	3.32	3.18	3.46	3.78
18437.3	2.33	2.47	2.60	2.76	2.75	2.95	2.89	3.11	3.08	3.31	3.17	3.45	3.76
18440.3	2.33	2.47	2.59	2.75	2.74	2.94	2.88	3.10	3.07	3.30	3.16	3.44	3.75
18443.2	2.32	2.46	2.58	2.75	2.73	2.94	2.87	3.09	3.06	3.29	3.15	3.43	3.73
18446.2	2.31	2.46	2.58	2.74	2.73	2.93	2.87	3.08	3.05	3.28	3.14	3.41	3.72
18449.1	2.31	2.45	2.57	2.73	2.72	2.91	2.86	3.07	3.04	3.27	3.13	3.40	3.70
18452.1	2.30	2.45	2.57	2.72	2.71	2.90	2.84	3.05	3.03	3.25	3.11	3.38	3.68
18455.0	2.30	2.44	2.56	2.71	2.70	2.89	2.83	3.04	3.01	3.23	3.09	3.36	3.65
18458.0	2.30	2.45	2.57	2.71	2.71	2.89	2.83	3.04	3.01	3.23	3.10	3.36	3.66
18461.0	2.31	2.46	2.58	2.73	2.72	2.90	2.85	3.05	3.02	3.24	3.11	3.37	3.67
18463.9	2.32	2.47	2.59	2.74	2.73	2.91	2.86	3.06	3.03	3.25	3.12	3.38	3.68
18466.9	2.32	2.48	2.60	2.75	2.74	2.92	2.87	3.07	3.04	3.26	3.13	3.39	3.69
18469.9	2.33	2.48	2.61	2.75	2.74	2.93	2.87	3.08	3.05	3.27	3.13	3.40	3.69
18472.9	2.34	2.49	2.62	2.76	2.75	2.93	2.88	3.08	3.05	3.27	3.14	3.40	3.70
18475.8	2.35	2.50	2.62	2.77	2.76	2.94	2.88	3.09	3.06	3.28	3.14	3.41	3.70
18478.8	2.35	2.51	2.63	2.77	2.76	2.94	2.89	3.09	3.06	3.28	3.14	3.41	3.71
18481.8	2.36	2.51	2.63	2.77	2.76	2.94	2.89	3.09	3.06	3.28	3.15	3.41	3.71
18484.8	2.37	2.52	2.64	2.78	2.77	2.95	2.90	3.10	3.07	3.29	3.15	3.41	3.72
18487.8	2.37	2.52	2.65	2.79	2.78	2.96	2.90	3.11	3.08	3.30	3.16	3.42	3.72
18490.7	2.38	2.53	2.65	2.79	2.78	2.96	2.91	3.11	3.08	3.30	3.17	3.43	3.73
18493.7	2.38	2.53	2.65	2.79	2.78	2.97	2.91	3.11	3.09	3.31	3.17	3.44	3.74
18496.7	2.39	2.53	2.65	2.80	2.79	2.97	2.91	3.12	3.09	3.31	3.17	3.44	3.74
18499.7	2.39	2.53	2.66	2.80	2.79	2.97	2.92	3.12	3.09	3.31	3.18	3.44	3.75
18502.6	2.40	2.54	2.66	2.80	2.79	2.98	2.92	3.13	3.10	3.32	3.18	3.45	3.75
18505.6	2.40	2.54	2.67	2.81	2.80	2.99	2.93	3.13	3.11	3.32	3.19	3.46	3.76
18508.6	2.41	2.55	2.67	2.82	2.81	2.99	2.94	3.14	3.11	3.33	3.20	3.47	3.77
18511.6	2.41	2.56	2.68	2.83	2.82	3.00	2.95	3.15	3.12	3.34	3.21	3.48	3.78
18514.5	2.42	2.57	2.69	2.83	2.82	3.01	2.95	3.16	3.13	3.35	3.22	3.48	3.78
18517.5	2.42	2.57	2.70	2.84	2.83	3.01	2.96	3.16	3.14	3.36	3.22	3.49	3.79
18520.5	2.43	2.58	2.70	2.85	2.84	3.02	2.96	3.17	3.14	3.36	3.23	3.50	3.80
18523.5	2.44	2.59	2.71	2.85	2.84	3.03	2.97	3.18	3.15	3.37	3.23	3.50	3.80
18526.5	2.44	2.59	2.71	2.85	2.84	3.03	2.97	3.18	3.15	3.37	3.24	3.50	3.81
18529.4	2.45	2.59	2.71	2.86	2.85	3.03	2.98	3.18	3.15	3.38	3.24	3.51	3.81

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
18532.4	2.45	2.59	2.71	2.85	2.84	3.03	2.97	3.18	3.15	3.37	3.24	3.50	3.81
18535.4	2.45	2.59	2.70	2.85	2.84	3.02	2.97	3.17	3.15	3.36	3.23	3.50	3.80
18538.4	2.45	2.59	2.70	2.85	2.84	3.02	2.97	3.17	3.15	3.37	3.23	3.50	3.80
18541.3	2.46	2.59	2.70	2.85	2.84	3.02	2.97	3.17	3.15	3.37	3.23	3.50	3.80
18544.3	2.46	2.59	2.71	2.85	2.84	3.03	2.97	3.18	3.15	3.37	3.24	3.51	3.81
18547.3	2.46	2.60	2.71	2.86	2.85	3.03	2.98	3.18	3.15	3.38	3.24	3.51	3.81
18550.3	2.47	2.60	2.72	2.86	2.85	3.04	2.98	3.19	3.16	3.39	3.25	3.52	3.82
18553.3	2.47	2.61	2.72	2.87	2.86	3.05	2.99	3.20	3.17	3.39	3.26	3.52	3.82
18556.2	2.48	2.61	2.72	2.87	2.86	3.05	2.99	3.20	3.17	3.40	3.26	3.53	3.83
18559.2	2.48	2.61	2.72	2.87	2.86	3.05	2.99	3.20	3.17	3.40	3.26	3.53	3.83
18562.2	2.48	2.61	2.72	2.87	2.86	3.05	2.99	3.20	3.17	3.40	3.26	3.53	3.83
18565.2	2.49	2.61	2.72	2.87	2.86	3.05	2.99	3.20	3.18	3.40	3.27	3.53	3.84
18568.1	2.49	2.61	2.72	2.87	2.86	3.05	3.00	3.21	3.18	3.41	3.27	3.54	3.84
18571.1	2.49	2.62	2.73	2.88	2.87	3.06	3.00	3.21	3.18	3.41	3.27	3.54	3.84
18574.1	2.50	2.62	2.73	2.88	2.87	3.06	3.00	3.21	3.19	3.41	3.27	3.55	3.84
18577.1	2.50	2.62	2.73	2.88	2.87	3.06	3.00	3.22	3.19	3.42	3.28	3.55	3.85
18580.0	2.51	2.63	2.73	2.88	2.87	3.06	3.01	3.22	3.19	3.42	3.28	3.55	3.86
18583.0	2.51	2.63	2.73	2.88	2.87	3.07	3.01	3.22	3.20	3.42	3.29	3.56	3.86
18586.0	2.51	2.63	2.73	2.89	2.88	3.07	3.01	3.23	3.20	3.43	3.29	3.57	3.87
18589.0	2.51	2.62	2.73	2.88	2.87	3.07	3.01	3.22	3.20	3.42	3.28	3.56	3.86
18591.9	2.51	2.62	2.72	2.88	2.87	3.06	3.00	3.22	3.19	3.42	3.28	3.55	3.85
18594.9	2.51	2.61	2.72	2.87	2.86	3.06	3.00	3.21	3.18	3.41	3.27	3.54	3.85
18597.8	2.50	2.61	2.71	2.87	2.86	3.05	2.99	3.21	3.18	3.41	3.27	3.54	3.84
18600.8	2.50	2.60	2.71	2.86	2.85	3.05	2.99	3.20	3.17	3.40	3.26	3.53	3.83
18603.8	2.50	2.60	2.71	2.86	2.85	3.04	2.99	3.20	3.17	3.39	3.26	3.53	3.82
18606.7	2.50	2.60	2.70	2.86	2.85	3.04	2.98	3.19	3.17	3.39	3.25	3.52	3.81
18609.7	2.50	2.60	2.70	2.86	2.85	3.04	2.98	3.19	3.17	3.39	3.25	3.52	3.81
18612.6	2.50	2.60	2.70	2.86	2.85	3.04	2.98	3.19	3.17	3.39	3.25	3.52	3.81
18615.6	2.50	2.60	2.71	2.86	2.85	3.04	2.99	3.20	3.17	3.39	3.25	3.52	3.81
18618.5	2.50	2.60	2.71	2.86	2.85	3.04	2.99	3.20	3.17	3.39	3.25	3.52	3.81
18621.5	2.50	2.60	2.71	2.86	2.85	3.04	2.99	3.20	3.17	3.39	3.25	3.52	3.80
18624.5	2.51	2.60	2.71	2.86	2.85	3.04	2.99	3.20	3.17	3.39	3.25	3.52	3.80
18627.4	2.51	2.61	2.71	2.86	2.85	3.04	2.98	3.19	3.17	3.38	3.25	3.51	3.80
18630.4	2.51	2.61	2.71	2.86	2.85	3.04	2.98	3.19	3.16	3.38	3.25	3.51	3.79
18633.3	2.51	2.61	2.71	2.86	2.85	3.04	2.98	3.19	3.16	3.37	3.24	3.50	3.78
18636.3	2.51	2.61	2.70	2.85	2.84	3.03	2.98	3.18	3.15	3.37	3.24	3.49	3.78
18639.3	2.51	2.61	2.70	2.85	2.84	3.03	2.97	3.17	3.15	3.36	3.23	3.48	3.76
18642.2	2.51	2.61	2.70	2.85	2.84	3.02	2.97	3.17	3.14	3.35	3.22	3.47	3.75
18645.2	2.52	2.61	2.70	2.84	2.83	3.01	2.96	3.16	3.13	3.34	3.21	3.46	3.74
18648.1	2.52	2.61	2.70	2.84	2.83	3.01	2.96	3.15	3.12	3.33	3.20	3.45	3.72
18651.1	2.52	2.60	2.70	2.84	2.83	3.00	2.95	3.14	3.12	3.32	3.20	3.44	3.71
18654.0	2.52	2.60	2.69	2.84	2.83	3.00	2.95	3.14	3.11	3.31	3.19	3.43	3.69
18657.0	2.52	2.60	2.69	2.83	2.82	2.99	2.94	3.13	3.10	3.30	3.18	3.42	3.68
18660.0	2.52	2.60	2.69	2.83	2.82	2.99	2.94	3.12	3.10	3.29	3.17	3.41	3.66
18662.9	2.52	2.60	2.69	2.83	2.82	2.98	2.93	3.12	3.09	3.28	3.17	3.40	3.65
18665.9	2.52	2.60	2.69	2.82	2.81	2.98	2.93	3.11	3.09	3.28	3.16	3.39	3.63

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
18668.8	2.52	2.60	2.68	2.82	2.81	2.98	2.93	3.10	3.08	3.27	3.15	3.38	3.62
18671.8	2.51	2.60	2.68	2.81	2.81	2.97	2.92	3.09	3.07	3.25	3.14	3.36	3.60
18674.8	2.51	2.59	2.68	2.80	2.79	2.95	2.91	3.07	3.05	3.23	3.12	3.34	3.58
18677.7	2.51	2.59	2.67	2.79	2.78	2.94	2.89	3.05	3.03	3.20	3.10	3.31	3.56
18680.7	2.51	2.59	2.66	2.78	2.78	2.92	2.88	3.04	3.02	3.19	3.08	3.30	3.53
18683.6	2.51	2.58	2.66	2.78	2.77	2.92	2.87	3.03	3.01	3.18	3.07	3.28	3.51
18686.6	2.50	2.58	2.65	2.77	2.76	2.91	2.87	3.02	3.00	3.17	3.07	3.27	3.50
18689.5	2.50	2.58	2.65	2.76	2.76	2.90	2.86	3.01	2.99	3.16	3.06	3.26	3.49
18692.5	2.50	2.57	2.64	2.76	2.75	2.90	2.85	3.01	2.99	3.15	3.05	3.25	3.48
18695.5	2.49	2.57	2.64	2.75	2.74	2.89	2.84	3.00	2.98	3.14	3.04	3.24	3.46
18698.4	2.49	2.56	2.63	2.74	2.74	2.88	2.84	2.99	2.97	3.13	3.03	3.23	3.45
18701.4	2.49	2.56	2.63	2.74	2.73	2.87	2.83	2.97	2.96	3.12	3.02	3.21	3.42
18704.3	2.48	2.55	2.62	2.73	2.72	2.85	2.81	2.96	2.94	3.10	3.00	3.19	3.40
18707.3	2.47	2.54	2.61	2.72	2.71	2.84	2.80	2.94	2.92	3.07	2.98	3.17	3.38
18710.3	2.47	2.54	2.60	2.71	2.70	2.83	2.79	2.92	2.91	3.05	2.96	3.14	3.35
18713.2	2.46	2.53	2.59	2.70	2.69	2.82	2.78	2.91	2.89	3.03	2.95	3.12	3.32
18716.2	2.46	2.52	2.59	2.69	2.68	2.81	2.77	2.90	2.88	3.02	2.93	3.10	3.30
18719.1	2.45	2.51	2.58	2.68	2.67	2.79	2.76	2.88	2.87	3.00	2.92	3.08	3.28
18722.1	2.44	2.50	2.57	2.67	2.66	2.78	2.75	2.87	2.85	2.98	2.90	3.07	3.26
18725.0	2.43	2.49	2.55	2.65	2.65	2.77	2.73	2.85	2.84	2.97	2.89	3.05	3.24
18728.0	2.42	2.48	2.54	2.64	2.64	2.75	2.72	2.84	2.82	2.95	2.87	3.03	3.22
18731.0	2.42	2.48	2.54	2.64	2.63	2.75	2.72	2.84	2.82	2.95	2.87	3.03	3.21
18733.9	2.42	2.48	2.54	2.64	2.63	2.75	2.71	2.83	2.82	2.94	2.87	3.02	3.21
18736.9	2.42	2.48	2.54	2.63	2.63	2.75	2.71	2.83	2.82	2.94	2.86	3.02	3.20
18739.9	2.41	2.47	2.53	2.63	2.63	2.75	2.71	2.83	2.81	2.94	2.86	3.02	3.20
18742.9	2.41	2.47	2.53	2.63	2.62	2.74	2.71	2.83	2.81	2.94	2.86	3.01	3.19
18745.8	2.41	2.47	2.53	2.63	2.62	2.74	2.71	2.83	2.81	2.93	2.86	3.01	3.18
18748.8	2.41	2.47	2.53	2.63	2.62	2.74	2.71	2.82	2.81	2.93	2.86	3.00	3.17
18751.8	2.41	2.47	2.53	2.63	2.62	2.74	2.71	2.82	2.81	2.93	2.85	3.00	3.17
18754.8	2.41	2.47	2.53	2.63	2.62	2.74	2.71	2.82	2.81	2.92	2.85	3.00	3.16
18757.7	2.41	2.47	2.53	2.63	2.62	2.74	2.71	2.82	2.81	2.92	2.85	2.99	3.16
18760.7	2.42	2.47	2.53	2.63	2.62	2.74	2.71	2.82	2.81	2.92	2.85	2.99	3.15
18763.7	2.42	2.48	2.53	2.63	2.62	2.74	2.71	2.82	2.81	2.92	2.85	2.99	3.15
18766.6	2.42	2.48	2.54	2.63	2.63	2.74	2.71	2.82	2.81	2.92	2.85	2.99	3.15
18769.6	2.43	2.48	2.54	2.63	2.63	2.74	2.71	2.82	2.81	2.92	2.85	2.99	3.14
18772.6	2.43	2.49	2.54	2.64	2.63	2.74	2.71	2.82	2.81	2.92	2.85	2.98	3.14
18775.6	2.43	2.49	2.54	2.64	2.63	2.74	2.71	2.82	2.81	2.92	2.85	2.98	3.13
18778.5	2.44	2.49	2.54	2.64	2.63	2.74	2.71	2.82	2.81	2.92	2.85	2.98	3.13
18781.5	2.44	2.49	2.55	2.64	2.63	2.74	2.71	2.82	2.81	2.92	2.85	2.98	3.12
18784.5	2.44	2.49	2.55	2.64	2.64	2.75	2.71	2.82	2.81	2.92	2.85	2.98	3.12
18787.4	2.45	2.50	2.55	2.65	2.64	2.75	2.72	2.82	2.81	2.92	2.85	2.98	3.11
18790.4	2.45	2.51	2.56	2.65	2.65	2.75	2.72	2.83	2.81	2.92	2.85	2.98	3.11
18793.4	2.46	2.51	2.57	2.66	2.65	2.76	2.72	2.83	2.82	2.92	2.86	2.98	3.10
18796.4	2.47	2.52	2.57	2.66	2.66	2.76	2.73	2.83	2.82	2.92	2.86	2.97	3.09
18799.3	2.48	2.53	2.58	2.67	2.66	2.76	2.74	2.84	2.82	2.92	2.86	2.98	3.09
18802.3	2.49	2.54	2.59	2.68	2.67	2.77	2.75	2.84	2.83	2.93	2.87	2.98	3.09

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
18805.3	2.50	2.56	2.61	2.70	2.70	2.80	2.77	2.87	2.86	2.95	2.90	3.01	3.12
18808.3	2.52	2.57	2.63	2.73	2.72	2.82	2.80	2.90	2.89	2.98	2.93	3.04	3.15
18811.2	2.53	2.59	2.65	2.75	2.75	2.85	2.82	2.93	2.91	3.01	2.95	3.06	3.18
18814.2	2.55	2.61	2.68	2.78	2.77	2.88	2.85	2.96	2.94	3.03	2.98	3.09	3.20
18817.2	2.58	2.65	2.73	2.83	2.82	2.93	2.90	3.01	2.99	3.09	3.03	3.14	3.25
18820.1	2.61	2.69	2.77	2.87	2.87	2.98	2.95	3.06	3.04	3.13	3.08	3.19	3.30
18823.1	2.63	2.71	2.79	2.90	2.89	3.01	2.97	3.08	3.07	3.16	3.11	3.21	3.32
18826.1	2.65	2.74	2.82	2.93	2.92	3.03	3.00	3.10	3.09	3.18	3.13	3.23	3.33
18829.1	2.68	2.77	2.85	2.96	2.96	3.07	3.04	3.14	3.13	3.21	3.16	3.26	3.35
18832.0	2.70	2.80	2.89	3.00	2.99	3.10	3.07	3.17	3.16	3.24	3.19	3.28	3.37
18835.0	2.73	2.83	2.92	3.03	3.03	3.13	3.10	3.19	3.18	3.25	3.21	3.29	3.37
18838.0	2.75	2.86	2.95	3.06	3.05	3.15	3.13	3.21	3.20	3.26	3.22	3.29	3.35
18840.9	2.78	2.89	2.98	3.09	3.08	3.18	3.15	3.23	3.22	3.27	3.24	3.30	3.35
18843.9	2.80	2.91	3.00	3.11	3.10	3.20	3.18	3.24	3.24	3.28	3.26	3.30	3.34
18846.9	2.82	2.93	3.03	3.13	3.13	3.22	3.20	3.26	3.26	3.30	3.27	3.31	3.35
18849.9	2.83	2.95	3.04	3.15	3.15	3.23	3.21	3.27	3.27	3.30	3.28	3.32	3.35
18852.8	2.85	2.97	3.07	3.18	3.18	3.25	3.24	3.30	3.29	3.32	3.30	3.34	3.36
18855.8	2.86	2.99	3.09	3.20	3.20	3.27	3.25	3.31	3.31	3.32	3.31	3.34	3.36
18858.8	2.86	2.99	3.09	3.20	3.20	3.26	3.25	3.30	3.30	3.31	3.30	3.32	3.35
18861.8	2.86	2.99	3.09	3.19	3.19	3.24	3.23	3.27	3.27	3.29	3.28	3.29	3.33
18864.7	2.86	2.98	3.08	3.18	3.18	3.22	3.21	3.25	3.25	3.27	3.25	3.28	3.31
18867.7	2.85	2.98	3.07	3.17	3.16	3.20	3.19	3.23	3.23	3.25	3.23	3.25	3.28
18870.7	2.85	2.97	3.06	3.15	3.15	3.18	3.17	3.20	3.20	3.22	3.21	3.23	3.26
18873.6	2.84	2.96	3.05	3.13	3.12	3.15	3.15	3.17	3.17	3.19	3.18	3.20	3.23
18876.6	2.83	2.95	3.03	3.10	3.10	3.13	3.12	3.15	3.14	3.16	3.15	3.17	3.20
18879.6	2.82	2.93	3.01	3.07	3.07	3.09	3.09	3.11	3.11	3.12	3.11	3.13	3.16
18882.6	2.81	2.92	2.98	3.05	3.04	3.06	3.06	3.08	3.08	3.09	3.08	3.10	3.13
18885.5	2.80	2.90	2.95	3.01	3.01	3.02	3.02	3.04	3.04	3.05	3.04	3.06	3.08
18888.5	2.78	2.88	2.92	2.97	2.97	2.99	2.98	3.00	3.00	3.01	3.00	3.02	3.04
18891.5	2.77	2.85	2.89	2.94	2.93	2.95	2.94	2.96	2.96	2.97	2.96	2.98	3.00
18894.4	2.75	2.82	2.87	2.91	2.90	2.92	2.91	2.93	2.93	2.94	2.93	2.95	2.97
18897.4	2.72	2.79	2.83	2.87	2.86	2.88	2.87	2.89	2.89	2.90	2.89	2.91	2.92
18900.4	2.69	2.75	2.79	2.82	2.82	2.83	2.82	2.84	2.84	2.85	2.84	2.86	2.87
18903.4	2.65	2.71	2.73	2.75	2.75	2.76	2.76	2.77	2.77	2.78	2.77	2.79	2.80
18906.3	2.61	2.66	2.68	2.69	2.69	2.71	2.70	2.71	2.71	2.73	2.72	2.73	2.75
18909.3	2.56	2.60	2.62	2.63	2.63	2.64	2.63	2.65	2.65	2.66	2.65	2.67	2.68
18912.3	2.51	2.55	2.56	2.57	2.57	2.58	2.58	2.59	2.59	2.60	2.60	2.61	2.62
18915.3	2.45	2.48	2.49	2.50	2.50	2.52	2.51	2.52	2.52	2.53	2.53	2.54	2.56
18918.2	2.39	2.41	2.43	2.43	2.43	2.45	2.45	2.46	2.46	2.47	2.46	2.47	2.49
18921.2	2.31	2.33	2.35	2.36	2.36	2.37	2.37	2.38	2.38	2.39	2.39	2.40	2.42
18924.2	2.24	2.26	2.28	2.29	2.29	2.30	2.30	2.31	2.31	2.32	2.31	2.33	2.34
18927.1	2.16	2.18	2.19	2.20	2.20	2.21	2.21	2.22	2.22	2.23	2.23	2.24	2.26
18930.1	2.09	2.10	2.11	2.12	2.12	2.13	2.13	2.14	2.14	2.15	2.15	2.16	2.17
18933.1	2.00	2.01	2.02	2.03	2.03	2.04	2.04	2.05	2.05	2.06	2.05	2.07	2.08
18936.1	1.91	1.93	1.94	1.95	1.95	1.96	1.96	1.97	1.97	1.98	1.97	1.98	2.03
18939.0	1.83	1.84	1.85	1.87	1.86	1.88	1.87	1.88	1.88	1.89	1.89	1.91	1.98

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
18942.0	1.76	1.77	1.78	1.79	1.79	1.80	1.80	1.81	1.81	1.83	1.81	1.86	1.94
18945.0	1.76	1.77	1.78	1.79	1.79	1.80	1.80	1.81	1.81	1.83	1.81	1.86	1.94
18948.0	1.76	1.77	1.78	1.79	1.79	1.80	1.80	1.81	1.81	1.83	1.81	1.87	1.95
18951.0	1.76	1.77	1.78	1.79	1.79	1.80	1.80	1.81	1.81	1.83	1.81	1.87	1.95
18954.0	1.76	1.77	1.78	1.79	1.79	1.80	1.80	1.81	1.81	1.84	1.81	1.87	1.95
18957.0	1.76	1.77	1.77	1.79	1.79	1.80	1.80	1.81	1.81	1.84	1.81	1.87	1.96
18960.0	1.76	1.77	1.78	1.79	1.79	1.80	1.80	1.81	1.81	1.84	1.81	1.88	1.96
18963.0	1.76	1.77	1.78	1.79	1.79	1.80	1.80	1.81	1.81	1.84	1.81	1.88	1.96
18966.0	1.76	1.77	1.78	1.79	1.79	1.81	1.80	1.81	1.81	1.84	1.82	1.88	1.96
18969.0	1.76	1.77	1.78	1.80	1.80	1.81	1.80	1.82	1.81	1.85	1.82	1.88	1.96
18972.0	1.76	1.77	1.78	1.80	1.80	1.81	1.80	1.82	1.81	1.85	1.82	1.88	1.97
18975.0	1.76	1.77	1.78	1.80	1.79	1.81	1.80	1.81	1.81	1.85	1.82	1.89	1.97
18978.0	1.75	1.77	1.77	1.79	1.79	1.80	1.80	1.81	1.81	1.85	1.82	1.89	1.97
18981.0	1.74	1.76	1.77	1.78	1.78	1.79	1.79	1.81	1.80	1.85	1.82	1.89	1.98
18984.0	1.74	1.75	1.76	1.78	1.78	1.79	1.78	1.81	1.80	1.86	1.82	1.89	1.98
18987.0	1.73	1.74	1.75	1.77	1.77	1.78	1.78	1.81	1.80	1.86	1.82	1.90	1.98
18990.0	1.72	1.74	1.75	1.76	1.76	1.77	1.77	1.81	1.80	1.86	1.83	1.90	1.98
18993.0	1.72	1.73	1.74	1.76	1.76	1.77	1.77	1.81	1.81	1.86	1.83	1.90	1.98
18996.0	1.71	1.73	1.74	1.75	1.75	1.78	1.76	1.81	1.81	1.86	1.83	1.90	1.98
18999.0	1.71	1.72	1.73	1.75	1.75	1.78	1.76	1.81	1.81	1.86	1.83	1.90	1.98
19002.0	1.70	1.72	1.73	1.74	1.74	1.78	1.76	1.81	1.81	1.86	1.83	1.90	1.98
19005.0	1.70	1.71	1.72	1.74	1.73	1.78	1.77	1.82	1.81	1.86	1.83	1.90	1.98
19008.0	1.70	1.71	1.72	1.74	1.74	1.78	1.77	1.82	1.81	1.87	1.84	1.90	1.99
19011.0	1.69	1.71	1.72	1.74	1.74	1.79	1.77	1.83	1.82	1.87	1.84	1.91	1.99
19014.0	1.69	1.70	1.71	1.74	1.74	1.79	1.77	1.83	1.82	1.88	1.84	1.91	1.99
19017.0	1.68	1.69	1.70	1.74	1.74	1.79	1.78	1.83	1.83	1.88	1.85	1.92	2.00
19020.0	1.68	1.69	1.70	1.75	1.74	1.80	1.78	1.84	1.83	1.89	1.85	1.92	2.00
19023.0	1.67	1.68	1.70	1.75	1.75	1.80	1.78	1.84	1.84	1.89	1.86	1.93	2.01
19026.0	1.67	1.68	1.70	1.75	1.75	1.81	1.79	1.85	1.84	1.90	1.86	1.94	2.01
19029.0	1.67	1.68	1.71	1.76	1.75	1.81	1.79	1.85	1.84	1.91	1.87	1.94	2.02
19032.0	1.66	1.67	1.71	1.76	1.76	1.81	1.80	1.86	1.85	1.91	1.87	1.95	2.03
19035.0	1.66	1.67	1.71	1.76	1.76	1.82	1.80	1.86	1.86	1.92	1.88	1.96	2.03
19038.0	1.65	1.67	1.71	1.77	1.76	1.82	1.80	1.87	1.86	1.92	1.89	1.96	2.04
19041.0	1.65	1.67	1.72	1.77	1.77	1.83	1.81	1.87	1.86	1.93	1.89	1.97	2.04
19044.0	1.65	1.67	1.72	1.77	1.77	1.83	1.81	1.88	1.87	1.93	1.89	1.97	2.05
19047.0	1.65	1.67	1.72	1.78	1.77	1.83	1.81	1.88	1.87	1.94	1.90	1.98	2.06
19050.0	1.65	1.67	1.72	1.78	1.77	1.83	1.81	1.88	1.87	1.94	1.90	1.98	2.06
19053.0	1.65	1.68	1.72	1.78	1.77	1.83	1.81	1.88	1.87	1.94	1.90	1.99	2.06
19056.0	1.66	1.68	1.72	1.78	1.77	1.83	1.81	1.88	1.87	1.94	1.90	1.99	2.07
19059.0	1.66	1.68	1.72	1.78	1.77	1.83	1.82	1.88	1.87	1.94	1.90	1.99	2.07
19062.0	1.66	1.68	1.72	1.78	1.77	1.83	1.81	1.88	1.87	1.94	1.90	1.99	2.07
19065.0	1.66	1.68	1.72	1.78	1.77	1.83	1.81	1.88	1.87	1.94	1.90	2.00	2.08
19068.0	1.66	1.68	1.72	1.78	1.78	1.84	1.82	1.89	1.88	1.95	1.91	2.00	2.10
19071.0	1.66	1.68	1.72	1.78	1.78	1.84	1.82	1.89	1.88	1.96	1.91	2.01	2.12
19074.0	1.65	1.68	1.72	1.78	1.78	1.84	1.82	1.89	1.88	1.96	1.91	2.02	2.12
19077.0	1.65	1.67	1.72	1.78	1.77	1.84	1.81	1.89	1.88	1.96	1.91	2.03	2.13

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
19080.0	1.65	1.67	1.72	1.78	1.77	1.84	1.81	1.89	1.88	1.96	1.91	2.03	2.14
19083.0	1.65	1.67	1.72	1.77	1.77	1.83	1.81	1.89	1.88	1.96	1.91	2.04	2.16
19086.0	1.64	1.66	1.71	1.77	1.77	1.84	1.81	1.89	1.88	1.97	1.91	2.04	2.17
19089.0	1.64	1.66	1.71	1.77	1.77	1.85	1.82	1.89	1.89	1.98	1.91	2.05	2.18
19092.0	1.64	1.67	1.72	1.78	1.78	1.85	1.82	1.92	1.90	2.00	1.94	2.07	2.21
19095.0	1.65	1.67	1.72	1.79	1.79	1.87	1.83	1.93	1.93	2.02	1.96	2.09	2.24
19098.0	1.65	1.69	1.74	1.80	1.80	1.88	1.85	1.96	1.95	2.05	1.99	2.12	2.27
19101.0	1.66	1.70	1.75	1.82	1.82	1.90	1.87	1.99	1.96	2.08	2.02	2.14	2.28
19104.0	1.68	1.72	1.77	1.84	1.83	1.92	1.89	2.00	1.99	2.10	2.03	2.17	2.33
19107.0	1.70	1.74	1.79	1.86	1.86	1.94	1.92	2.02	2.02	2.12	2.05	2.21	2.37
19110.0	1.73	1.78	1.83	1.90	1.89	1.98	1.95	2.06	2.05	2.15	2.09	2.23	2.39
19113.0	1.76	1.81	1.87	1.93	1.93	2.01	1.99	2.09	2.07	2.19	2.12	2.25	2.43
19116.0	1.79	1.84	1.89	1.95	1.95	2.03	2.01	2.10	2.09	2.21	2.13	2.28	2.45
19119.0	1.82	1.87	1.92	1.98	1.97	2.05	2.02	2.12	2.11	2.23	2.15	2.31	2.47
19122.0	1.86	1.91	1.96	2.01	2.01	2.09	2.06	2.16	2.15	2.26	2.19	2.34	2.51
19125.0	1.90	1.96	2.00	2.06	2.05	2.13	2.11	2.20	2.19	2.30	2.23	2.39	2.55
19128.0	1.92	1.98	2.03	2.09	2.09	2.17	2.15	2.25	2.23	2.35	2.28	2.45	2.61
19131.0	1.93	2.01	2.07	2.13	2.13	2.21	2.19	2.29	2.28	2.41	2.33	2.50	2.68
19134.0	1.95	2.03	2.09	2.16	2.15	2.25	2.22	2.33	2.32	2.45	2.37	2.56	2.74
19137.0	1.96	2.04	2.11	2.19	2.18	2.28	2.25	2.38	2.36	2.51	2.42	2.62	2.82
19140.0	1.97	2.06	2.14	2.23	2.22	2.34	2.30	2.44	2.42	2.58	2.49	2.70	2.92
19143.0	1.99	2.08	2.17	2.28	2.27	2.40	2.36	2.51	2.49	2.66	2.56	2.79	3.02
19146.0	2.00	2.10	2.19	2.30	2.29	2.42	2.38	2.54	2.52	2.69	2.59	2.82	3.07
19149.0	2.02	2.11	2.20	2.32	2.31	2.44	2.40	2.56	2.54	2.72	2.61	2.85	3.10
19152.0	2.04	2.13	2.22	2.34	2.33	2.47	2.42	2.59	2.56	2.74	2.63	2.87	3.13
19155.0	2.05	2.15	2.24	2.36	2.35	2.49	2.44	2.61	2.59	2.77	2.66	2.89	3.15
19158.0	2.07	2.16	2.26	2.38	2.37	2.51	2.47	2.63	2.61	2.79	2.68	2.91	3.18
19161.0	2.08	2.18	2.28	2.40	2.39	2.53	2.49	2.66	2.63	2.82	2.71	2.94	3.20
19164.0	2.10	2.20	2.30	2.42	2.41	2.56	2.51	2.68	2.66	2.85	2.73	2.96	3.23
19167.0	2.12	2.22	2.31	2.44	2.43	2.58	2.54	2.71	2.68	2.88	2.76	2.99	3.26
19170.0	2.13	2.24	2.33	2.46	2.45	2.60	2.56	2.73	2.71	2.91	2.79	3.02	3.29
19173.0	2.15	2.25	2.35	2.48	2.47	2.63	2.58	2.76	2.74	2.93	2.81	3.04	3.31
19176.0	2.17	2.27	2.37	2.50	2.50	2.65	2.61	2.79	2.76	2.96	2.84	3.07	3.34
19179.0	2.18	2.29	2.39	2.53	2.52	2.68	2.63	2.81	2.79	2.99	2.87	3.10	3.38
19182.0	2.20	2.31	2.41	2.55	2.54	2.70	2.66	2.84	2.82	3.02	2.89	3.13	3.41
19185.0	2.22	2.33	2.43	2.57	2.56	2.73	2.68	2.87	2.84	3.05	2.92	3.16	3.44
19188.0	2.23	2.34	2.45	2.60	2.59	2.76	2.71	2.90	2.87	3.08	2.95	3.19	3.47
19191.0	2.25	2.36	2.48	2.62	2.61	2.78	2.73	2.93	2.90	3.11	2.98	3.22	3.51
19194.0	2.27	2.38	2.50	2.64	2.63	2.81	2.76	2.96	2.93	3.14	3.01	3.25	3.55
19197.0	2.28	2.40	2.52	2.67	2.66	2.84	2.78	2.99	2.96	3.17	3.04	3.29	3.58
19200.0	2.30	2.42	2.54	2.69	2.68	2.87	2.81	3.02	2.99	3.20	3.07	3.32	3.62
19203.0	2.32	2.44	2.56	2.72	2.71	2.90	2.84	3.05	3.02	3.24	3.11	3.35	3.66
19206.0	2.33	2.46	2.58	2.74	2.73	2.92	2.87	3.08	3.05	3.27	3.14	3.39	3.70
19209.0	2.35	2.48	2.60	2.77	2.76	2.95	2.89	3.11	3.08	3.30	3.17	3.42	3.74
19212.0	2.36	2.50	2.63	2.79	2.78	2.98	2.92	3.14	3.11	3.34	3.20	3.46	3.78
19215.0	2.38	2.52	2.65	2.82	2.81	3.01	2.95	3.17	3.14	3.37	3.23	3.49	3.82

Notes

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Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
19218.0	2.40	2.54	2.67	2.85	2.84	3.04	2.98	3.20	3.17	3.41	3.27	3.53	3.86
19221.0	2.41	2.55	2.69	2.87	2.86	3.07	3.01	3.24	3.21	3.44	3.30	3.56	3.89
19224.0	2.43	2.57	2.72	2.90	2.89	3.11	3.04	3.27	3.24	3.48	3.34	3.60	3.93
19227.0	2.44	2.59	2.74	2.93	2.92	3.14	3.07	3.31	3.28	3.51	3.37	3.64	3.96
19230.0	2.46	2.61	2.76	2.96	2.94	3.17	3.11	3.35	3.32	3.56	3.41	3.68	4.01
19233.0	2.46	2.61	2.76	2.96	2.94	3.17	3.11	3.35	3.32	3.56	3.41	3.68	4.01
19236.0	2.46	2.61	2.76	2.96	2.95	3.17	3.11	3.35	3.32	3.56	3.42	3.68	4.01
19239.0	2.46	2.61	2.76	2.96	2.95	3.18	3.11	3.35	3.32	3.56	3.42	3.69	4.00
19242.0	2.46	2.61	2.76	2.96	2.95	3.18	3.11	3.35	3.32	3.57	3.42	3.69	4.01
19245.0	2.46	2.62	2.76	2.96	2.95	3.18	3.11	3.36	3.32	3.57	3.42	3.69	4.01
19248.0	2.46	2.62	2.77	2.96	2.95	3.18	3.11	3.36	3.33	3.57	3.42	3.69	4.01
19251.0	2.46	2.62	2.77	2.96	2.95	3.18	3.11	3.36	3.33	3.57	3.43	3.70	4.00
19254.0	2.46	2.62	2.77	2.96	2.95	3.18	3.11	3.36	3.33	3.57	3.43	3.70	4.00
19257.0	2.46	2.62	2.77	2.96	2.95	3.18	3.11	3.36	3.33	3.58	3.43	3.70	3.99
19260.0	2.46	2.62	2.77	2.96	2.95	3.18	3.11	3.36	3.33	3.58	3.43	3.70	3.99
19263.0	2.46	2.62	2.76	2.96	2.95	3.18	3.11	3.36	3.33	3.58	3.43	3.69	3.98
19266.0	2.46	2.62	2.76	2.96	2.95	3.18	3.11	3.37	3.33	3.58	3.43	3.70	3.98
19269.0	2.46	2.61	2.76	2.96	2.95	3.18	3.11	3.37	3.33	3.58	3.44	3.70	3.98
19272.0	2.46	2.61	2.76	2.96	2.95	3.18	3.11	3.37	3.34	3.59	3.44	3.70	3.98
19275.0	2.46	2.61	2.76	2.96	2.95	3.18	3.11	3.37	3.34	3.59	3.44	3.70	3.98
19278.0	2.46	2.61	2.76	2.96	2.95	3.18	3.11	3.37	3.34	3.59	3.44	3.70	3.98
19281.0	2.46	2.61	2.76	2.96	2.95	3.18	3.11	3.37	3.34	3.59	3.44	3.70	3.98
19284.0	2.46	2.61	2.76	2.96	2.95	3.18	3.11	3.36	3.33	3.57	3.42	3.68	3.96
19287.0	2.46	2.61	2.76	2.96	2.95	3.17	3.11	3.35	3.32	3.55	3.41	3.66	3.94
19290.0	2.46	2.61	2.76	2.96	2.95	3.17	3.10	3.34	3.31	3.55	3.41	3.65	3.92
19293.0	2.46	2.61	2.76	2.96	2.94	3.17	3.10	3.34	3.31	3.54	3.40	3.65	3.91
19296.0	2.46	2.61	2.76	2.96	2.94	3.16	3.10	3.33	3.30	3.53	3.39	3.64	3.90
19299.0	2.46	2.61	2.76	2.96	2.94	3.16	3.10	3.32	3.29	3.52	3.38	3.62	3.88
19302.0	2.46	2.60	2.75	2.95	2.94	3.16	3.10	3.32	3.29	3.51	3.38	3.61	3.87
19305.0	2.46	2.60	2.75	2.95	2.94	3.16	3.10	3.31	3.28	3.50	3.37	3.60	3.86
19308.0	2.45	2.60	2.75	2.95	2.94	3.15	3.09	3.31	3.28	3.49	3.36	3.59	3.85
19311.0	2.45	2.60	2.75	2.95	2.94	3.15	3.09	3.30	3.27	3.49	3.36	3.59	3.84
19314.0	2.45	2.60	2.75	2.94	2.93	3.14	3.08	3.29	3.26	3.47	3.35	3.57	3.83
19317.0	2.45	2.60	2.74	2.94	2.93	3.13	3.07	3.28	3.25	3.46	3.33	3.56	3.81
19320.0	2.45	2.59	2.74	2.93	2.92	3.12	3.06	3.26	3.24	3.44	3.32	3.54	3.79
19323.0	2.45	2.59	2.74	2.92	2.91	3.10	3.05	3.25	3.22	3.43	3.30	3.53	3.78
19326.0	2.44	2.59	2.73	2.92	2.91	3.09	3.04	3.23	3.21	3.41	3.29	3.51	3.76
19329.0	2.44	2.59	2.73	2.92	2.90	3.09	3.04	3.22	3.20	3.40	3.28	3.50	3.74
19332.0	2.44	2.58	2.73	2.91	2.90	3.08	3.03	3.22	3.19	3.39	3.27	3.49	3.73
19335.0	2.44	2.58	2.73	2.91	2.90	3.08	3.03	3.21	3.18	3.38	3.26	3.48	3.72
19338.0	2.44	2.58	2.72	2.91	2.90	3.07	3.02	3.20	3.17	3.37	3.25	3.47	3.71
19341.0	2.45	2.58	2.72	2.90	2.89	3.07	3.02	3.19	3.16	3.36	3.24	3.45	3.69
19344.0	2.45	2.58	2.72	2.90	2.89	3.06	3.02	3.18	3.16	3.34	3.23	3.43	3.67
19347.0	2.46	2.58	2.72	2.90	2.89	3.06	3.01	3.18	3.15	3.33	3.23	3.42	3.65
19350.0	2.46	2.58	2.71	2.90	2.89	3.06	3.01	3.17	3.15	3.32	3.22	3.41	3.64
19353.0	2.47	2.59	2.71	2.89	2.88	3.05	3.01	3.17	3.15	3.32	3.21	3.41	3.64

Notes

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Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
19356.0	2.47	2.59	2.71	2.89	2.88	3.05	3.00	3.16	3.14	3.31	3.21	3.40	3.64
19358.9	2.48	2.60	2.72	2.90	2.89	3.06	3.01	3.17	3.15	3.32	3.22	3.41	3.64
19361.9	2.48	2.61	2.73	2.90	2.89	3.07	3.02	3.18	3.16	3.34	3.23	3.43	3.66
19364.8	2.49	2.62	2.74	2.91	2.90	3.08	3.03	3.20	3.18	3.35	3.24	3.44	3.67
19367.7	2.49	2.62	2.75	2.92	2.91	3.08	3.03	3.21	3.18	3.36	3.25	3.45	3.68
19370.7	2.50	2.63	2.76	2.93	2.92	3.09	3.04	3.21	3.19	3.37	3.26	3.46	3.69
19373.6	2.50	2.64	2.77	2.94	2.93	3.10	3.05	3.22	3.20	3.38	3.27	3.47	3.70
19376.5	2.51	2.65	2.78	2.95	2.94	3.11	3.06	3.23	3.21	3.39	3.28	3.48	3.71
19379.5	2.52	2.66	2.80	2.96	2.95	3.12	3.07	3.24	3.22	3.40	3.29	3.49	3.72
19382.4	2.53	2.67	2.81	2.98	2.97	3.13	3.08	3.25	3.23	3.41	3.30	3.50	3.74
19385.3	2.54	2.68	2.83	3.00	2.99	3.15	3.10	3.27	3.25	3.43	3.32	3.52	3.76
19388.3	2.55	2.70	2.85	3.02	3.01	3.17	3.12	3.29	3.27	3.45	3.33	3.54	3.78
19391.2	2.56	2.72	2.87	3.05	3.04	3.19	3.14	3.31	3.29	3.46	3.35	3.56	3.80
19394.2	2.57	2.73	2.89	3.08	3.07	3.22	3.17	3.33	3.32	3.48	3.37	3.57	3.82
19397.1	2.58	2.75	2.92	3.11	3.10	3.24	3.19	3.35	3.34	3.50	3.39	3.59	3.83
19400.0	2.59	2.77	2.94	3.13	3.12	3.26	3.22	3.37	3.37	3.52	3.41	3.61	3.85
19403.0	2.60	2.78	2.95	3.13	3.12	3.29	3.24	3.40	3.39	3.54	3.43	3.63	3.86
19405.9	2.61	2.78	2.95	3.14	3.13	3.31	3.26	3.42	3.42	3.55	3.45	3.64	3.88
19408.8	2.62	2.79	2.96	3.15	3.14	3.33	3.28	3.44	3.44	3.57	3.47	3.66	3.90
19411.8	2.62	2.80	2.98	3.17	3.16	3.35	3.30	3.46	3.46	3.59	3.49	3.68	3.92
19414.7	2.63	2.81	2.99	3.19	3.18	3.38	3.33	3.49	3.49	3.62	3.52	3.70	3.94
19417.6	2.64	2.83	3.01	3.22	3.20	3.41	3.36	3.52	3.52	3.65	3.55	3.74	3.97
19420.6	2.65	2.85	3.04	3.25	3.24	3.45	3.40	3.57	3.57	3.69	3.59	3.78	4.02
19423.5	2.66	2.87	3.07	3.29	3.27	3.50	3.44	3.62	3.62	3.74	3.64	3.84	4.07
19426.4	2.68	2.89	3.09	3.32	3.31	3.54	3.47	3.66	3.66	3.79	3.69	3.89	4.12
19429.4	2.69	2.91	3.12	3.35	3.34	3.57	3.51	3.69	3.69	3.84	3.73	3.94	4.18
19432.3	2.70	2.92	3.13	3.37	3.35	3.59	3.53	3.72	3.70	3.88	3.77	3.99	4.24
19435.2	2.71	2.93	3.14	3.38	3.37	3.60	3.54	3.75	3.73	3.92	3.81	4.03	4.29
19438.2	2.72	2.94	3.16	3.40	3.38	3.62	3.56	3.78	3.76	3.96	3.84	4.07	4.34
19441.1	2.72	2.95	3.17	3.41	3.40	3.64	3.58	3.81	3.78	3.99	3.86	4.10	4.38
19444.0	2.73	2.96	3.18	3.43	3.42	3.67	3.60	3.84	3.81	4.03	3.90	4.15	4.43
19447.0	2.74	2.97	3.19	3.45	3.43	3.70	3.63	3.87	3.84	4.07	3.93	4.19	4.49
19449.9	2.75	2.98	3.20	3.47	3.45	3.73	3.65	3.90	3.87	4.10	3.96	4.23	4.54
19452.8	2.76	2.99	3.22	3.49	3.47	3.75	3.68	3.93	3.90	4.14	4.00	4.27	4.58
19455.8	2.77	3.00	3.23	3.50	3.48	3.77	3.69	3.95	3.92	4.17	4.02	4.30	4.60
19458.7	2.77	3.01	3.24	3.52	3.50	3.79	3.71	3.97	3.94	4.19	4.04	4.32	4.62
19461.7	2.78	3.02	3.26	3.54	3.52	3.81	3.73	4.00	3.97	4.22	4.07	4.35	4.64
19464.6	2.79	3.04	3.27	3.56	3.54	3.84	3.76	4.03	4.00	4.25	4.10	4.38	4.67
19467.5	2.80	3.05	3.29	3.58	3.56	3.87	3.79	4.07	4.03	4.29	4.14	4.43	4.73
19470.5	2.81	3.06	3.31	3.61	3.59	3.92	3.83	4.12	4.08	4.34	4.19	4.48	4.79
19473.4	2.82	3.08	3.34	3.65	3.63	3.97	3.88	4.18	4.14	4.41	4.25	4.55	4.87
19476.3	2.83	3.09	3.36	3.69	3.67	4.02	3.93	4.24	4.21	4.48	4.32	4.63	4.95
19479.3	2.84	3.11	3.38	3.72	3.70	4.07	3.97	4.30	4.26	4.55	4.38	4.70	5.02
19482.2	2.85	3.12	3.41	3.75	3.73	4.12	4.01	4.35	4.31	4.61	4.43	4.76	5.08
19485.1	2.86	3.14	3.42	3.78	3.75	4.15	4.04	4.39	4.35	4.64	4.47	4.80	5.11
19488.1	2.87	3.15	3.44	3.80	3.78	4.18	4.07	4.42	4.38	4.67	4.50	4.82	5.13

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
19491.0	2.88	3.16	3.46	3.82	3.80	4.21	4.10	4.45	4.41	4.70	4.53	4.85	5.15
19494.0	2.88	3.17	3.46	3.83	3.81	4.21	4.10	4.46	4.42	4.70	4.54	4.85	5.13
19497.0	2.88	3.17	3.47	3.83	3.81	4.22	4.11	4.46	4.42	4.71	4.54	4.85	5.13
19500.0	2.88	3.17	3.47	3.83	3.81	4.21	4.11	4.46	4.42	4.71	4.54	4.85	5.14
19503.0	2.89	3.18	3.47	3.83	3.81	4.21	4.10	4.45	4.41	4.70	4.53	4.85	5.13
19506.0	2.89	3.18	3.47	3.83	3.81	4.20	4.09	4.44	4.40	4.69	4.52	4.83	5.12
19509.0	2.89	3.19	3.48	3.83	3.81	4.20	4.09	4.43	4.39	4.68	4.51	4.82	5.10
19512.0	2.90	3.19	3.48	3.84	3.81	4.19	4.09	4.42	4.39	4.66	4.50	4.81	5.09
19515.0	2.90	3.20	3.48	3.83	3.81	4.18	4.08	4.41	4.38	4.65	4.49	4.79	5.07
19518.0	2.91	3.20	3.48	3.83	3.80	4.18	4.08	4.41	4.37	4.64	4.48	4.78	5.06
19521.0	2.91	3.21	3.49	3.83	3.81	4.18	4.08	4.41	4.37	4.64	4.48	4.78	5.06
19524.0	2.92	3.22	3.50	3.84	3.82	4.18	4.08	4.41	4.37	4.64	4.48	4.78	5.06
19527.0	2.92	3.22	3.51	3.84	3.82	4.18	4.08	4.41	4.37	4.64	4.48	4.78	5.06
19530.0	2.93	3.22	3.51	3.84	3.81	4.18	4.08	4.40	4.36	4.63	4.47	4.77	5.04
19533.0	2.93	3.23	3.50	3.82	3.80	4.16	4.06	4.37	4.34	4.60	4.44	4.73	5.01
19536.0	2.93	3.23	3.50	3.81	3.79	4.14	4.04	4.35	4.32	4.57	4.42	4.70	4.97
19539.0	2.94	3.23	3.50	3.81	3.79	4.13	4.03	4.33	4.30	4.55	4.40	4.68	4.94
19542.0	2.94	3.24	3.50	3.80	3.79	4.12	4.03	4.32	4.29	4.54	4.39	4.67	4.93
19545.0	2.94	3.23	3.50	3.79	3.77	4.10	4.01	4.29	4.26	4.51	4.36	4.64	4.89
19548.0	2.94	3.23	3.49	3.78	3.76	4.08	4.00	4.27	4.24	4.48	4.34	4.61	4.86
19551.0	2.95	3.24	3.50	3.79	3.77	4.08	3.99	4.27	4.23	4.47	4.33	4.60	4.86
19554.0	2.95	3.25	3.51	3.79	3.77	4.07	3.99	4.26	4.22	4.46	4.32	4.59	4.85
19557.0	2.95	3.24	3.49	3.77	3.75	4.04	3.97	4.22	4.19	4.43	4.29	4.55	4.80
19560.0	2.95	3.23	3.48	3.75	3.73	4.01	3.94	4.19	4.16	4.39	4.25	4.51	4.75
19563.0	2.95	3.24	3.48	3.74	3.73	4.00	3.93	4.18	4.15	4.37	4.24	4.49	4.73
19566.0	2.96	3.25	3.49	3.74	3.73	4.00	3.92	4.17	4.14	4.37	4.23	4.49	4.72
19569.0	2.96	3.24	3.48	3.74	3.72	3.99	3.92	4.16	4.13	4.35	4.22	4.47	4.71
19572.0	2.96	3.24	3.48	3.73	3.72	3.98	3.91	4.14	4.12	4.34	4.21	4.46	4.70
19575.0	2.96	3.24	3.48	3.73	3.71	3.97	3.90	4.13	4.10	4.32	4.19	4.44	4.68
19578.0	2.96	3.24	3.47	3.72	3.70	3.95	3.88	4.11	4.08	4.29	4.16	4.41	4.65
19581.0	2.96	3.22	3.45	3.69	3.67	3.91	3.85	4.06	4.03	4.24	4.12	4.36	4.59
19584.0	2.96	3.21	3.43	3.66	3.65	3.87	3.81	4.02	3.99	4.20	4.07	4.31	4.53
19587.0	2.96	3.21	3.43	3.66	3.65	3.87	3.81	4.01	3.98	4.18	4.06	4.29	4.52
19590.0	2.98	3.22	3.44	3.66	3.65	3.87	3.81	4.00	3.98	4.18	4.05	4.28	4.50
19593.0	2.98	3.22	3.43	3.65	3.64	3.85	3.79	3.98	3.96	4.15	4.03	4.26	4.48
19596.0	2.97	3.21	3.42	3.63	3.62	3.83	3.77	3.96	3.94	4.13	4.01	4.23	4.45
19599.0	2.97	3.20	3.41	3.62	3.61	3.81	3.75	3.94	3.92	4.10	3.99	4.20	4.41
19602.0	2.97	3.20	3.39	3.60	3.59	3.78	3.73	3.91	3.89	4.07	3.95	4.17	4.37
19605.0	2.96	3.18	3.36	3.56	3.55	3.73	3.68	3.85	3.83	4.00	3.90	4.10	4.30
19608.0	2.96	3.16	3.34	3.53	3.52	3.69	3.64	3.80	3.78	3.95	3.85	4.04	4.24
19611.0	2.97	3.17	3.34	3.53	3.52	3.69	3.65	3.81	3.79	3.95	3.85	4.04	4.23
19614.0	2.99	3.19	3.37	3.56	3.55	3.72	3.68	3.84	3.82	3.98	3.88	4.07	4.26
19617.0	3.01	3.22	3.40	3.60	3.59	3.78	3.73	3.90	3.87	4.04	3.94	4.13	4.31
19620.0	2.87	3.09	3.28	3.49	3.48	3.69	3.63	3.83	3.80	4.00	3.88	4.11	4.33
19622.9	2.74	2.97	3.16	3.38	3.36	3.59	3.53	3.76	3.73	3.96	3.82	4.09	4.34
19625.9	2.64	2.86	3.06	3.28	3.27	3.51	3.44	3.68	3.65	3.89	3.75	4.03	4.29

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
19628.8	2.55	2.77	2.97	3.19	3.18	3.43	3.36	3.61	3.58	3.83	3.68	3.97	4.25
19631.8	2.49	2.70	2.90	3.12	3.11	3.36	3.29	3.54	3.51	3.77	3.61	3.91	4.20
19634.7	2.42	2.63	2.82	3.04	3.03	3.27	3.20	3.46	3.42	3.68	3.52	3.83	4.13
19637.7	2.38	2.58	2.76	2.98	2.96	3.21	3.14	3.39	3.35	3.61	3.45	3.76	4.06
19640.7	2.33	2.53	2.71	2.92	2.91	3.15	3.08	3.32	3.29	3.55	3.39	3.69	4.00
19643.6	2.30	2.49	2.67	2.88	2.86	3.10	3.03	3.28	3.25	3.50	3.35	3.65	3.96
19646.6	2.27	2.46	2.63	2.84	2.83	3.07	3.00	3.25	3.21	3.47	3.31	3.62	3.94
19649.5	2.25	2.44	2.61	2.81	2.80	3.04	2.97	3.22	3.19	3.45	3.29	3.60	3.92
19652.5	2.23	2.41	2.58	2.78	2.77	3.00	2.93	3.18	3.15	3.41	3.25	3.56	3.88
19655.4	2.20	2.38	2.55	2.75	2.74	2.97	2.90	3.15	3.11	3.37	3.21	3.52	3.85
19658.4	2.18	2.36	2.52	2.72	2.71	2.94	2.87	3.11	3.08	3.33	3.18	3.48	3.81
19661.3	2.17	2.34	2.50	2.69	2.68	2.90	2.84	3.08	3.04	3.30	3.14	3.45	3.77
19664.3	2.15	2.32	2.48	2.67	2.65	2.88	2.81	3.05	3.01	3.27	3.11	3.42	3.74
19667.3	2.14	2.30	2.46	2.64	2.63	2.85	2.78	3.01	2.98	3.23	3.08	3.38	3.71
19670.2	2.12	2.28	2.43	2.61	2.60	2.81	2.75	2.97	2.94	3.19	3.04	3.33	3.65
19673.2	2.11	2.26	2.40	2.58	2.56	2.77	2.71	2.93	2.90	3.14	2.99	3.28	3.60
19676.1	2.10	2.25	2.38	2.55	2.54	2.74	2.68	2.90	2.87	3.10	2.96	3.24	3.55
19679.1	2.09	2.24	2.37	2.53	2.52	2.71	2.65	2.86	2.83	3.06	2.92	3.20	3.50
19682.0	2.09	2.22	2.35	2.51	2.50	2.69	2.63	2.83	2.80	3.03	2.89	3.16	3.46
19685.0	2.08	2.22	2.34	2.49	2.48	2.66	2.61	2.81	2.78	3.00	2.86	3.13	3.42
19688.0	2.08	2.21	2.33	2.48	2.47	2.65	2.59	2.79	2.76	2.97	2.84	3.10	3.39
19690.9	2.08	2.21	2.33	2.47	2.46	2.63	2.58	2.77	2.74	2.95	2.82	3.08	3.36
19693.9	2.08	2.21	2.32	2.46	2.45	2.62	2.57	2.75	2.73	2.93	2.81	3.06	3.33
19696.8	2.08	2.21	2.32	2.46	2.45	2.61	2.56	2.74	2.72	2.92	2.79	3.04	3.31
19699.8	2.08	2.20	2.32	2.45	2.44	2.60	2.55	2.72	2.70	2.89	2.77	3.01	3.28
19702.7	2.08	2.20	2.31	2.44	2.43	2.58	2.54	2.71	2.68	2.87	2.76	2.99	3.24
19705.7	2.09	2.21	2.31	2.44	2.43	2.58	2.53	2.70	2.67	2.86	2.74	2.96	3.21
19708.7	2.09	2.21	2.32	2.44	2.43	2.58	2.53	2.69	2.67	2.84	2.74	2.95	3.18
19711.6	2.10	2.21	2.32	2.44	2.43	2.58	2.54	2.69	2.67	2.84	2.74	2.94	3.17
19714.6	2.10	2.22	2.33	2.45	2.44	2.59	2.54	2.70	2.68	2.85	2.74	2.94	3.16
19717.5	2.11	2.23	2.33	2.45	2.45	2.59	2.55	2.70	2.68	2.85	2.75	2.95	3.16
19720.5	2.12	2.23	2.34	2.46	2.45	2.60	2.56	2.71	2.69	2.86	2.75	2.96	3.17
19723.4	2.12	2.24	2.35	2.47	2.46	2.61	2.56	2.72	2.70	2.86	2.76	2.96	3.17
19726.4	2.13	2.25	2.36	2.48	2.47	2.62	2.57	2.73	2.70	2.87	2.77	2.96	3.16
19729.3	2.14	2.26	2.36	2.49	2.48	2.62	2.58	2.73	2.71	2.87	2.77	2.96	3.16
19732.3	2.15	2.27	2.37	2.50	2.49	2.63	2.59	2.74	2.72	2.88	2.78	2.96	3.15
19735.3	2.16	2.28	2.39	2.51	2.50	2.64	2.60	2.75	2.73	2.89	2.79	2.97	3.15
19738.2	2.17	2.29	2.40	2.52	2.51	2.66	2.61	2.76	2.74	2.90	2.80	2.98	3.16
19741.2	2.18	2.30	2.41	2.53	2.52	2.67	2.62	2.77	2.76	2.91	2.81	2.99	3.17
19744.1	2.20	2.32	2.42	2.54	2.54	2.68	2.64	2.79	2.77	2.92	2.83	3.00	3.18
19747.1	2.21	2.33	2.44	2.56	2.55	2.69	2.65	2.80	2.78	2.93	2.84	3.02	3.19
19750.0	2.23	2.35	2.45	2.57	2.56	2.71	2.67	2.82	2.80	2.95	2.86	3.03	3.21
19753.0	2.24	2.36	2.47	2.59	2.58	2.72	2.68	2.83	2.81	2.96	2.87	3.05	3.22
19756.0	2.24	2.36	2.46	2.58	2.58	2.72	2.68	2.83	2.81	2.96	2.87	3.05	3.22
19759.0	2.23	2.35	2.46	2.58	2.57	2.72	2.68	2.83	2.81	2.96	2.87	3.05	3.22
19762.0	2.23	2.35	2.46	2.58	2.57	2.72	2.68	2.83	2.81	2.97	2.87	3.05	3.21

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
19765.0	2.22	2.34	2.45	2.58	2.57	2.72	2.68	2.83	2.81	2.97	2.87	3.05	3.21
19768.0	2.22	2.34	2.45	2.58	2.57	2.72	2.68	2.83	2.81	2.97	2.87	3.05	3.21
19771.0	2.21	2.34	2.45	2.58	2.57	2.72	2.68	2.83	2.81	2.97	2.88	3.06	3.22
19774.0	2.21	2.34	2.45	2.58	2.57	2.72	2.68	2.83	2.81	2.97	2.88	3.06	3.22
19777.0	2.21	2.33	2.45	2.58	2.57	2.72	2.68	2.84	2.82	2.98	2.88	3.06	3.22
19780.0	2.20	2.33	2.45	2.58	2.57	2.73	2.68	2.84	2.82	2.98	2.88	3.07	3.22
19783.0	2.20	2.33	2.45	2.58	2.57	2.73	2.68	2.84	2.82	2.99	2.89	3.07	3.23
19786.0	2.20	2.33	2.45	2.58	2.57	2.73	2.69	2.85	2.83	2.99	2.89	3.08	3.24
19789.0	2.20	2.33	2.45	2.58	2.57	2.74	2.69	2.85	2.83	3.00	2.90	3.08	3.24
19792.0	2.20	2.33	2.45	2.59	2.58	2.74	2.69	2.86	2.84	3.00	2.90	3.09	3.24
19795.0	2.20	2.34	2.45	2.59	2.58	2.75	2.70	2.86	2.84	3.01	2.91	3.10	3.25
19798.0	2.20	2.34	2.46	2.59	2.59	2.75	2.70	2.87	2.85	3.02	2.92	3.11	3.25
19801.0	2.20	2.34	2.46	2.60	2.59	2.75	2.71	2.87	2.85	3.02	2.92	3.11	3.25
19804.0	2.20	2.34	2.46	2.60	2.59	2.76	2.71	2.88	2.86	3.02	2.92	3.10	3.24
19807.0	2.21	2.34	2.47	2.60	2.59	2.76	2.71	2.88	2.85	3.02	2.92	3.10	3.23
19810.0	2.21	2.35	2.47	2.61	2.60	2.76	2.71	2.88	2.86	3.01	2.92	3.09	3.22
19813.0	2.21	2.35	2.47	2.61	2.60	2.77	2.72	2.88	2.86	3.02	2.93	3.10	3.23
19816.0	2.22	2.36	2.48	2.62	2.61	2.78	2.73	2.90	2.88	3.04	2.94	3.11	3.23
19819.0	2.23	2.37	2.49	2.63	2.62	2.79	2.74	2.91	2.89	3.05	2.95	3.12	3.24
19822.0	2.23	2.38	2.50	2.64	2.64	2.80	2.75	2.92	2.90	3.06	2.97	3.13	3.24
19825.0	2.24	2.39	2.51	2.66	2.65	2.82	2.77	2.94	2.92	3.07	2.98	3.14	3.25
19828.0	2.25	2.40	2.53	2.67	2.66	2.83	2.78	2.95	2.93	3.09	3.00	3.15	3.25
19831.0	2.26	2.41	2.54	2.69	2.68	2.85	2.80	2.97	2.95	3.10	3.01	3.17	3.26
19834.0	2.27	2.42	2.55	2.70	2.69	2.87	2.82	2.99	2.97	3.12	3.03	3.19	3.28
19837.0	2.28	2.44	2.57	2.72	2.71	2.89	2.84	3.01	2.99	3.15	3.06	3.21	3.30
19840.0	2.30	2.46	2.59	2.74	2.73	2.91	2.86	3.04	3.01	3.17	3.08	3.23	3.32
19843.0	2.32	2.47	2.61	2.76	2.75	2.94	2.88	3.06	3.04	3.19	3.10	3.26	3.34
19846.0	2.33	2.49	2.63	2.79	2.78	2.96	2.91	3.09	3.07	3.22	3.13	3.28	3.36
19849.0	2.35	2.52	2.66	2.81	2.80	2.99	2.93	3.12	3.09	3.25	3.16	3.31	3.38
19852.0	2.38	2.54	2.68	2.84	2.83	3.02	2.96	3.15	3.12	3.28	3.19	3.34	3.39
19855.0	2.40	2.57	2.71	2.87	2.86	3.05	2.99	3.18	3.16	3.31	3.22	3.37	3.41
19858.0	2.43	2.60	2.74	2.90	2.89	3.08	3.03	3.21	3.19	3.33	3.25	3.39	3.42
19861.0	2.45	2.63	2.77	2.94	2.93	3.12	3.06	3.24	3.22	3.36	3.28	3.41	3.43
19864.0	2.49	2.66	2.81	2.97	2.96	3.15	3.09	3.27	3.25	3.37	3.30	3.41	3.44
19867.0	2.52	2.70	2.85	3.01	3.00	3.18	3.13	3.29	3.27	3.39	3.32	3.42	3.44
19870.0	2.55	2.73	2.88	3.03	3.02	3.19	3.14	3.29	3.28	3.37	3.32	3.40	3.42
19873.0	2.59	2.76	2.91	3.05	3.04	3.21	3.16	3.30	3.28	3.36	3.32	3.37	3.39
19876.0	2.61	2.78	2.91	3.05	3.04	3.18	3.14	3.26	3.25	3.31	3.28	3.32	3.34
19879.0	2.64	2.80	2.92	3.04	3.04	3.16	3.12	3.22	3.21	3.26	3.24	3.27	3.28
19882.0	2.62	2.76	2.88	2.99	2.98	3.09	3.06	3.15	3.14	3.18	3.16	3.19	3.20
19885.0	2.61	2.73	2.83	2.93	2.92	3.03	3.00	3.08	3.07	3.11	3.09	3.11	3.12
19888.0	2.52	2.64	2.73	2.83	2.82	2.92	2.89	2.96	2.96	2.99	2.97	2.99	3.01
19891.0	2.44	2.55	2.64	2.73	2.72	2.82	2.79	2.86	2.85	2.88	2.87	2.88	2.90
19894.0	2.30	2.41	2.50	2.58	2.58	2.66	2.64	2.70	2.69	2.72	2.71	2.72	2.74
19897.0	2.18	2.28	2.37	2.45	2.44	2.52	2.50	2.56	2.55	2.58	2.57	2.58	2.59
19900.0	2.17	2.27	2.36	2.44	2.43	2.51	2.49	2.55	2.54	2.56	2.55	2.57	2.58

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
19903.0	2.16	2.27	2.35	2.43	2.42	2.50	2.48	2.53	2.53	2.55	2.54	2.55	2.56
19905.9	2.16	2.26	2.34	2.42	2.41	2.49	2.47	2.52	2.51	2.53	2.52	2.54	2.55
19908.9	2.15	2.25	2.34	2.41	2.40	2.47	2.45	2.50	2.50	2.51	2.51	2.52	2.53
19911.9	2.15	2.25	2.33	2.40	2.39	2.46	2.45	2.49	2.49	2.50	2.50	2.51	2.52
19914.9	2.14	2.24	2.32	2.39	2.39	2.46	2.44	2.49	2.49	2.50	2.50	2.51	2.52
19917.8	2.13	2.23	2.31	2.39	2.39	2.47	2.45	2.49	2.49	2.50	2.50	2.51	2.52
19920.8	2.13	2.22	2.31	2.39	2.39	2.47	2.45	2.50	2.49	2.51	2.50	2.51	2.52
19923.8	2.12	2.22	2.30	2.39	2.38	2.47	2.44	2.50	2.49	2.50	2.50	2.51	2.52
19926.8	2.11	2.21	2.29	2.38	2.37	2.46	2.44	2.48	2.48	2.49	2.49	2.50	2.51
19929.8	2.11	2.20	2.28	2.37	2.37	2.44	2.42	2.47	2.47	2.48	2.47	2.49	2.49
19932.7	2.10	2.20	2.28	2.36	2.36	2.43	2.41	2.46	2.45	2.46	2.46	2.47	2.48
19935.7	2.10	2.19	2.27	2.35	2.35	2.42	2.40	2.44	2.44	2.45	2.44	2.46	2.47
19938.7	2.09	2.18	2.26	2.34	2.34	2.41	2.39	2.43	2.43	2.44	2.43	2.44	2.45
19941.7	2.08	2.18	2.25	2.33	2.33	2.39	2.38	2.41	2.41	2.42	2.42	2.43	2.44
19944.6	2.08	2.17	2.24	2.32	2.32	2.38	2.37	2.40	2.40	2.41	2.40	2.41	2.42
19947.6	2.07	2.16	2.24	2.31	2.31	2.37	2.36	2.39	2.39	2.39	2.39	2.40	2.41
19950.6	2.07	2.16	2.23	2.30	2.30	2.36	2.34	2.37	2.37	2.38	2.37	2.38	2.39
19953.6	2.06	2.15	2.22	2.29	2.29	2.34	2.33	2.36	2.36	2.37	2.36	2.37	2.38
19956.5	2.06	2.14	2.21	2.28	2.28	2.33	2.32	2.35	2.35	2.35	2.35	2.36	2.37
19959.5	2.05	2.14	2.20	2.27	2.27	2.32	2.31	2.33	2.33	2.34	2.33	2.34	2.35
19962.5	2.04	2.13	2.20	2.26	2.26	2.30	2.30	2.32	2.32	2.33	2.32	2.33	2.34
19965.5	2.04	2.12	2.19	2.25	2.25	2.29	2.28	2.31	2.30	2.31	2.31	2.31	2.32
19968.5	2.03	2.12	2.18	2.24	2.24	2.28	2.27	2.29	2.29	2.30	2.29	2.30	2.31
19971.4	2.03	2.11	2.17	2.23	2.23	2.26	2.26	2.28	2.28	2.29	2.28	2.29	2.30
19974.4	2.02	2.10	2.16	2.22	2.22	2.25	2.25	2.26	2.26	2.27	2.26	2.27	2.28
19977.4	2.02	2.09	2.15	2.21	2.20	2.24	2.23	2.25	2.25	2.26	2.25	2.26	2.27
19980.4	2.01	2.09	2.15	2.20	2.19	2.22	2.22	2.23	2.23	2.24	2.24	2.24	2.25
19983.3	2.01	2.08	2.14	2.18	2.18	2.21	2.21	2.22	2.22	2.23	2.22	2.23	2.24
19986.3	2.00	2.07	2.13	2.17	2.17	2.20	2.19	2.20	2.20	2.21	2.21	2.22	2.23
19989.3	1.99	2.07	2.12	2.16	2.16	2.18	2.18	2.19	2.19	2.20	2.19	2.20	2.21
19992.3	1.99	2.06	2.11	2.15	2.15	2.17	2.17	2.17	2.17	2.18	2.18	2.19	2.20
19995.3	1.98	2.05	2.10	2.14	2.13	2.15	2.15	2.16	2.16	2.17	2.16	2.17	2.18
19998.2	1.98	2.04	2.09	2.12	2.12	2.14	2.14	2.15	2.14	2.15	2.15	2.16	2.17
20001.2	1.97	2.04	2.08	2.11	2.11	2.13	2.13	2.13	2.13	2.14	2.13	2.14	2.15
20004.2	1.97	2.03	2.07	2.10	2.10	2.11	2.11	2.12	2.12	2.12	2.12	2.12	2.13
20007.2	1.96	2.02	2.06	2.08	2.08	2.10	2.10	2.10	2.10	2.11	2.10	2.11	2.12
20010.1	1.95	2.01	2.05	2.07	2.07	2.08	2.08	2.09	2.09	2.09	2.09	2.09	2.10
20013.1	1.95	2.00	2.04	2.06	2.06	2.07	2.07	2.07	2.07	2.08	2.07	2.08	2.09
20016.1	1.94	1.99	2.03	2.05	2.04	2.06	2.06	2.06	2.06	2.06	2.06	2.07	2.08
20019.1	1.93	1.99	2.02	2.03	2.03	2.04	2.04	2.05	2.05	2.05	2.05	2.05	2.06
20022.0	1.93	1.98	2.01	2.02	2.02	2.03	2.03	2.03	2.03	2.04	2.03	2.04	2.05
20025.0	1.92	1.97	1.99	2.01	2.00	2.01	2.01	2.02	2.02	2.02	2.02	2.02	2.03
20028.0	1.92	1.96	1.98	1.99	1.99	2.00	2.00	2.00	2.00	2.01	2.00	2.01	2.02
20030.9	1.91	1.96	1.98	1.99	1.99	1.99	1.99	2.00	2.00	2.00	2.00	2.01	2.01
20033.8	1.91	1.95	1.97	1.98	1.98	1.99	1.99	1.99	1.99	2.00	1.99	2.00	2.01
20036.8	1.91	1.95	1.97	1.98	1.97	1.98	1.98	1.99	1.99	1.99	1.99	2.00	2.00

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20039.7	1.90	1.94	1.96	1.97	1.97	1.98	1.98	1.98	1.98	1.99	1.98	1.99	2.00
20042.6	1.90	1.94	1.96	1.97	1.96	1.97	1.97	1.98	1.97	1.98	1.98	1.99	2.00
20045.5	1.89	1.93	1.95	1.96	1.96	1.97	1.96	1.97	1.97	1.98	1.97	1.98	1.99
20048.4	1.89	1.93	1.95	1.96	1.96	1.96	1.96	1.97	1.96	1.97	1.97	1.98	1.99
20051.3	1.89	1.92	1.95	1.95	1.95	1.96	1.95	1.96	1.96	1.97	1.96	1.97	1.98
20054.3	1.88	1.92	1.94	1.95	1.95	1.95	1.95	1.96	1.96	1.96	1.96	1.97	1.98
20057.2	1.88	1.92	1.94	1.94	1.94	1.95	1.95	1.95	1.95	1.96	1.95	1.96	1.97
20060.1	1.88	1.91	1.93	1.94	1.94	1.94	1.94	1.95	1.95	1.96	1.95	1.96	1.97
20063.0	1.87	1.91	1.93	1.93	1.93	1.94	1.94	1.94	1.94	1.95	1.95	1.96	1.96
20065.9	1.87	1.90	1.92	1.93	1.93	1.93	1.93	1.94	1.94	1.95	1.94	1.95	1.96
20068.8	1.87	1.90	1.92	1.92	1.92	1.93	1.93	1.94	1.93	1.94	1.94	1.95	1.96
20071.8	1.86	1.90	1.92	1.92	1.92	1.92	1.92	1.93	1.93	1.94	1.93	1.94	1.95
20074.7	1.86	1.89	1.91	1.92	1.92	1.92	1.92	1.93	1.93	1.93	1.93	1.94	1.95
20077.6	1.86	1.89	1.91	1.91	1.91	1.92	1.91	1.92	1.92	1.93	1.93	1.93	1.94
20080.5	1.86	1.89	1.90	1.91	1.91	1.91	1.91	1.92	1.92	1.93	1.92	1.93	1.94
20083.4	1.85	1.88	1.90	1.90	1.90	1.91	1.91	1.91	1.91	1.92	1.92	1.93	1.93
20086.3	1.85	1.88	1.89	1.90	1.90	1.90	1.90	1.91	1.91	1.92	1.91	1.92	1.93
20089.3	1.85	1.88	1.88	1.89	1.89	1.90	1.90	1.91	1.91	1.91	1.91	1.92	1.92
20092.2	1.85	1.87	1.88	1.89	1.89	1.90	1.89	1.90	1.90	1.91	1.90	1.91	1.92
20095.1	1.85	1.87	1.88	1.88	1.88	1.89	1.89	1.90	1.90	1.90	1.90	1.91	1.91
20098.0	1.84	1.86	1.87	1.88	1.88	1.89	1.88	1.89	1.89	1.90	1.89	1.90	1.91
20100.9	1.84	1.86	1.87	1.87	1.87	1.88	1.88	1.89	1.89	1.89	1.89	1.90	1.90
20103.8	1.84	1.86	1.86	1.87	1.87	1.88	1.88	1.88	1.88	1.89	1.88	1.89	1.90
20106.8	1.83	1.85	1.86	1.86	1.86	1.87	1.87	1.88	1.88	1.88	1.88	1.88	1.89
20109.7	1.83	1.85	1.85	1.86	1.86	1.87	1.87	1.87	1.87	1.88	1.87	1.88	1.88
20112.6	1.83	1.84	1.85	1.85	1.85	1.86	1.86	1.87	1.87	1.87	1.87	1.87	1.88
20115.5	1.82	1.84	1.84	1.85	1.85	1.86	1.85	1.86	1.86	1.86	1.86	1.87	1.87
20118.4	1.82	1.83	1.84	1.84	1.84	1.85	1.85	1.85	1.85	1.86	1.85	1.86	1.86
20121.3	1.81	1.83	1.83	1.84	1.84	1.84	1.84	1.85	1.85	1.85	1.85	1.85	1.86
20124.3	1.81	1.82	1.83	1.83	1.83	1.84	1.84	1.84	1.84	1.84	1.84	1.85	1.85
20127.2	1.81	1.82	1.82	1.83	1.83	1.83	1.83	1.83	1.83	1.84	1.83	1.84	1.84
20130.1	1.80	1.81	1.82	1.82	1.82	1.82	1.82	1.83	1.83	1.83	1.83	1.83	1.84
20133.0	1.80	1.80	1.81	1.81	1.81	1.82	1.82	1.82	1.82	1.82	1.82	1.83	1.83
20135.9	1.79	1.80	1.80	1.81	1.81	1.81	1.81	1.81	1.81	1.82	1.81	1.82	1.83
20138.8	1.78	1.79	1.79	1.80	1.80	1.80	1.80	1.81	1.81	1.81	1.81	1.81	1.82
20141.8	1.78	1.78	1.79	1.79	1.79	1.80	1.80	1.80	1.80	1.80	1.80	1.81	1.81
20144.7	1.77	1.78	1.78	1.79	1.79	1.79	1.79	1.79	1.79	1.80	1.80	1.80	1.81
20147.6	1.76	1.77	1.77	1.78	1.78	1.78	1.78	1.79	1.79	1.79	1.79	1.79	1.80
20150.5	1.76	1.76	1.76	1.77	1.77	1.78	1.77	1.78	1.78	1.78	1.78	1.78	1.79
20153.4	1.75	1.75	1.76	1.76	1.76	1.77	1.77	1.77	1.77	1.77	1.77	1.78	1.78
20156.3	1.74	1.74	1.75	1.75	1.75	1.76	1.76	1.76	1.76	1.77	1.76	1.77	1.77
20159.3	1.73	1.73	1.74	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.76	1.76
20162.2	1.72	1.72	1.73	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.75	1.75
20165.1	1.71	1.71	1.72	1.72	1.72	1.73	1.72	1.73	1.73	1.73	1.73	1.73	1.73
20168.0	1.70	1.70	1.70	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.72	1.72
20171.0	1.70	1.71	1.71	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.73

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20173.9	1.71	1.72	1.72	1.72	1.72	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73
20176.9	1.72	1.72	1.73	1.73	1.73	1.73	1.73	1.74	1.74	1.74	1.74	1.74	1.74
20179.8	1.72	1.73	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.75	1.74	1.75	1.75
20182.8	1.73	1.74	1.74	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.76
20185.7	1.74	1.75	1.75	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76
20188.7	1.75	1.75	1.76	1.76	1.76	1.77	1.76	1.77	1.77	1.77	1.77	1.77	1.77
20191.6	1.75	1.76	1.76	1.77	1.77	1.77	1.77	1.78	1.77	1.78	1.78	1.78	1.78
20194.6	1.76	1.77	1.77	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.79
20197.5	1.77	1.77	1.78	1.78	1.78	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79
20200.5	1.77	1.78	1.78	1.79	1.79	1.79	1.79	1.80	1.80	1.80	1.80	1.80	1.80
20203.5	1.78	1.79	1.79	1.80	1.80	1.80	1.80	1.80	1.80	1.81	1.80	1.81	1.81
20206.4	1.79	1.79	1.80	1.80	1.80	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.82
20209.4	1.79	1.80	1.81	1.81	1.81	1.81	1.81	1.82	1.82	1.82	1.82	1.82	1.82
20212.3	1.80	1.81	1.81	1.82	1.82	1.82	1.82	1.82	1.82	1.83	1.82	1.83	1.83
20215.3	1.80	1.81	1.82	1.82	1.82	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.84
20218.2	1.81	1.82	1.82	1.83	1.83	1.83	1.83	1.84	1.84	1.84	1.84	1.84	1.84
20221.2	1.82	1.83	1.83	1.84	1.84	1.84	1.84	1.84	1.84	1.85	1.84	1.85	1.85
20224.1	1.82	1.83	1.84	1.84	1.84	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.86
20227.1	1.83	1.84	1.84	1.85	1.85	1.85	1.85	1.86	1.86	1.86	1.86	1.86	1.86
20230.0	1.84	1.84	1.85	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.87	1.87
20233.0	1.84	1.85	1.86	1.86	1.86	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
20236.0	1.85	1.86	1.86	1.87	1.87	1.87	1.87	1.88	1.88	1.88	1.88	1.88	1.88
20238.9	1.86	1.87	1.87	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.89
20241.9	1.87	1.87	1.88	1.88	1.88	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89
20244.8	1.87	1.88	1.89	1.89	1.89	1.89	1.89	1.90	1.90	1.90	1.90	1.90	1.90
20247.8	1.88	1.89	1.89	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.91
20250.7	1.89	1.90	1.90	1.90	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91
20253.7	1.89	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.92	1.92	1.92	1.92
20256.6	1.90	1.91	1.91	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92
20259.6	1.91	1.92	1.92	1.93	1.92	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
20262.5	1.92	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.94	1.93	1.93	1.94
20265.5	1.93	1.93	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94
20268.5	1.94	1.94	1.94	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95
20271.4	1.94	1.95	1.95	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.95	1.95
20274.4	1.95	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96
20277.3	1.96	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97
20280.3	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98
20283.2	1.98	1.98	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.98	1.99	1.98	1.98
20286.2	1.99	1.99	1.99	2.00	2.00	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99
20289.1	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.99
20292.1	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.00	2.00
20295.0	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.01	2.02	2.01	2.01
20298.0	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.02	2.03	2.02	2.02	2.02	2.02
20300.9	2.05	2.05	2.05	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.03	2.03
20303.8	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.05	2.05	2.05	2.05	2.05	2.04
20306.6	2.08	2.08	2.08	2.07	2.07	2.07	2.07	2.07	2.07	2.06	2.07	2.06	2.06

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20309.5	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.08	2.08	2.08	2.08	2.08	2.07
20312.4	2.11	2.11	2.11	2.10	2.10	2.10	2.10	2.10	2.10	2.09	2.09	2.09	2.09
20315.3	2.12	2.12	2.12	2.12	2.12	2.11	2.12	2.11	2.11	2.11	2.11	2.11	2.11
20318.2	2.14	2.14	2.14	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.12	2.13
20321.1	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.14	2.15
20323.9	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.16	2.17
20326.8	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19
20329.7	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21
20332.6	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23
20335.5	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
20338.4	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.27	2.26	2.26	2.26	2.26
20341.2	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28
20344.1	2.29	2.30	2.29	2.30	2.30	2.29	2.29	2.30	2.30	2.29	2.30	2.29	2.29
20347.0	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31
20349.9	2.32	2.33	2.32	2.33	2.33	2.32	2.32	2.33	2.33	2.32	2.33	2.32	2.32
20352.8	2.33	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34
20355.6	2.35	2.35	2.35	2.36	2.36	2.35	2.35	2.36	2.36	2.35	2.36	2.35	2.35
20358.5	2.36	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37
20361.4	2.38	2.38	2.38	2.39	2.38	2.38	2.38	2.39	2.39	2.38	2.39	2.38	2.38
20364.3	2.39	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.39
20367.2	2.40	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41
20370.1	2.41	2.42	2.42	2.43	2.42	2.42	2.42	2.43	2.43	2.42	2.43	2.42	2.42
20372.9	2.42	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.43
20375.8	2.44	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45
20378.7	2.45	2.46	2.46	2.46	2.46	2.46	2.47	2.47	2.46	2.46	2.47	2.46	2.46
20381.6	2.46	2.47	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.47	2.48
20384.5	2.47	2.49	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.49	2.50
20387.4	2.49	2.51	2.51	2.51	2.51	2.51	2.52	2.51	2.51	2.52	2.51	2.51	2.51
20390.2	2.50	2.52	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.52	2.53
20393.1	2.51	2.53	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.55	2.54	2.54	2.54
20396.0	2.52	2.55	2.55	2.55	2.55	2.56	2.56	2.56	2.55	2.56	2.56	2.55	2.56
20399.0	2.49	2.51	2.52	2.52	2.52	2.52	2.53	2.52	2.52	2.53	2.52	2.52	2.52
20402.0	2.46	2.48	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49
20405.0	2.43	2.45	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.45	2.46
20408.0	2.40	2.42	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.42	2.43
20411.0	2.37	2.39	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.39	2.39
20414.0	2.34	2.36	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.36	2.36
20417.0	2.32	2.33	2.33	2.34	2.34	2.33	2.34	2.34	2.34	2.34	2.34	2.33	2.33
20420.0	2.29	2.30	2.30	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.30	2.30
20423.0	2.26	2.27	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.27	2.27
20426.0	2.24	2.25	2.25	2.26	2.26	2.25	2.26	2.26	2.26	2.25	2.26	2.25	2.25
20429.0	2.21	2.23	2.23	2.23	2.23	2.23	2.23	2.24	2.23	2.23	2.23	2.23	2.23
20432.0	2.19	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.20
20435.0	2.17	2.18	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.18
20438.0	2.15	2.16	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.16
20441.0	2.13	2.14	2.14	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.14	2.14

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20444.0	2.10	2.12	2.12	2.13	2.13	2.12	2.12	2.13	2.13	2.12	2.13	2.12	2.12
20447.0	2.08	2.10	2.10	2.10	2.10	2.10	2.10	2.11	2.10	2.10	2.10	2.10	2.09
20450.0	2.06	2.07	2.07	2.08	2.08	2.07	2.07	2.08	2.08	2.07	2.08	2.07	2.07
20453.0	2.03	2.05	2.05	2.05	2.05	2.05	2.05	2.06	2.05	2.05	2.05	2.05	2.04
20456.0	2.01	2.02	2.02	2.03	2.03	2.03	2.02	2.03	2.03	2.02	2.03	2.02	2.02
20459.0	1.98	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.01	2.00	2.00	2.00	1.99
20462.0	1.96	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.98	1.97	1.98	1.98	1.97
20465.0	1.94	1.95	1.95	1.96	1.96	1.95	1.95	1.96	1.96	1.95	1.95	1.95	1.95
20468.0	1.92	1.93	1.93	1.93	1.93	1.93	1.93	1.94	1.94	1.93	1.93	1.93	1.93
20471.0	1.89	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91
20474.0	1.87	1.88	1.88	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89
20474.0	2.45	2.46	2.46	2.47	2.47	2.49	2.49	2.50	2.50	2.52	2.50	2.54	2.60
20477.0	2.43	2.44	2.44	2.45	2.45	2.47	2.46	2.48	2.48	2.51	2.48	2.52	2.57
20480.0	2.41	2.41	2.42	2.43	2.43	2.45	2.45	2.46	2.46	2.48	2.46	2.50	2.55
20483.0	2.39	2.39	2.40	2.41	2.41	2.43	2.43	2.44	2.44	2.46	2.44	2.48	2.54
20486.0	2.37	2.37	2.37	2.39	2.39	2.40	2.40	2.41	2.41	2.43	2.42	2.45	2.51
20489.0	2.34	2.34	2.35	2.37	2.37	2.38	2.38	2.39	2.39	2.41	2.39	2.42	2.49
20492.0	2.32	2.32	2.33	2.35	2.34	2.36	2.35	2.36	2.36	2.38	2.37	2.39	2.46
20495.0	2.30	2.30	2.31	2.32	2.32	2.33	2.33	2.34	2.34	2.35	2.34	2.36	2.43
20498.0	2.28	2.28	2.28	2.30	2.30	2.31	2.31	2.32	2.32	2.32	2.32	2.34	2.42
20501.0	2.26	2.26	2.26	2.28	2.28	2.29	2.29	2.30	2.30	2.30	2.30	2.32	2.40
20504.0	2.23	2.23	2.24	2.26	2.26	2.27	2.27	2.27	2.27	2.28	2.28	2.29	2.37
20507.0	2.31	2.32	2.32	2.34	2.34	2.35	2.35	2.36	2.36	2.36	2.36	2.37	2.43
20510.0	2.41	2.41	2.41	2.43	2.43	2.44	2.44	2.45	2.45	2.45	2.45	2.46	2.48
20513.0	2.47	2.49	2.50	2.51	2.51	2.52	2.52	2.53	2.53	2.54	2.53	2.54	2.55
20516.0	2.55	2.58	2.58	2.60	2.60	2.61	2.61	2.62	2.62	2.62	2.62	2.63	2.64
20519.0	2.60	2.65	2.66	2.68	2.68	2.69	2.69	2.70	2.69	2.70	2.70	2.71	2.72
20522.0	2.66	2.73	2.75	2.76	2.76	2.77	2.77	2.78	2.78	2.79	2.78	2.79	2.81
20525.0	2.70	2.78	2.82	2.84	2.84	2.85	2.84	2.85	2.85	2.86	2.86	2.87	2.88
20528.0	2.74	2.84	2.90	2.92	2.92	2.93	2.92	2.93	2.93	2.94	2.94	2.95	2.96
20531.0	2.77	2.89	2.95	2.99	2.99	3.00	2.99	3.00	3.00	3.01	3.01	3.02	3.03
20534.0	2.81	2.93	3.01	3.06	3.06	3.07	3.07	3.08	3.08	3.09	3.08	3.09	3.11
20537.0	2.83	2.96	3.06	3.11	3.11	3.13	3.13	3.14	3.14	3.15	3.14	3.16	3.17
20540.0	2.86	3.00	3.11	3.17	3.17	3.19	3.19	3.20	3.20	3.22	3.21	3.22	3.24
20543.0	2.89	3.03	3.14	3.22	3.22	3.24	3.24	3.25	3.25	3.26	3.26	3.27	3.29
20546.0	2.91	3.06	3.18	3.27	3.26	3.29	3.28	3.30	3.30	3.31	3.31	3.32	3.34
20549.0	2.93	3.08	3.21	3.30	3.30	3.32	3.32	3.34	3.34	3.35	3.34	3.36	3.38
20552.0	2.96	3.11	3.24	3.34	3.33	3.36	3.36	3.38	3.37	3.39	3.38	3.40	3.42
20555.0	2.98	3.13	3.26	3.36	3.36	3.39	3.39	3.41	3.40	3.42	3.41	3.43	3.45
20558.0	3.00	3.15	3.29	3.39	3.39	3.43	3.42	3.44	3.44	3.46	3.45	3.47	3.48
20561.0	3.02	3.17	3.31	3.41	3.41	3.46	3.45	3.47	3.47	3.49	3.48	3.50	3.53
20564.0	3.04	3.19	3.33	3.44	3.43	3.49	3.47	3.51	3.51	3.52	3.51	3.53	3.59
20567.0	3.06	3.21	3.35	3.46	3.45	3.51	3.49	3.54	3.54	3.55	3.55	3.56	3.64
20570.0	3.08	3.23	3.37	3.48	3.48	3.53	3.52	3.57	3.56	3.59	3.58	3.60	3.69
20573.0	3.10	3.25	3.39	3.50	3.49	3.55	3.54	3.59	3.58	3.61	3.60	3.62	3.73
20576.0	3.12	3.27	3.41	3.52	3.51	3.57	3.56	3.61	3.61	3.64	3.63	3.65	3.77

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20579.0	3.14	3.29	3.42	3.53	3.53	3.59	3.57	3.63	3.62	3.66	3.64	3.68	3.81
20582.0	3.16	3.31	3.44	3.55	3.55	3.61	3.59	3.65	3.64	3.68	3.66	3.70	3.84
20585.0	3.18	3.33	3.46	3.57	3.56	3.62	3.61	3.66	3.66	3.70	3.68	3.72	3.87
20588.0	3.21	3.35	3.48	3.58	3.58	3.64	3.62	3.68	3.67	3.72	3.70	3.75	3.91
20590.9	3.19	3.33	3.45	3.56	3.55	3.61	3.59	3.65	3.64	3.69	3.67	3.71	3.87
20593.7	3.18	3.31	3.43	3.53	3.53	3.58	3.57	3.62	3.61	3.66	3.64	3.68	3.84
20596.6	3.17	3.29	3.41	3.51	3.50	3.55	3.54	3.59	3.58	3.63	3.61	3.65	3.81
20599.4	3.16	3.28	3.39	3.48	3.48	3.52	3.51	3.56	3.56	3.60	3.58	3.62	3.78
20602.3	3.15	3.26	3.37	3.46	3.45	3.49	3.48	3.53	3.53	3.57	3.55	3.59	3.75
20605.1	3.14	3.24	3.35	3.43	3.43	3.47	3.46	3.51	3.50	3.54	3.52	3.56	3.72
20608.0	3.13	3.23	3.33	3.41	3.41	3.44	3.43	3.48	3.47	3.51	3.49	3.53	3.69
20610.9	3.12	3.21	3.31	3.39	3.38	3.41	3.41	3.45	3.44	3.49	3.47	3.51	3.67
20613.7	3.11	3.20	3.29	3.36	3.36	3.39	3.38	3.42	3.42	3.46	3.44	3.49	3.65
20616.6	3.10	3.18	3.27	3.34	3.34	3.36	3.36	3.40	3.39	3.43	3.41	3.46	3.61
20619.4	3.09	3.17	3.25	3.31	3.31	3.34	3.33	3.37	3.36	3.40	3.38	3.43	3.58
20622.3	3.08	3.15	3.23	3.29	3.29	3.31	3.31	3.34	3.33	3.38	3.35	3.40	3.55
20625.1	3.08	3.14	3.21	3.27	3.27	3.29	3.28	3.31	3.31	3.35	3.33	3.38	3.52
20628.0	3.07	3.12	3.19	3.25	3.24	3.26	3.26	3.29	3.28	3.32	3.30	3.36	3.50
20630.9	3.06	3.11	3.17	3.22	3.22	3.24	3.24	3.26	3.26	3.30	3.28	3.33	3.48
20633.7	3.06	3.10	3.15	3.20	3.20	3.22	3.21	3.24	3.23	3.27	3.25	3.31	3.45
20636.6	3.06	3.08	3.13	3.18	3.18	3.20	3.19	3.21	3.21	3.25	3.22	3.28	3.41
20639.4	3.06	3.07	3.11	3.16	3.16	3.17	3.17	3.18	3.18	3.22	3.20	3.26	3.39
20642.3	3.07	3.08	3.09	3.14	3.14	3.15	3.15	3.16	3.16	3.20	3.17	3.24	3.36
20645.1	3.08	3.09	3.09	3.12	3.11	3.13	3.13	3.14	3.14	3.17	3.15	3.21	3.33
20648.0	3.10	3.10	3.11	3.11	3.11	3.11	3.11	3.12	3.11	3.15	3.12	3.18	3.30
20650.9	3.12	3.12	3.12	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.16	3.27
20653.7	3.13	3.13	3.14	3.14	3.14	3.14	3.14	3.15	3.15	3.15	3.15	3.15	3.24
20656.6	3.15	3.15	3.16	3.16	3.16	3.16	3.16	3.17	3.16	3.17	3.17	3.17	3.22
20659.4	3.16	3.16	3.17	3.17	3.17	3.17	3.17	3.18	3.18	3.18	3.18	3.18	3.19
20662.3	3.18	3.18	3.18	3.19	3.19	3.19	3.19	3.20	3.19	3.20	3.20	3.20	3.21
20665.1	3.19	3.19	3.20	3.20	3.20	3.20	3.20	3.21	3.21	3.21	3.21	3.21	3.22
20668.0	3.20	3.21	3.21	3.22	3.22	3.22	3.22	3.22	3.22	3.23	3.22	3.23	3.24
20671.0	3.12	3.12	3.13	3.13	3.13	3.14	3.14	3.14	3.14	3.14	3.14	3.15	3.15
20673.9	3.06	3.06	3.07	3.07	3.07	3.07	3.07	3.08	3.08	3.08	3.08	3.08	3.11
20676.9	2.97	2.98	2.98	2.98	2.98	2.99	2.99	2.99	2.99	3.00	2.99	3.00	3.11
20679.9	2.91	2.92	2.92	2.92	2.92	2.93	2.93	2.93	2.93	2.95	2.93	2.98	3.10
20682.9	2.83	2.83	2.83	2.84	2.84	2.84	2.84	2.88	2.88	2.94	2.90	2.98	3.10
20685.8	2.77	2.77	2.78	2.80	2.80	2.83	2.82	2.88	2.87	2.94	2.89	2.97	3.09
20688.8	2.68	2.69	2.73	2.79	2.79	2.83	2.81	2.87	2.87	2.94	2.89	2.97	3.09
20691.8	2.62	2.64	2.71	2.77	2.77	2.82	2.80	2.87	2.86	2.93	2.88	2.97	3.09
20694.8	2.55	2.62	2.70	2.76	2.76	2.82	2.80	2.87	2.86	2.93	2.88	2.96	3.09
20697.7	2.52	2.60	2.68	2.75	2.75	2.81	2.79	2.87	2.86	2.93	2.88	2.96	3.09
20700.7	2.50	2.58	2.67	2.75	2.75	2.81	2.79	2.86	2.86	2.93	2.88	2.96	3.09
20703.7	2.48	2.57	2.66	2.74	2.74	2.81	2.79	2.86	2.86	2.92	2.88	2.96	3.09
20706.6	2.46	2.56	2.66	2.74	2.74	2.81	2.79	2.86	2.85	2.92	2.88	2.95	3.10
20709.6	2.44	2.55	2.65	2.74	2.73	2.81	2.79	2.86	2.85	2.92	2.87	2.95	3.09

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20712.6	2.43	2.54	2.65	2.74	2.74	2.81	2.79	2.86	2.85	2.92	2.87	2.95	3.10
20715.6	2.42	2.54	2.65	2.74	2.74	2.81	2.79	2.86	2.85	2.92	2.87	2.95	3.10
20718.5	2.42	2.53	2.65	2.74	2.74	2.81	2.79	2.86	2.85	2.92	2.87	2.94	3.11
20721.5	2.41	2.53	2.65	2.74	2.74	2.81	2.79	2.86	2.85	2.92	2.87	2.95	3.12
20724.5	2.41	2.53	2.65	2.75	2.74	2.81	2.79	2.86	2.85	2.91	2.87	2.96	3.12
20727.4	2.41	2.53	2.66	2.75	2.75	2.81	2.79	2.86	2.85	2.91	2.87	2.96	3.14
20730.4	2.41	2.54	2.66	2.75	2.75	2.81	2.80	2.86	2.85	2.91	2.87	2.96	3.15
20733.4	2.41	2.54	2.67	2.76	2.76	2.81	2.80	2.86	2.85	2.91	2.87	2.96	3.15
20736.4	2.42	2.55	2.68	2.76	2.76	2.81	2.80	2.86	2.85	2.91	2.87	2.96	3.16
20739.3	2.42	2.56	2.69	2.77	2.77	2.81	2.80	2.86	2.85	2.91	2.87	2.97	3.16
20742.3	2.43	2.57	2.70	2.77	2.77	2.81	2.80	2.86	2.85	2.91	2.87	2.98	3.17
20745.3	2.44	2.58	2.70	2.78	2.78	2.82	2.80	2.86	2.85	2.91	2.87	2.98	3.18
20748.3	2.45	2.60	2.71	2.78	2.78	2.82	2.81	2.86	2.85	2.92	2.87	2.99	3.19
20751.2	2.47	2.61	2.72	2.79	2.79	2.82	2.81	2.87	2.86	2.92	2.88	3.00	3.20
20754.2	2.48	2.63	2.73	2.79	2.79	2.83	2.82	2.88	2.87	2.94	2.89	3.00	3.22
20757.2	2.50	2.64	2.74	2.80	2.79	2.84	2.82	2.89	2.88	2.95	2.90	3.02	3.23
20760.1	2.52	2.65	2.75	2.80	2.80	2.85	2.83	2.90	2.90	2.96	2.91	3.04	3.24
20763.1	2.55	2.67	2.76	2.80	2.80	2.85	2.83	2.91	2.90	2.98	2.92	3.04	3.26
20766.1	2.57	2.68	2.77	2.81	2.81	2.85	2.83	2.91	2.91	2.99	2.93	3.05	3.26
20769.1	2.59	2.70	2.78	2.81	2.81	2.86	2.84	2.92	2.91	2.99	2.94	3.06	3.28
20772.0	2.61	2.72	2.78	2.82	2.81	2.86	2.84	2.92	2.91	3.00	2.94	3.06	3.29
20775.0	2.64	2.73	2.79	2.82	2.82	2.86	2.84	2.92	2.92	3.00	2.94	3.07	3.30
20778.0	2.64	2.74	2.81	2.84	2.83	2.88	2.86	2.94	2.93	3.02	2.96	3.09	3.32
20781.0	2.64	2.75	2.82	2.85	2.85	2.90	2.88	2.96	2.95	3.05	2.98	3.11	3.36
20784.0	2.64	2.75	2.83	2.87	2.87	2.92	2.89	2.98	2.97	3.07	3.00	3.14	3.40
20787.0	2.64	2.76	2.85	2.88	2.88	2.93	2.91	3.00	2.99	3.09	3.02	3.17	3.44
20790.0	2.64	2.76	2.86	2.90	2.90	2.95	2.93	3.02	3.01	3.11	3.04	3.20	3.47
20793.0	2.64	2.77	2.87	2.91	2.91	2.97	2.95	3.04	3.04	3.14	3.07	3.22	3.50
20796.0	2.64	2.77	2.88	2.93	2.92	2.99	2.97	3.07	3.06	3.16	3.09	3.24	3.54
20799.0	2.63	2.77	2.88	2.94	2.94	3.02	2.99	3.10	3.09	3.20	3.12	3.27	3.56
20802.0	2.63	2.78	2.89	2.96	2.96	3.05	3.02	3.12	3.12	3.23	3.15	3.32	3.60
20805.0	2.63	2.78	2.90	2.99	2.98	3.08	3.05	3.16	3.15	3.27	3.19	3.36	3.64
20808.0	2.62	2.78	2.90	3.01	3.00	3.11	3.08	3.20	3.19	3.31	3.23	3.41	3.67
20811.0	2.62	2.78	2.91	3.03	3.02	3.14	3.11	3.24	3.23	3.36	3.27	3.45	3.73
20814.0	2.62	2.78	2.91	3.05	3.04	3.17	3.14	3.28	3.26	3.40	3.31	3.49	3.78
20817.0	2.61	2.78	2.92	3.06	3.05	3.19	3.15	3.30	3.29	3.44	3.34	3.55	3.82
20820.0	2.61	2.78	2.92	3.07	3.06	3.21	3.16	3.33	3.31	3.48	3.38	3.59	3.87
20823.0	2.61	2.78	2.92	3.07	3.07	3.22	3.18	3.35	3.33	3.50	3.40	3.62	3.90
20826.0	2.60	2.78	2.92	3.08	3.07	3.23	3.19	3.36	3.34	3.52	3.41	3.64	3.93
20829.0	2.60	2.77	2.93	3.09	3.08	3.24	3.20	3.38	3.36	3.54	3.43	3.65	3.95
20832.0	2.60	2.77	2.93	3.09	3.08	3.26	3.21	3.39	3.37	3.56	3.45	3.67	3.97
20835.0	2.59	2.77	2.93	3.10	3.09	3.27	3.22	3.41	3.38	3.58	3.46	3.69	3.99
20838.0	2.59	2.77	2.93	3.10	3.09	3.28	3.22	3.42	3.39	3.59	3.48	3.71	4.02
20841.0	2.59	2.76	2.93	3.11	3.09	3.28	3.23	3.43	3.41	3.61	3.49	3.72	4.03
20844.0	2.59	2.76	2.93	3.11	3.10	3.29	3.24	3.44	3.42	3.62	3.50	3.73	4.04
20847.0	2.59	2.76	2.93	3.11	3.10	3.30	3.25	3.45	3.43	3.63	3.51	3.75	4.05

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20850.0	2.59	2.76	2.93	3.11	3.10	3.31	3.25	3.46	3.43	3.64	3.52	3.76	4.05
20853.0	2.58	2.76	2.93	3.11	3.10	3.31	3.25	3.47	3.44	3.66	3.53	3.77	4.07
20856.0	2.58	2.76	2.92	3.12	3.10	3.32	3.26	3.48	3.45	3.67	3.54	3.79	4.08
20859.0	2.58	2.76	2.92	3.12	3.11	3.32	3.26	3.49	3.46	3.68	3.55	3.80	4.09
20862.0	2.58	2.75	2.92	3.12	3.11	3.33	3.26	3.49	3.46	3.69	3.56	3.81	4.10
20865.0	2.58	2.75	2.92	3.12	3.11	3.33	3.27	3.50	3.47	3.70	3.56	3.82	4.11
20868.0	2.58	2.75	2.92	3.12	3.11	3.33	3.27	3.50	3.47	3.70	3.57	3.82	4.12
20871.0	2.59	2.75	2.92	3.12	3.11	3.33	3.27	3.51	3.48	3.71	3.57	3.83	4.13
20874.0	2.59	2.75	2.92	3.12	3.11	3.34	3.27	3.51	3.48	3.72	3.58	3.85	4.14
20877.0	2.59	2.76	2.92	3.12	3.11	3.34	3.27	3.52	3.48	3.73	3.58	3.86	4.16
20880.0	2.59	2.76	2.92	3.12	3.11	3.34	3.27	3.52	3.49	3.73	3.59	3.87	4.16
20883.0	2.59	2.76	2.92	3.12	3.11	3.34	3.27	3.52	3.49	3.73	3.59	3.87	4.17
20886.0	2.60	2.76	2.92	3.12	3.11	3.34	3.27	3.52	3.49	3.73	3.59	3.87	4.18
20889.0	2.60	2.76	2.92	3.12	3.11	3.34	3.27	3.52	3.49	3.73	3.59	3.87	4.18
20892.0	2.61	2.76	2.92	3.12	3.11	3.34	3.27	3.52	3.49	3.73	3.59	3.87	4.18
20895.0	2.61	2.77	2.93	3.12	3.11	3.34	3.27	3.52	3.49	3.73	3.59	3.87	4.18
20897.9	2.62	2.78	2.94	3.13	3.12	3.35	3.29	3.53	3.50	3.74	3.60	3.88	4.18
20900.8	2.63	2.79	2.95	3.15	3.13	3.37	3.30	3.55	3.51	3.76	3.61	3.89	4.20
20903.8	2.65	2.80	2.96	3.16	3.15	3.38	3.31	3.56	3.53	3.77	3.63	3.90	4.21
20906.7	2.66	2.82	2.98	3.17	3.16	3.39	3.33	3.58	3.54	3.79	3.64	3.92	4.22
20909.6	2.67	2.83	2.99	3.19	3.17	3.41	3.34	3.59	3.56	3.80	3.66	3.94	4.23
20912.5	2.68	2.84	3.00	3.20	3.19	3.42	3.36	3.61	3.57	3.82	3.67	3.95	4.25
20915.4	2.69	2.85	3.01	3.21	3.20	3.44	3.37	3.62	3.59	3.83	3.69	3.97	4.27
20918.3	2.70	2.86	3.03	3.23	3.21	3.45	3.39	3.64	3.60	3.85	3.71	3.99	4.28
20921.3	2.72	2.88	3.04	3.24	3.23	3.47	3.40	3.65	3.62	3.87	3.72	4.00	4.30
20924.2	2.73	2.89	3.05	3.26	3.24	3.48	3.42	3.67	3.63	3.88	3.74	4.02	4.32
20927.1	2.74	2.90	3.07	3.27	3.26	3.50	3.43	3.68	3.65	3.90	3.75	4.04	4.34
20930.0	2.75	2.92	3.08	3.29	3.27	3.51	3.45	3.70	3.67	3.92	3.77	4.05	4.35
20932.9	2.77	2.93	3.09	3.30	3.29	3.53	3.46	3.72	3.68	3.93	3.79	4.07	4.37
20935.8	2.78	2.94	3.11	3.31	3.30	3.54	3.48	3.74	3.70	3.95	3.81	4.09	4.39
20938.8	2.79	2.96	3.12	3.33	3.31	3.56	3.49	3.75	3.72	3.97	3.83	4.11	4.41
20941.7	2.80	2.97	3.14	3.34	3.33	3.58	3.51	3.77	3.74	3.99	3.85	4.13	4.43
20944.6	2.82	2.98	3.15	3.36	3.35	3.59	3.52	3.79	3.76	4.01	3.86	4.15	4.45
20947.5	2.83	3.00	3.17	3.37	3.36	3.61	3.54	3.81	3.77	4.03	3.88	4.17	4.47
20950.4	2.84	3.01	3.18	3.39	3.38	3.63	3.56	3.83	3.79	4.05	3.90	4.19	4.49
20953.3	2.85	3.03	3.19	3.41	3.39	3.64	3.57	3.84	3.81	4.07	3.92	4.21	4.51
20956.3	2.87	3.04	3.21	3.42	3.41	3.66	3.59	3.86	3.83	4.09	3.94	4.23	4.53
20959.2	2.88	3.06	3.23	3.44	3.42	3.68	3.61	3.88	3.85	4.11	3.96	4.26	4.56
20962.1	2.89	3.07	3.24	3.45	3.44	3.70	3.62	3.90	3.87	4.14	3.98	4.28	4.58
20965.0	2.91	3.08	3.26	3.47	3.46	3.72	3.64	3.92	3.89	4.16	4.00	4.30	4.60
20967.9	2.92	3.10	3.27	3.49	3.47	3.73	3.66	3.94	3.91	4.18	4.02	4.32	4.63
20970.8	2.93	3.11	3.29	3.50	3.49	3.75	3.68	3.97	3.93	4.20	4.04	4.35	4.65
20973.8	2.95	3.13	3.30	3.52	3.51	3.77	3.70	3.99	3.95	4.23	4.07	4.38	4.68
20976.7	2.96	3.15	3.32	3.54	3.52	3.79	3.72	4.01	3.97	4.25	4.09	4.40	4.71
20979.6	2.97	3.16	3.34	3.56	3.54	3.81	3.74	4.03	3.99	4.28	4.11	4.42	4.74
20982.5	2.99	3.18	3.35	3.57	3.56	3.83	3.75	4.05	4.01	4.30	4.13	4.45	4.76

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
20985.4	3.00	3.19	3.37	3.59	3.58	3.85	3.77	4.07	4.03	4.32	4.15	4.47	4.79
20988.3	3.02	3.21	3.39	3.61	3.59	3.87	3.79	4.09	4.05	4.34	4.17	4.49	4.81
20991.3	3.03	3.23	3.41	3.63	3.61	3.89	3.81	4.11	4.07	4.36	4.19	4.51	4.83
20994.2	3.04	3.24	3.42	3.65	3.63	3.91	3.83	4.13	4.09	4.38	4.21	4.53	4.86
20997.1	3.06	3.26	3.44	3.66	3.65	3.92	3.85	4.15	4.11	4.40	4.23	4.55	4.88
21000.0	3.07	3.28	3.46	3.68	3.67	3.94	3.87	4.17	4.13	4.42	4.25	4.57	4.90
21002.9	3.09	3.29	3.48	3.70	3.69	3.96	3.89	4.19	4.15	4.44	4.27	4.60	4.93
21005.8	3.10	3.31	3.50	3.72	3.71	3.98	3.91	4.21	4.17	4.47	4.29	4.62	4.96
21008.8	3.11	3.33	3.51	3.74	3.73	4.00	3.93	4.23	4.19	4.49	4.31	4.64	4.98
21011.7	3.13	3.34	3.53	3.76	3.75	4.02	3.95	4.25	4.21	4.51	4.34	4.67	5.01
21014.6	3.14	3.36	3.55	3.78	3.77	4.05	3.97	4.27	4.23	4.54	4.36	4.69	5.03
21017.5	3.16	3.38	3.57	3.80	3.79	4.07	3.99	4.30	4.26	4.56	4.38	4.72	5.06
21020.4	3.17	3.40	3.59	3.82	3.81	4.09	4.01	4.32	4.28	4.59	4.41	4.74	5.09
21023.3	3.19	3.41	3.61	3.84	3.83	4.11	4.03	4.35	4.30	4.61	4.43	4.77	5.13
21026.3	3.20	3.43	3.63	3.87	3.85	4.14	4.06	4.37	4.33	4.64	4.46	4.80	5.16
21029.2	3.22	3.45	3.65	3.89	3.87	4.16	4.08	4.40	4.35	4.67	4.49	4.83	5.20
21032.1	3.23	3.47	3.67	3.91	3.89	4.18	4.10	4.42	4.38	4.70	4.51	4.86	5.23
21035.0	3.24	3.49	3.70	3.93	3.92	4.21	4.13	4.45	4.41	4.73	4.54	4.89	5.27
21038.0	3.24	3.48	3.69	3.93	3.91	4.21	4.13	4.46	4.41	4.74	4.55	4.90	5.28
21040.9	3.24	3.48	3.69	3.93	3.91	4.21	4.13	4.46	4.42	4.74	4.55	4.91	5.30
21043.9	3.24	3.48	3.68	3.93	3.91	4.21	4.13	4.47	4.42	4.75	4.56	4.92	5.32
21046.8	3.23	3.47	3.68	3.92	3.91	4.21	4.13	4.47	4.42	4.76	4.56	4.93	5.34
21049.8	3.23	3.47	3.68	3.92	3.91	4.21	4.13	4.47	4.42	4.76	4.57	4.94	5.36
21052.8	3.23	3.47	3.67	3.92	3.90	4.22	4.13	4.47	4.43	4.76	4.57	4.94	5.36
21055.7	3.22	3.46	3.67	3.92	3.90	4.22	4.13	4.47	4.43	4.77	4.57	4.95	5.37
21058.7	3.22	3.46	3.67	3.92	3.90	4.22	4.13	4.48	4.43	4.77	4.57	4.95	5.37
21061.6	3.22	3.46	3.66	3.92	3.90	4.22	4.13	4.48	4.43	4.77	4.58	4.95	5.38
21064.6	3.21	3.45	3.66	3.92	3.90	4.22	4.13	4.48	4.43	4.78	4.58	4.96	5.38
21067.6	3.21	3.45	3.66	3.91	3.90	4.22	4.13	4.48	4.44	4.78	4.58	4.96	5.39
21070.5	3.21	3.44	3.66	3.91	3.90	4.22	4.13	4.49	4.44	4.78	4.58	4.97	5.39
21073.5	3.20	3.44	3.65	3.91	3.89	4.22	4.13	4.49	4.44	4.79	4.59	4.97	5.39
21076.4	3.20	3.44	3.65	3.91	3.89	4.22	4.13	4.49	4.44	4.79	4.59	4.97	5.39
21079.4	3.20	3.43	3.65	3.91	3.89	4.22	4.13	4.49	4.45	4.79	4.59	4.98	5.39
21082.4	3.19	3.43	3.65	3.91	3.89	4.22	4.13	4.49	4.45	4.80	4.59	4.98	5.39
21085.3	3.19	3.43	3.64	3.91	3.89	4.22	4.13	4.50	4.45	4.80	4.60	4.98	5.40
21088.3	3.19	3.42	3.64	3.91	3.89	4.23	4.13	4.50	4.45	4.81	4.60	4.99	5.40
21091.2	3.18	3.42	3.64	3.91	3.89	4.23	4.13	4.50	4.45	4.81	4.60	4.99	5.40
21094.2	3.18	3.42	3.64	3.91	3.89	4.23	4.13	4.51	4.46	4.81	4.61	5.00	5.40
21097.2	3.18	3.41	3.64	3.91	3.89	4.23	4.14	4.51	4.46	4.82	4.61	5.00	5.39
21100.1	3.17	3.41	3.63	3.91	3.89	4.23	4.14	4.51	4.46	4.82	4.61	5.00	5.40
21103.1	3.17	3.41	3.63	3.91	3.89	4.24	4.14	4.52	4.47	4.83	4.62	5.01	5.41
21106.0	3.16	3.40	3.63	3.91	3.89	4.24	4.14	4.52	4.47	4.83	4.62	5.01	5.41
21109.0	3.16	3.40	3.63	3.91	3.89	4.24	4.14	4.52	4.47	4.83	4.62	5.02	5.41
21112.0	3.16	3.40	3.63	3.91	3.89	4.24	4.15	4.53	4.48	4.84	4.63	5.02	5.41
21114.9	3.15	3.39	3.63	3.91	3.89	4.25	4.15	4.53	4.48	4.84	4.63	5.03	5.41
21117.9	3.15	3.39	3.63	3.91	3.89	4.25	4.15	4.53	4.48	4.85	4.64	5.03	5.42

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
21120.8	3.14	3.39	3.63	3.91	3.90	4.25	4.15	4.54	4.49	4.85	4.64	5.04	5.42
21123.8	3.14	3.39	3.62	3.92	3.90	4.25	4.15	4.54	4.49	4.86	4.64	5.04	5.42
21126.8	3.14	3.38	3.62	3.92	3.90	4.26	4.16	4.54	4.49	4.86	4.65	5.05	5.42
21129.7	3.13	3.38	3.62	3.92	3.90	4.26	4.16	4.55	4.50	4.87	4.65	5.05	5.42
21132.7	3.13	3.38	3.62	3.92	3.90	4.26	4.16	4.55	4.50	4.87	4.66	5.06	5.42
21135.6	3.13	3.38	3.62	3.92	3.90	4.27	4.17	4.56	4.51	4.88	4.66	5.06	5.42
21138.6	3.12	3.38	3.62	3.92	3.90	4.27	4.17	4.56	4.51	4.88	4.67	5.06	5.42
21141.6	3.12	3.38	3.62	3.93	3.90	4.27	4.17	4.57	4.52	4.89	4.67	5.07	5.43
21144.5	3.12	3.37	3.62	3.93	3.91	4.28	4.17	4.57	4.52	4.90	4.68	5.08	5.43
21147.5	3.11	3.37	3.62	3.93	3.91	4.28	4.18	4.58	4.52	4.90	4.68	5.08	5.44
21150.4	3.11	3.37	3.62	3.93	3.91	4.29	4.18	4.58	4.53	4.91	4.69	5.09	5.44
21153.4	3.11	3.37	3.62	3.93	3.91	4.29	4.18	4.59	4.53	4.91	4.69	5.09	5.44
21156.4	3.10	3.37	3.63	3.94	3.92	4.29	4.19	4.59	4.54	4.92	4.70	5.10	5.44
21159.3	3.10	3.37	3.63	3.94	3.92	4.30	4.19	4.60	4.54	4.92	4.70	5.10	5.45
21162.3	3.10	3.37	3.63	3.94	3.92	4.30	4.19	4.60	4.55	4.93	4.71	5.10	5.45
21165.2	3.10	3.37	3.63	3.95	3.92	4.30	4.20	4.60	4.55	4.93	4.71	5.10	5.46
21168.2	3.10	3.37	3.63	3.95	3.93	4.31	4.20	4.61	4.56	4.94	4.72	5.10	5.46
21171.2	3.09	3.37	3.63	3.95	3.93	4.31	4.20	4.61	4.56	4.94	4.72	5.10	5.47
21174.1	3.09	3.37	3.63	3.95	3.93	4.31	4.21	4.62	4.56	4.94	4.72	5.11	5.48
21177.1	3.09	3.37	3.63	3.96	3.94	4.32	4.21	4.62	4.57	4.94	4.73	5.11	5.48
21180.0	3.09	3.37	3.64	3.96	3.94	4.32	4.21	4.62	4.57	4.95	4.73	5.10	5.48
21183.0	3.09	3.37	3.64	3.96	3.94	4.32	4.22	4.63	4.57	4.95	4.73	5.10	5.48
21186.0	3.06	3.33	3.60	3.92	3.90	4.29	4.18	4.59	4.54	4.92	4.70	5.09	5.47
21188.9	3.03	3.30	3.56	3.88	3.86	4.25	4.14	4.55	4.50	4.90	4.67	5.08	5.46
21191.9	3.00	3.27	3.53	3.85	3.83	4.21	4.10	4.52	4.47	4.87	4.63	5.06	5.46
21194.9	2.97	3.24	3.50	3.81	3.79	4.18	4.07	4.49	4.43	4.84	4.60	5.04	5.46
21197.9	2.95	3.22	3.47	3.78	3.76	4.15	4.04	4.46	4.40	4.81	4.57	5.02	5.45
21200.8	2.93	3.19	3.45	3.75	3.73	4.11	4.01	4.43	4.37	4.79	4.54	4.99	5.45
21203.8	2.92	3.18	3.42	3.73	3.71	4.09	3.98	4.40	4.34	4.76	4.52	4.97	5.44
21206.8	2.90	3.16	3.40	3.70	3.68	4.06	3.95	4.37	4.32	4.74	4.49	4.95	5.44
21209.8	2.89	3.14	3.39	3.68	3.66	4.04	3.93	4.35	4.29	4.71	4.47	4.93	5.43
21212.7	2.88	3.13	3.37	3.66	3.64	4.01	3.91	4.32	4.27	4.69	4.44	4.90	5.41
21215.7	2.87	3.12	3.35	3.65	3.63	3.99	3.89	4.30	4.25	4.67	4.42	4.88	5.39
21218.7	2.86	3.10	3.34	3.63	3.61	3.97	3.87	4.28	4.23	4.64	4.40	4.86	5.36
21221.7	2.86	3.10	3.33	3.62	3.60	3.96	3.86	4.26	4.21	4.62	4.37	4.84	5.34
21224.6	2.85	3.09	3.32	3.60	3.58	3.94	3.84	4.24	4.19	4.59	4.35	4.81	5.30
21227.6	2.85	3.08	3.31	3.59	3.58	3.93	3.83	4.22	4.17	4.57	4.33	4.79	5.27
21230.6	2.85	3.08	3.31	3.59	3.57	3.92	3.82	4.21	4.16	4.55	4.32	4.76	5.25
21233.6	2.85	3.08	3.30	3.58	3.56	3.91	3.81	4.20	4.14	4.54	4.31	4.75	5.23
21236.5	2.85	3.08	3.30	3.57	3.55	3.90	3.80	4.19	4.13	4.52	4.29	4.73	5.22
21239.5	2.85	3.08	3.30	3.57	3.55	3.89	3.80	4.18	4.13	4.52	4.29	4.72	5.22
21242.5	2.85	3.08	3.30	3.56	3.55	3.89	3.79	4.17	4.12	4.51	4.28	4.71	5.20
21245.4	2.86	3.08	3.30	3.56	3.55	3.88	3.79	4.17	4.12	4.50	4.27	4.70	5.20
21248.4	2.87	3.09	3.30	3.56	3.55	3.88	3.79	4.16	4.11	4.49	4.27	4.69	5.18
21251.4	2.88	3.09	3.30	3.57	3.55	3.88	3.79	4.16	4.11	4.49	4.26	4.68	5.17
21254.4	2.89	3.10	3.31	3.57	3.55	3.88	3.79	4.16	4.11	4.48	4.26	4.67	5.15

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
21257.3	2.90	3.11	3.32	3.57	3.55	3.88	3.79	4.16	4.11	4.48	4.26	4.67	5.14
21260.3	2.91	3.12	3.32	3.58	3.56	3.89	3.79	4.16	4.11	4.48	4.26	4.67	5.13
21263.3	2.92	3.13	3.33	3.58	3.57	3.89	3.80	4.16	4.11	4.48	4.26	4.67	5.14
21266.3	2.94	3.15	3.34	3.59	3.57	3.90	3.80	4.16	4.12	4.48	4.27	4.66	5.13
21269.2	2.95	3.16	3.36	3.60	3.58	3.90	3.81	4.17	4.12	4.48	4.27	4.66	5.12
21272.2	2.96	3.18	3.37	3.61	3.59	3.91	3.82	4.18	4.13	4.48	4.28	4.66	5.12
21275.2	2.98	3.19	3.39	3.62	3.61	3.92	3.83	4.19	4.14	4.49	4.28	4.66	5.11
21278.2	2.99	3.21	3.40	3.64	3.62	3.93	3.84	4.19	4.15	4.49	4.29	4.67	5.10
21281.1	3.01	3.23	3.42	3.65	3.64	3.95	3.86	4.21	4.16	4.50	4.30	4.67	5.09
21284.1	3.03	3.25	3.44	3.67	3.65	3.96	3.87	4.22	4.17	4.51	4.31	4.68	5.09
21287.1	3.05	3.26	3.46	3.69	3.67	3.98	3.89	4.23	4.19	4.52	4.33	4.69	5.10
21290.1	3.07	3.28	3.48	3.71	3.69	3.99	3.91	4.25	4.20	4.53	4.34	4.70	5.10
21293.0	3.09	3.30	3.50	3.73	3.71	4.01	3.93	4.27	4.22	4.55	4.36	4.71	5.11
21296.0	3.11	3.33	3.53	3.75	3.74	4.03	3.95	4.28	4.24	4.57	4.38	4.73	5.12
21299.0	3.09	3.30	3.51	3.74	3.72	4.02	3.93	4.27	4.22	4.55	4.36	4.71	5.10
21301.9	3.07	3.28	3.48	3.72	3.70	4.00	3.91	4.25	4.20	4.53	4.34	4.69	5.07
21304.9	3.05	3.26	3.47	3.70	3.68	3.99	3.90	4.23	4.19	4.51	4.33	4.67	5.05
21307.9	3.03	3.25	3.45	3.68	3.67	3.97	3.88	4.22	4.17	4.50	4.31	4.65	5.03
21310.9	3.01	3.23	3.43	3.67	3.65	3.96	3.87	4.20	4.16	4.48	4.29	4.64	5.01
21313.8	3.00	3.21	3.41	3.65	3.63	3.94	3.85	4.19	4.15	4.47	4.28	4.62	4.99
21316.8	2.98	3.19	3.39	3.63	3.62	3.93	3.84	4.18	4.13	4.45	4.27	4.61	4.98
21319.8	2.97	3.18	3.38	3.62	3.60	3.91	3.82	4.16	4.12	4.44	4.25	4.59	4.96
21322.7	2.95	3.16	3.36	3.60	3.59	3.90	3.81	4.15	4.10	4.42	4.24	4.58	4.95
21325.7	2.94	3.15	3.35	3.59	3.57	3.89	3.79	4.14	4.09	4.41	4.23	4.57	4.93
21328.7	2.93	3.13	3.33	3.57	3.56	3.87	3.78	4.12	4.08	4.40	4.21	4.56	4.92
21331.6	2.91	3.12	3.32	3.56	3.54	3.86	3.77	4.11	4.07	4.39	4.20	4.54	4.90
21334.6	2.90	3.11	3.30	3.54	3.53	3.85	3.75	4.10	4.05	4.38	4.19	4.53	4.89
21337.6	2.89	3.10	3.29	3.53	3.51	3.83	3.74	4.09	4.04	4.36	4.18	4.52	4.88
21340.6	2.88	3.08	3.28	3.52	3.50	3.82	3.73	4.07	4.03	4.35	4.16	4.51	4.86
21343.5	2.87	3.07	3.27	3.51	3.49	3.81	3.71	4.06	4.02	4.34	4.15	4.49	4.85
21346.5	2.86	3.06	3.26	3.49	3.48	3.79	3.70	4.05	4.00	4.32	4.14	4.48	4.83
21349.5	2.85	3.05	3.24	3.48	3.46	3.78	3.69	4.03	3.99	4.31	4.12	4.46	4.82
21352.4	2.85	3.04	3.23	3.47	3.45	3.77	3.68	4.02	3.98	4.30	4.11	4.45	4.81
21355.4	2.84	3.03	3.22	3.46	3.44	3.76	3.67	4.01	3.96	4.28	4.10	4.44	4.80
21358.4	2.83	3.03	3.22	3.45	3.43	3.75	3.66	4.00	3.95	4.27	4.09	4.43	4.78
21361.4	2.82	3.02	3.21	3.44	3.42	3.74	3.65	3.99	3.94	4.26	4.08	4.42	4.77
21364.3	2.82	3.01	3.20	3.43	3.41	3.73	3.64	3.98	3.93	4.25	4.07	4.41	4.76
21367.3	2.81	3.00	3.19	3.42	3.40	3.72	3.63	3.97	3.92	4.24	4.06	4.40	4.75
21370.3	2.81	3.00	3.18	3.41	3.40	3.71	3.62	3.96	3.91	4.23	4.05	4.39	4.74
21373.2	2.80	2.99	3.17	3.40	3.39	3.70	3.61	3.95	3.90	4.22	4.04	4.38	4.73
21376.2	2.80	2.98	3.17	3.40	3.38	3.69	3.60	3.94	3.90	4.21	4.03	4.37	4.72
21379.2	2.79	2.98	3.16	3.39	3.37	3.68	3.59	3.93	3.89	4.20	4.02	4.36	4.71
21382.1	2.79	2.97	3.15	3.38	3.36	3.67	3.59	3.92	3.88	4.19	4.01	4.35	4.70
21385.1	2.79	2.97	3.15	3.37	3.36	3.67	3.58	3.91	3.87	4.18	4.00	4.34	4.69
21388.1	2.78	2.96	3.14	3.37	3.35	3.66	3.57	3.91	3.86	4.18	3.99	4.33	4.68
21391.1	2.78	2.96	3.14	3.36	3.34	3.65	3.56	3.90	3.85	4.17	3.99	4.32	4.67

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
21394.0	2.78	2.96	3.13	3.35	3.34	3.65	3.56	3.89	3.85	4.16	3.98	4.32	4.66
21397.0	2.78	2.95	3.13	3.35	3.33	3.64	3.55	3.88	3.84	4.15	3.97	4.31	4.65
21400.0	2.77	2.95	3.12	3.34	3.33	3.64	3.55	3.88	3.84	4.15	3.97	4.30	4.65
21403.0	2.77	2.94	3.12	3.34	3.33	3.63	3.55	3.88	3.84	4.15	3.97	4.30	4.64
21406.0	2.76	2.94	3.12	3.34	3.32	3.63	3.54	3.88	3.83	4.14	3.97	4.30	4.64
21409.0	2.76	2.94	3.11	3.33	3.32	3.63	3.54	3.88	3.83	4.14	3.96	4.29	4.63
21412.0	2.75	2.93	3.11	3.33	3.32	3.63	3.54	3.87	3.83	4.14	3.96	4.29	4.63
21415.0	2.75	2.93	3.11	3.33	3.31	3.62	3.53	3.87	3.83	4.14	3.96	4.29	4.62
21418.0	2.75	2.93	3.10	3.33	3.31	3.62	3.53	3.87	3.83	4.13	3.96	4.28	4.61
21421.0	2.74	2.92	3.10	3.32	3.31	3.62	3.53	3.86	3.82	4.13	3.95	4.28	4.61
21424.0	2.74	2.92	3.10	3.32	3.31	3.61	3.53	3.85	3.81	4.12	3.94	4.27	4.59
21427.0	2.74	2.92	3.09	3.32	3.30	3.61	3.52	3.85	3.81	4.12	3.94	4.27	4.59
21430.0	2.73	2.91	3.09	3.32	3.30	3.61	3.52	3.85	3.81	4.11	3.93	4.26	4.59
21433.0	2.73	2.91	3.09	3.32	3.30	3.60	3.52	3.84	3.80	4.10	3.93	4.26	4.58
21436.0	2.73	2.91	3.09	3.31	3.30	3.60	3.51	3.84	3.80	4.10	3.92	4.25	4.58
21439.0	2.73	2.91	3.09	3.31	3.30	3.60	3.51	3.83	3.79	4.09	3.92	4.24	4.57
21442.0	2.72	2.91	3.09	3.31	3.29	3.60	3.51	3.83	3.79	4.09	3.92	4.24	4.57
21445.0	2.72	2.90	3.08	3.31	3.29	3.60	3.51	3.83	3.79	4.09	3.92	4.23	4.56
21448.0	2.72	2.90	3.08	3.31	3.29	3.59	3.51	3.83	3.79	4.09	3.91	4.23	4.55
21451.0	2.72	2.90	3.08	3.31	3.29	3.59	3.51	3.83	3.79	4.08	3.91	4.22	4.55
21454.0	2.72	2.90	3.08	3.31	3.29	3.60	3.51	3.83	3.79	4.08	3.92	4.22	4.53
21457.0	2.72	2.90	3.08	3.31	3.29	3.60	3.51	3.83	3.79	4.08	3.92	4.22	4.53
21460.0	2.72	2.90	3.08	3.31	3.29	3.60	3.51	3.83	3.79	4.09	3.92	4.22	4.53
21463.0	2.72	2.90	3.08	3.31	3.29	3.60	3.51	3.84	3.79	4.09	3.92	4.22	4.52
21466.0	2.72	2.91	3.09	3.31	3.30	3.60	3.52	3.84	3.80	4.09	3.92	4.23	4.52
21469.0	2.72	2.91	3.09	3.31	3.30	3.60	3.52	3.84	3.80	4.09	3.92	4.22	4.51
21472.0	2.73	2.91	3.09	3.32	3.30	3.61	3.52	3.84	3.80	4.09	3.93	4.22	4.50
21475.0	2.73	2.91	3.09	3.32	3.31	3.61	3.53	3.85	3.81	4.09	3.93	4.22	4.50
21478.0	2.73	2.92	3.10	3.33	3.31	3.62	3.53	3.85	3.81	4.10	3.93	4.23	4.50
21481.0	2.74	2.92	3.11	3.33	3.32	3.62	3.54	3.86	3.82	4.10	3.94	4.23	4.50
21484.0	2.75	2.93	3.11	3.34	3.32	3.63	3.55	3.87	3.82	4.11	3.95	4.24	4.50
21487.0	2.75	2.94	3.12	3.35	3.33	3.64	3.55	3.87	3.83	4.11	3.95	4.24	4.50
21490.0	2.76	2.95	3.13	3.36	3.34	3.65	3.56	3.88	3.84	4.12	3.96	4.25	4.49
21493.0	2.78	2.96	3.14	3.37	3.35	3.66	3.57	3.89	3.85	4.13	3.97	4.25	4.48
21496.0	2.79	2.98	3.16	3.39	3.37	3.68	3.59	3.91	3.87	4.13	3.98	4.25	4.47
21499.0	2.81	2.99	3.17	3.40	3.38	3.70	3.61	3.92	3.89	4.13	3.99	4.24	4.47
21502.0	2.83	3.02	3.20	3.43	3.41	3.71	3.63	3.92	3.88	4.12	3.99	4.23	4.46
21505.0	2.86	3.04	3.23	3.46	3.44	3.72	3.64	3.91	3.88	4.12	3.98	4.23	4.46
21507.9	2.85	3.04	3.22	3.45	3.44	3.71	3.64	3.91	3.87	4.11	3.98	4.22	4.45
21510.8	2.85	3.04	3.22	3.45	3.43	3.70	3.63	3.90	3.86	4.10	3.97	4.21	4.44
21513.7	2.85	3.03	3.21	3.44	3.42	3.69	3.62	3.89	3.85	4.09	3.96	4.20	4.43
21516.6	2.85	3.03	3.21	3.43	3.42	3.68	3.61	3.88	3.84	4.08	3.95	4.19	4.42
21519.4	2.84	3.03	3.20	3.43	3.41	3.67	3.60	3.87	3.83	4.07	3.94	4.19	4.41
21522.3	2.84	3.02	3.20	3.42	3.40	3.66	3.59	3.86	3.82	4.06	3.93	4.18	4.39
21525.2	2.84	3.02	3.19	3.41	3.40	3.66	3.59	3.85	3.82	4.05	3.92	4.17	4.39
21528.1	2.83	3.01	3.19	3.41	3.39	3.65	3.58	3.84	3.81	4.04	3.91	4.16	4.38

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
21531.0	2.83	3.01	3.18	3.40	3.38	3.64	3.57	3.83	3.80	4.04	3.90	4.15	4.37
21533.9	2.83	3.01	3.18	3.39	3.38	3.63	3.56	3.83	3.79	4.03	3.89	4.14	4.36
21536.8	2.83	3.00	3.17	3.39	3.37	3.63	3.56	3.82	3.78	4.02	3.88	4.13	4.34
21539.7	2.82	3.00	3.17	3.38	3.37	3.62	3.55	3.81	3.77	4.00	3.87	4.11	4.33
21542.6	2.82	3.00	3.16	3.38	3.36	3.61	3.55	3.80	3.77	3.99	3.86	4.10	4.31
21545.4	2.82	2.99	3.16	3.37	3.35	3.61	3.54	3.79	3.76	3.98	3.85	4.09	4.30
21548.3	2.81	2.99	3.15	3.36	3.35	3.60	3.53	3.78	3.75	3.97	3.85	4.08	4.28
21551.2	2.81	2.99	3.15	3.36	3.34	3.59	3.53	3.78	3.74	3.96	3.84	4.07	4.27
21554.1	2.81	2.98	3.15	3.35	3.34	3.59	3.52	3.77	3.74	3.95	3.83	4.06	4.26
21557.0	2.81	2.98	3.14	3.35	3.33	3.58	3.51	3.76	3.73	3.94	3.82	4.05	4.25
21559.9	2.80	2.97	3.14	3.34	3.32	3.57	3.51	3.75	3.72	3.94	3.82	4.04	4.24
21562.8	2.80	2.97	3.13	3.33	3.32	3.57	3.50	3.75	3.71	3.93	3.81	4.03	4.23
21565.7	2.80	2.97	3.13	3.33	3.31	3.56	3.49	3.74	3.71	3.92	3.80	4.02	4.22
21568.6	2.79	2.96	3.12	3.32	3.31	3.55	3.49	3.73	3.70	3.91	3.79	4.01	4.21
21571.4	2.79	2.96	3.12	3.32	3.30	3.54	3.48	3.72	3.69	3.90	3.78	4.00	4.19
21574.3	2.79	2.96	3.11	3.31	3.29	3.54	3.47	3.71	3.68	3.88	3.77	3.99	4.18
21577.2	2.79	2.95	3.11	3.30	3.29	3.53	3.46	3.70	3.67	3.87	3.76	3.97	4.17
21580.1	2.78	2.95	3.10	3.30	3.28	3.52	3.46	3.70	3.67	3.86	3.75	3.96	4.15
21583.0	2.78	2.94	3.10	3.29	3.28	3.52	3.45	3.69	3.66	3.85	3.75	3.95	4.14
21585.9	2.78	2.94	3.09	3.28	3.27	3.51	3.45	3.68	3.65	3.84	3.74	3.94	4.13
21588.8	2.77	2.94	3.09	3.28	3.26	3.50	3.44	3.68	3.65	3.84	3.73	3.93	4.11
21591.7	2.77	2.93	3.08	3.27	3.26	3.50	3.43	3.67	3.64	3.83	3.72	3.92	4.10
21594.6	2.77	2.93	3.08	3.27	3.25	3.49	3.43	3.66	3.63	3.82	3.72	3.91	4.09
21597.4	2.76	2.92	3.07	3.26	3.25	3.48	3.42	3.66	3.63	3.81	3.71	3.90	4.07
21600.3	2.76	2.92	3.07	3.25	3.24	3.48	3.41	3.65	3.62	3.80	3.70	3.89	4.06
21603.2	2.76	2.92	3.06	3.25	3.23	3.47	3.41	3.64	3.61	3.79	3.69	3.88	4.05
21606.1	2.75	2.91	3.06	3.24	3.23	3.47	3.40	3.63	3.61	3.78	3.68	3.87	4.03
21609.0	2.75	2.91	3.05	3.24	3.22	3.46	3.40	3.63	3.60	3.77	3.68	3.86	4.02
21612.0	2.76	2.91	3.06	3.24	3.23	3.46	3.40	3.63	3.60	3.77	3.68	3.85	4.01
21615.0	2.76	2.92	3.07	3.25	3.23	3.47	3.41	3.63	3.60	3.77	3.68	3.85	4.01
21618.0	2.77	2.93	3.07	3.25	3.24	3.47	3.41	3.63	3.60	3.77	3.68	3.85	4.00
21621.0	2.77	2.93	3.08	3.26	3.24	3.48	3.42	3.63	3.60	3.77	3.68	3.85	4.00
21624.0	2.78	2.94	3.08	3.26	3.25	3.48	3.42	3.63	3.61	3.77	3.68	3.85	3.99
21627.0	2.79	2.95	3.09	3.27	3.26	3.48	3.43	3.64	3.61	3.77	3.68	3.85	3.99
21630.0	2.79	2.96	3.10	3.28	3.26	3.49	3.43	3.64	3.61	3.77	3.69	3.85	3.98
21633.0	2.80	2.96	3.10	3.28	3.27	3.49	3.44	3.64	3.62	3.77	3.69	3.85	3.98
21636.0	2.81	2.97	3.11	3.29	3.27	3.50	3.44	3.64	3.62	3.77	3.69	3.85	3.97
21639.0	2.81	2.98	3.12	3.29	3.28	3.50	3.44	3.64	3.62	3.77	3.69	3.84	3.96
21642.0	2.82	2.99	3.12	3.30	3.29	3.50	3.45	3.64	3.62	3.77	3.69	3.83	3.95
21645.0	2.83	2.99	3.13	3.31	3.29	3.50	3.45	3.64	3.62	3.76	3.69	3.83	3.94
21648.0	2.84	3.00	3.14	3.31	3.30	3.51	3.46	3.64	3.62	3.76	3.69	3.82	3.93
21651.0	2.85	3.01	3.15	3.32	3.31	3.52	3.46	3.65	3.62	3.75	3.69	3.82	3.92
21654.0	2.85	3.02	3.15	3.33	3.31	3.52	3.47	3.65	3.63	3.75	3.69	3.81	3.91
21657.0	2.86	3.03	3.16	3.33	3.32	3.53	3.47	3.65	3.63	3.75	3.69	3.81	3.91
21660.0	2.87	3.04	3.17	3.34	3.33	3.53	3.48	3.66	3.64	3.75	3.70	3.81	3.90
21663.0	2.88	3.05	3.18	3.35	3.33	3.54	3.49	3.66	3.64	3.75	3.70	3.80	3.90

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
21666.0	2.89	3.06	3.18	3.35	3.34	3.54	3.49	3.66	3.65	3.75	3.70	3.80	3.90
21669.0	2.90	3.06	3.19	3.36	3.35	3.55	3.50	3.67	3.65	3.74	3.70	3.79	3.89
21672.0	2.91	3.07	3.20	3.37	3.35	3.55	3.50	3.67	3.65	3.74	3.70	3.79	3.88
21675.0	2.92	3.08	3.21	3.37	3.36	3.56	3.51	3.67	3.65	3.74	3.70	3.79	3.87
21678.0	2.93	3.09	3.22	3.38	3.37	3.56	3.52	3.67	3.66	3.74	3.70	3.78	3.87
21681.0	2.94	3.10	3.23	3.39	3.38	3.57	3.52	3.67	3.66	3.73	3.70	3.78	3.86
21684.0	2.95	3.11	3.24	3.40	3.38	3.57	3.53	3.67	3.66	3.73	3.70	3.77	3.85
21687.0	2.96	3.12	3.25	3.40	3.39	3.57	3.53	3.67	3.66	3.73	3.70	3.77	3.84
21690.0	2.97	3.13	3.26	3.41	3.40	3.57	3.53	3.67	3.66	3.72	3.69	3.76	3.83
21693.0	2.99	3.15	3.27	3.42	3.41	3.58	3.54	3.67	3.66	3.72	3.69	3.76	3.83
21696.0	3.00	3.16	3.28	3.43	3.42	3.58	3.54	3.67	3.66	3.71	3.69	3.75	3.82
21699.0	3.01	3.17	3.29	3.44	3.42	3.58	3.55	3.67	3.66	3.71	3.69	3.75	3.81
21702.0	3.03	3.18	3.30	3.44	3.43	3.59	3.55	3.67	3.66	3.71	3.69	3.74	3.81
21705.0	3.04	3.19	3.31	3.45	3.44	3.59	3.56	3.67	3.66	3.71	3.69	3.74	3.80
21708.0	3.05	3.20	3.32	3.46	3.45	3.60	3.57	3.67	3.66	3.71	3.69	3.74	3.79
21711.0	3.07	3.22	3.33	3.47	3.46	3.60	3.57	3.67	3.67	3.71	3.69	3.74	3.79
21713.9	3.06	3.21	3.33	3.47	3.46	3.60	3.57	3.67	3.66	3.71	3.68	3.74	3.78
21716.8	3.06	3.21	3.33	3.47	3.45	3.60	3.57	3.67	3.66	3.70	3.68	3.73	3.78
21719.7	3.06	3.21	3.32	3.46	3.45	3.60	3.57	3.66	3.66	3.70	3.67	3.73	3.77
21722.7	3.06	3.21	3.32	3.46	3.45	3.60	3.57	3.66	3.66	3.70	3.67	3.72	3.77
21725.6	3.06	3.20	3.32	3.46	3.45	3.60	3.57	3.66	3.66	3.70	3.67	3.72	3.77
21728.5	3.05	3.20	3.32	3.46	3.45	3.59	3.57	3.66	3.65	3.70	3.67	3.72	3.77
21731.4	3.05	3.20	3.32	3.46	3.45	3.59	3.57	3.66	3.65	3.69	3.67	3.71	3.77
21734.3	3.05	3.20	3.31	3.46	3.45	3.59	3.56	3.65	3.65	3.69	3.66	3.71	3.76
21737.2	3.05	3.19	3.31	3.46	3.45	3.59	3.56	3.65	3.65	3.69	3.66	3.71	3.76
21740.1	3.04	3.19	3.31	3.45	3.44	3.58	3.56	3.65	3.64	3.69	3.66	3.70	3.76
21743.0	3.04	3.19	3.31	3.45	3.44	3.58	3.55	3.64	3.64	3.68	3.65	3.70	3.75
21746.0	3.04	3.19	3.31	3.45	3.44	3.58	3.55	3.64	3.63	3.68	3.65	3.70	3.75
21748.9	3.04	3.18	3.30	3.45	3.43	3.57	3.55	3.63	3.63	3.67	3.64	3.69	3.74
21751.8	3.04	3.18	3.30	3.44	3.43	3.57	3.54	3.62	3.62	3.66	3.64	3.68	3.74
21754.7	3.04	3.18	3.30	3.44	3.43	3.56	3.54	3.62	3.61	3.66	3.63	3.68	3.73
21757.6	3.03	3.18	3.30	3.43	3.42	3.56	3.53	3.61	3.61	3.65	3.63	3.67	3.72
21760.5	3.03	3.18	3.29	3.43	3.42	3.55	3.53	3.61	3.60	3.65	3.62	3.67	3.72
21763.4	3.03	3.17	3.29	3.43	3.42	3.55	3.53	3.60	3.60	3.64	3.62	3.66	3.71
21766.3	3.03	3.17	3.29	3.43	3.42	3.55	3.53	3.60	3.59	3.64	3.61	3.66	3.71
21769.3	3.03	3.17	3.29	3.43	3.42	3.55	3.52	3.59	3.59	3.64	3.61	3.65	3.70
21772.2	3.03	3.17	3.29	3.42	3.41	3.54	3.52	3.59	3.58	3.63	3.61	3.65	3.70
21775.1	3.02	3.16	3.28	3.42	3.41	3.54	3.52	3.59	3.58	3.63	3.60	3.65	3.70
21778.0	3.02	3.16	3.28	3.42	3.41	3.54	3.52	3.59	3.58	3.63	3.60	3.65	3.70
21780.9	3.02	3.16	3.28	3.42	3.41	3.54	3.52	3.59	3.58	3.63	3.60	3.65	3.70
21783.8	3.02	3.16	3.28	3.42	3.41	3.54	3.52	3.58	3.58	3.63	3.60	3.65	3.69
21786.7	3.02	3.16	3.28	3.42	3.41	3.54	3.52	3.58	3.57	3.63	3.60	3.64	3.69
21789.7	3.02	3.15	3.28	3.42	3.41	3.54	3.52	3.58	3.57	3.62	3.59	3.64	3.69
21792.6	3.02	3.15	3.27	3.42	3.41	3.53	3.51	3.57	3.57	3.62	3.59	3.64	3.68
21795.5	3.01	3.15	3.27	3.42	3.41	3.53	3.51	3.57	3.56	3.61	3.59	3.63	3.68
21798.4	3.01	3.15	3.27	3.41	3.40	3.52	3.50	3.56	3.55	3.60	3.58	3.62	3.67

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
21801.3	3.01	3.15	3.27	3.41	3.40	3.52	3.50	3.55	3.55	3.60	3.57	3.61	3.66
21804.2	3.01	3.15	3.27	3.41	3.40	3.52	3.50	3.55	3.54	3.59	3.57	3.61	3.65
21807.1	3.01	3.14	3.27	3.41	3.40	3.51	3.50	3.55	3.54	3.59	3.56	3.60	3.65
21810.0	3.01	3.14	3.27	3.41	3.40	3.51	3.49	3.54	3.54	3.58	3.56	3.60	3.65
21813.0	3.01	3.14	3.26	3.41	3.40	3.51	3.49	3.54	3.53	3.58	3.56	3.59	3.64
21815.9	3.01	3.14	3.26	3.41	3.40	3.51	3.49	3.54	3.53	3.58	3.55	3.59	3.64
21818.8	3.01	3.14	3.26	3.41	3.40	3.51	3.49	3.54	3.53	3.57	3.55	3.59	3.64
21821.7	3.01	3.14	3.26	3.41	3.40	3.51	3.49	3.54	3.53	3.57	3.55	3.59	3.64
21824.6	3.01	3.13	3.26	3.41	3.40	3.51	3.49	3.53	3.53	3.57	3.55	3.59	3.65
21827.5	3.01	3.13	3.26	3.41	3.40	3.50	3.49	3.53	3.53	3.57	3.55	3.59	3.66
21830.4	3.01	3.13	3.26	3.41	3.40	3.50	3.49	3.53	3.53	3.57	3.55	3.59	3.66
21833.3	3.00	3.13	3.26	3.41	3.40	3.50	3.49	3.53	3.53	3.57	3.55	3.59	3.67
21836.3	3.00	3.13	3.26	3.41	3.40	3.50	3.49	3.53	3.53	3.57	3.55	3.59	3.67
21839.2	3.00	3.13	3.26	3.41	3.40	3.50	3.49	3.53	3.53	3.57	3.55	3.59	3.68
21842.1	3.00	3.13	3.25	3.41	3.40	3.50	3.49	3.53	3.53	3.57	3.55	3.59	3.69
21845.0	3.00	3.12	3.25	3.41	3.40	3.50	3.49	3.53	3.52	3.57	3.54	3.59	3.70
21847.9	3.01	3.14	3.27	3.42	3.41	3.52	3.50	3.55	3.54	3.58	3.56	3.61	3.73
21850.8	3.02	3.15	3.28	3.44	3.43	3.54	3.52	3.56	3.56	3.60	3.58	3.62	3.73
21853.6	3.02	3.17	3.30	3.46	3.44	3.55	3.54	3.58	3.57	3.61	3.59	3.64	3.74
21856.5	3.03	3.18	3.31	3.47	3.46	3.56	3.55	3.59	3.59	3.63	3.61	3.65	3.72
21859.4	3.03	3.19	3.32	3.48	3.47	3.58	3.56	3.61	3.60	3.64	3.62	3.66	3.71
21862.3	3.03	3.20	3.34	3.49	3.48	3.59	3.57	3.62	3.61	3.65	3.63	3.68	3.72
21865.1	3.03	3.20	3.35	3.50	3.49	3.60	3.59	3.63	3.62	3.67	3.64	3.69	3.73
21868.0	3.03	3.21	3.36	3.51	3.50	3.61	3.60	3.64	3.64	3.68	3.65	3.70	3.75
21870.9	3.02	3.21	3.37	3.52	3.51	3.62	3.61	3.65	3.64	3.69	3.66	3.71	3.75
21873.8	3.02	3.22	3.37	3.53	3.52	3.63	3.61	3.66	3.65	3.69	3.67	3.72	3.76
21876.6	3.02	3.22	3.38	3.54	3.53	3.63	3.62	3.66	3.66	3.70	3.68	3.72	3.77
21879.5	3.01	3.22	3.39	3.55	3.54	3.64	3.63	3.67	3.66	3.70	3.68	3.73	3.77
21882.4	3.01	3.22	3.39	3.55	3.54	3.64	3.63	3.67	3.67	3.71	3.69	3.73	3.77
21885.3	3.01	3.22	3.39	3.56	3.55	3.65	3.64	3.68	3.67	3.71	3.69	3.73	3.77
21888.1	3.01	3.22	3.40	3.57	3.56	3.66	3.65	3.69	3.68	3.72	3.70	3.73	3.77
21891.0	3.01	3.22	3.40	3.57	3.56	3.67	3.66	3.69	3.69	3.73	3.71	3.75	3.81
21893.9	3.01	3.22	3.40	3.58	3.57	3.68	3.66	3.71	3.70	3.76	3.73	3.81	3.87
21896.8	3.01	3.22	3.40	3.58	3.57	3.69	3.67	3.75	3.74	3.82	3.77	3.86	3.91
21899.6	3.01	3.22	3.41	3.59	3.58	3.72	3.69	3.79	3.78	3.88	3.82	3.92	3.99
21902.5	3.01	3.22	3.41	3.59	3.58	3.73	3.70	3.81	3.80	3.90	3.84	3.95	4.04
21905.4	3.02	3.22	3.41	3.59	3.58	3.74	3.70	3.82	3.81	3.91	3.85	3.96	4.09
21908.3	3.02	3.23	3.41	3.60	3.59	3.74	3.71	3.83	3.81	3.91	3.85	3.96	4.11
21911.1	3.03	3.23	3.41	3.60	3.59	3.75	3.71	3.83	3.82	3.92	3.86	3.97	4.13
21914.0	3.03	3.23	3.42	3.60	3.59	3.76	3.72	3.84	3.83	3.92	3.87	3.97	4.13
21916.9	3.04	3.24	3.42	3.61	3.60	3.76	3.72	3.85	3.83	3.92	3.87	3.97	4.13
21919.8	3.04	3.24	3.42	3.61	3.60	3.77	3.73	3.86	3.84	3.93	3.88	3.98	4.15
21922.6	3.05	3.25	3.43	3.62	3.61	3.77	3.74	3.86	3.85	3.94	3.89	3.99	4.16
21925.5	3.06	3.26	3.44	3.62	3.61	3.78	3.74	3.87	3.85	3.94	3.90	4.00	4.17
21928.4	3.07	3.27	3.44	3.63	3.62	3.79	3.75	3.87	3.86	3.95	3.90	4.00	4.17
21931.3	3.08	3.28	3.45	3.63	3.62	3.79	3.75	3.88	3.87	3.96	3.91	4.01	4.18

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
21934.1	3.10	3.29	3.46	3.64	3.63	3.80	3.76	3.89	3.87	3.96	3.91	4.02	4.19
21937.0	3.11	3.30	3.47	3.65	3.64	3.80	3.77	3.89	3.88	3.97	3.92	4.02	4.20
21939.9	3.13	3.31	3.48	3.66	3.64	3.81	3.77	3.90	3.89	3.98	3.93	4.03	4.20
21942.8	3.14	3.32	3.49	3.66	3.65	3.82	3.78	3.91	3.89	3.98	3.93	4.04	4.22
21945.6	3.16	3.34	3.50	3.67	3.66	3.83	3.79	3.91	3.90	3.99	3.94	4.05	4.22
21948.5	3.18	3.35	3.52	3.68	3.67	3.83	3.80	3.92	3.91	3.99	3.95	4.06	4.24
21951.4	3.20	3.37	3.53	3.70	3.69	3.84	3.81	3.93	3.91	4.00	3.96	4.07	4.26
21954.3	3.22	3.39	3.55	3.71	3.70	3.85	3.82	3.94	3.93	4.02	3.97	4.08	4.27
21957.1	3.24	3.41	3.56	3.72	3.71	3.87	3.83	3.96	3.95	4.03	3.99	4.09	4.28
21960.0	3.26	3.43	3.58	3.74	3.73	3.89	3.85	3.98	3.97	4.05	4.01	4.11	4.30
21962.9	3.21	3.38	3.54	3.70	3.69	3.84	3.80	3.95	3.93	4.02	3.96	4.06	4.22
21965.8	3.17	3.33	3.49	3.66	3.65	3.81	3.77	3.91	3.89	3.99	3.94	4.03	4.23
21968.7	3.11	3.28	3.45	3.62	3.61	3.77	3.73	3.88	3.86	3.96	3.91	4.00	4.19
21971.6	3.07	3.24	3.40	3.57	3.56	3.73	3.69	3.84	3.82	3.92	3.87	3.97	4.16
21974.5	3.01	3.18	3.35	3.53	3.51	3.69	3.65	3.80	3.78	3.88	3.84	3.93	4.13
21977.4	2.97	3.13	3.30	3.48	3.47	3.65	3.60	3.76	3.75	3.86	3.80	3.90	4.07
21980.3	2.91	3.08	3.24	3.43	3.42	3.61	3.56	3.72	3.71	3.82	3.76	3.87	4.03
21983.2	2.86	3.03	3.19	3.38	3.37	3.57	3.52	3.69	3.67	3.79	3.73	3.84	3.99
21986.1	2.81	2.98	3.14	3.33	3.32	3.52	3.47	3.65	3.63	3.76	3.69	3.81	3.95
21989.0	2.76	2.93	3.09	3.28	3.26	3.47	3.42	3.60	3.58	3.72	3.64	3.77	3.93
21991.9	2.71	2.88	3.03	3.22	3.21	3.42	3.36	3.55	3.53	3.67	3.60	3.73	3.88
21994.8	2.66	2.83	2.98	3.17	3.16	3.36	3.31	3.51	3.48	3.63	3.55	3.68	3.84
21997.7	2.61	2.77	2.93	3.11	3.10	3.31	3.26	3.45	3.43	3.58	3.50	3.64	3.80
22000.6	2.56	2.72	2.88	3.06	3.05	3.26	3.20	3.40	3.38	3.53	3.45	3.59	3.74
22003.5	2.51	2.67	2.83	3.01	3.00	3.20	3.15	3.35	3.32	3.48	3.40	3.54	3.69
22006.4	2.46	2.62	2.78	2.96	2.94	3.15	3.09	3.29	3.27	3.43	3.34	3.49	3.64
22009.3	2.41	2.57	2.72	2.90	2.89	3.09	3.04	3.24	3.21	3.38	3.29	3.44	3.58
22012.2	2.36	2.52	2.67	2.85	2.84	3.04	2.98	3.18	3.16	3.33	3.23	3.39	3.53
22015.1	2.32	2.47	2.62	2.80	2.79	2.98	2.93	3.13	3.10	3.27	3.18	3.34	3.48
22018.0	2.27	2.43	2.57	2.75	2.74	2.93	2.88	3.07	3.05	3.22	3.12	3.29	3.43
22020.9	2.22	2.38	2.52	2.69	2.68	2.87	2.82	3.02	2.99	3.16	3.07	3.23	3.38
22023.8	2.18	2.33	2.48	2.65	2.63	2.82	2.77	2.96	2.94	3.11	3.01	3.18	3.33
22026.7	2.13	2.28	2.43	2.59	2.58	2.77	2.72	2.91	2.88	3.05	2.96	3.12	3.27
22029.6	2.09	2.24	2.38	2.55	2.54	2.72	2.67	2.86	2.83	3.00	2.90	3.07	3.22
22032.5	2.04	2.19	2.33	2.50	2.49	2.67	2.62	2.80	2.78	2.94	2.85	3.01	3.16
22035.4	2.00	2.15	2.29	2.45	2.44	2.62	2.57	2.75	2.73	2.89	2.80	2.95	3.11
22038.3	1.96	2.10	2.24	2.40	2.39	2.57	2.52	2.70	2.68	2.83	2.74	2.89	3.06
22041.2	1.92	2.06	2.20	2.35	2.34	2.52	2.47	2.65	2.63	2.78	2.69	2.83	3.01
22044.1	1.88	2.02	2.15	2.31	2.30	2.47	2.42	2.60	2.57	2.72	2.64	2.78	2.95
22047.0	1.84	1.98	2.11	2.26	2.25	2.42	2.38	2.55	2.52	2.67	2.59	2.72	2.90
22049.9	1.80	1.94	2.07	2.22	2.21	2.38	2.33	2.50	2.47	2.61	2.54	2.66	2.85
22052.8	1.76	1.90	2.02	2.17	2.16	2.33	2.29	2.45	2.43	2.56	2.49	2.61	2.79
22055.7	1.72	1.85	1.98	2.13	2.12	2.28	2.24	2.40	2.38	2.50	2.43	2.55	2.74
22058.6	1.68	1.82	1.94	2.09	2.08	2.24	2.20	2.35	2.33	2.45	2.38	2.50	2.68
22061.5	1.64	1.78	1.90	2.04	2.03	2.19	2.15	2.30	2.28	2.40	2.33	2.45	2.63
22064.4	1.61	1.74	1.86	2.00	1.99	2.15	2.11	2.25	2.23	2.35	2.28	2.40	2.58

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
22067.3	1.57	1.70	1.82	1.96	1.95	2.10	2.06	2.20	2.18	2.30	2.23	2.35	2.53
22070.2	1.54	1.67	1.78	1.92	1.91	2.06	2.02	2.15	2.13	2.25	2.18	2.31	2.48
22073.1	1.50	1.63	1.75	1.88	1.87	2.01	1.98	2.10	2.09	2.21	2.14	2.26	2.44
22076.0	1.47	1.59	1.71	1.84	1.83	1.97	1.93	2.06	2.04	2.16	2.09	2.21	2.39
22079.0	1.49	1.62	1.73	1.87	1.86	2.00	1.96	2.09	2.07	2.19	2.12	2.24	2.41
22082.0	1.51	1.64	1.76	1.89	1.88	2.03	1.99	2.12	2.10	2.22	2.15	2.27	2.44
22085.0	1.53	1.66	1.78	1.92	1.91	2.05	2.02	2.15	2.13	2.25	2.18	2.30	2.46
22088.0	1.56	1.69	1.81	1.94	1.94	2.08	2.05	2.18	2.16	2.28	2.21	2.33	2.49
22091.0	1.58	1.71	1.83	1.97	1.96	2.11	2.08	2.21	2.19	2.31	2.24	2.36	2.52
22094.0	1.60	1.73	1.86	2.00	1.99	2.14	2.10	2.24	2.23	2.34	2.28	2.39	2.55
22097.0	1.62	1.76	1.88	2.03	2.02	2.17	2.13	2.28	2.26	2.38	2.31	2.42	2.58
22100.0	1.65	1.78	1.91	2.05	2.05	2.20	2.16	2.31	2.29	2.41	2.34	2.46	2.61
22103.0	1.67	1.81	1.94	2.08	2.07	2.23	2.19	2.34	2.33	2.44	2.38	2.49	2.65
22106.0	1.70	1.83	1.96	2.11	2.10	2.27	2.22	2.38	2.36	2.48	2.41	2.53	2.68
22109.0	1.72	1.86	1.99	2.14	2.13	2.30	2.25	2.41	2.39	2.51	2.45	2.56	2.71
22112.0	1.75	1.89	2.02	2.17	2.16	2.33	2.28	2.45	2.43	2.55	2.48	2.60	2.74
22115.0	1.77	1.91	2.05	2.20	2.19	2.36	2.32	2.48	2.46	2.59	2.52	2.63	2.77
22118.0	1.80	1.94	2.07	2.23	2.22	2.39	2.35	2.52	2.49	2.62	2.56	2.67	2.81
22121.0	1.82	1.97	2.10	2.26	2.25	2.42	2.38	2.55	2.53	2.66	2.59	2.71	2.85
22124.0	1.85	2.00	2.13	2.29	2.28	2.46	2.41	2.58	2.56	2.70	2.63	2.74	2.88
22127.0	1.88	2.03	2.16	2.32	2.31	2.49	2.44	2.62	2.60	2.74	2.66	2.78	2.92
22130.0	1.91	2.05	2.19	2.36	2.35	2.53	2.48	2.66	2.63	2.78	2.70	2.82	2.96
22133.0	1.93	2.08	2.22	2.39	2.38	2.56	2.51	2.69	2.67	2.82	2.74	2.87	3.00
22136.0	1.96	2.11	2.26	2.42	2.41	2.60	2.55	2.73	2.71	2.86	2.78	2.91	3.04
22139.0	1.99	2.14	2.29	2.46	2.44	2.63	2.58	2.77	2.74	2.90	2.81	2.95	3.08
22142.0	2.02	2.18	2.32	2.49	2.48	2.67	2.62	2.80	2.78	2.94	2.85	2.99	3.12
22145.0	2.05	2.21	2.35	2.52	2.51	2.70	2.65	2.84	2.82	2.98	2.89	3.04	3.17
22148.0	2.08	2.24	2.39	2.56	2.55	2.74	2.69	2.88	2.86	3.03	2.93	3.08	3.21
22151.0	2.11	2.27	2.42	2.59	2.58	2.78	2.73	2.92	2.90	3.07	2.97	3.12	3.26
22154.0	2.15	2.31	2.46	2.63	2.62	2.82	2.76	2.96	2.93	3.11	3.01	3.17	3.30
22157.0	2.18	2.34	2.49	2.67	2.66	2.85	2.80	3.00	2.97	3.15	3.05	3.21	3.35
22160.0	2.21	2.37	2.53	2.71	2.69	2.89	2.84	3.04	3.02	3.19	3.09	3.25	3.39
22163.0	2.25	2.41	2.56	2.74	2.73	2.93	2.88	3.08	3.06	3.23	3.13	3.29	3.43
22166.0	2.28	2.45	2.60	2.78	2.77	2.97	2.92	3.12	3.10	3.27	3.17	3.33	3.47
22169.0	2.32	2.48	2.64	2.82	2.81	3.02	2.96	3.16	3.14	3.31	3.21	3.37	3.52
22172.0	2.35	2.52	2.68	2.86	2.85	3.06	3.00	3.20	3.18	3.35	3.25	3.41	3.56
22175.0	2.39	2.56	2.72	2.90	2.89	3.10	3.05	3.25	3.22	3.39	3.30	3.45	3.61
22178.0	2.43	2.60	2.76	2.95	2.93	3.14	3.09	3.29	3.27	3.44	3.34	3.50	3.66
22181.0	2.47	2.64	2.80	2.99	2.98	3.19	3.13	3.34	3.31	3.48	3.39	3.55	3.71
22184.0	2.51	2.68	2.84	3.03	3.02	3.23	3.18	3.38	3.36	3.53	3.43	3.59	3.76
22187.0	2.55	2.72	2.89	3.08	3.06	3.28	3.22	3.43	3.40	3.58	3.48	3.64	3.81
22190.0	2.60	2.77	2.93	3.12	3.11	3.32	3.27	3.48	3.45	3.63	3.53	3.69	3.87
22193.0	2.64	2.81	2.98	3.17	3.15	3.37	3.32	3.52	3.50	3.67	3.58	3.74	3.92
22196.0	2.69	2.86	3.02	3.22	3.20	3.42	3.36	3.57	3.55	3.72	3.63	3.79	3.98
22199.0	2.74	2.91	3.07	3.26	3.25	3.47	3.41	3.62	3.60	3.77	3.68	3.84	4.03
22202.0	2.79	2.96	3.12	3.31	3.30	3.52	3.46	3.68	3.65	3.83	3.73	3.89	4.09

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
22205.0	2.84	3.01	3.17	3.36	3.35	3.57	3.51	3.73	3.70	3.88	3.78	3.94	4.14
22208.0	2.89	3.06	3.22	3.42	3.40	3.63	3.57	3.78	3.76	3.93	3.83	3.99	4.19
22211.0	2.90	3.07	3.23	3.42	3.41	3.63	3.57	3.79	3.76	3.93	3.84	4.00	4.19
22214.0	2.90	3.07	3.23	3.43	3.42	3.64	3.58	3.79	3.76	3.93	3.84	4.00	4.19
22217.0	2.91	3.08	3.24	3.43	3.42	3.64	3.58	3.79	3.77	3.93	3.84	3.99	4.18
22220.0	2.91	3.09	3.25	3.44	3.43	3.65	3.59	3.79	3.76	3.93	3.84	3.99	4.18
22223.0	2.92	3.09	3.25	3.45	3.43	3.65	3.59	3.79	3.76	3.92	3.83	3.99	4.17
22226.0	2.92	3.10	3.26	3.45	3.44	3.65	3.60	3.79	3.76	3.92	3.83	3.99	4.16
22229.0	2.93	3.10	3.27	3.46	3.45	3.65	3.60	3.79	3.76	3.92	3.83	3.98	4.14
22232.0	2.94	3.11	3.27	3.47	3.45	3.66	3.60	3.78	3.76	3.92	3.83	3.98	4.14
22235.0	2.94	3.12	3.28	3.47	3.46	3.66	3.61	3.78	3.76	3.91	3.83	3.97	4.13
22238.0	2.95	3.12	3.29	3.48	3.47	3.66	3.61	3.78	3.76	3.91	3.82	3.96	4.13
22241.0	2.95	3.13	3.29	3.49	3.47	3.66	3.61	3.78	3.76	3.90	3.82	3.96	4.14
22244.0	2.96	3.14	3.30	3.49	3.48	3.66	3.62	3.78	3.76	3.90	3.82	3.95	4.12
22247.0	2.96	3.14	3.31	3.50	3.49	3.67	3.62	3.78	3.76	3.89	3.82	3.94	4.10
22250.0	2.97	3.15	3.31	3.51	3.49	3.67	3.63	3.78	3.76	3.89	3.82	3.93	4.10
22253.0	2.97	3.15	3.32	3.51	3.50	3.67	3.63	3.78	3.76	3.89	3.81	3.93	4.09
22256.0	2.98	3.16	3.33	3.52	3.51	3.68	3.64	3.78	3.76	3.89	3.82	3.93	4.09
22259.0	2.98	3.17	3.33	3.53	3.51	3.69	3.64	3.79	3.77	3.89	3.82	3.93	4.09
22262.0	2.99	3.17	3.34	3.53	3.52	3.69	3.65	3.79	3.77	3.89	3.82	3.93	4.09
22265.0	2.99	3.18	3.35	3.54	3.53	3.69	3.65	3.79	3.77	3.89	3.82	3.93	4.09
22268.0	3.00	3.19	3.35	3.54	3.53	3.70	3.66	3.79	3.78	3.89	3.83	3.93	4.09
22271.0	3.00	3.19	3.36	3.55	3.54	3.70	3.67	3.80	3.78	3.90	3.83	3.94	4.09
22274.0	3.01	3.20	3.37	3.56	3.54	3.71	3.67	3.80	3.79	3.90	3.84	3.94	4.09
22277.0	3.01	3.20	3.37	3.56	3.55	3.72	3.68	3.81	3.79	3.90	3.84	3.94	4.09
22280.0	3.02	3.21	3.38	3.57	3.56	3.72	3.69	3.81	3.80	3.91	3.85	3.95	4.09
22283.0	3.03	3.22	3.39	3.58	3.57	3.73	3.69	3.82	3.81	3.91	3.85	3.95	4.09
22286.0	3.03	3.22	3.39	3.58	3.57	3.74	3.70	3.83	3.81	3.92	3.86	3.96	4.09
22289.0	3.04	3.23	3.40	3.59	3.58	3.74	3.71	3.83	3.82	3.92	3.86	3.96	4.10
22292.0	3.04	3.23	3.41	3.60	3.59	3.75	3.71	3.84	3.82	3.93	3.87	3.96	4.10
22295.0	3.05	3.24	3.41	3.61	3.59	3.76	3.72	3.85	3.83	3.93	3.88	3.97	4.10
22298.0	3.05	3.25	3.42	3.61	3.60	3.77	3.73	3.86	3.84	3.95	3.89	3.98	4.11
22301.0	3.06	3.25	3.43	3.62	3.61	3.78	3.74	3.87	3.86	3.96	3.90	4.00	4.13
22304.0	3.06	3.26	3.44	3.63	3.62	3.79	3.75	3.89	3.87	3.99	3.92	4.03	4.16
22307.0	3.07	3.26	3.44	3.64	3.63	3.81	3.77	3.91	3.90	4.01	3.94	4.06	4.21
22310.0	3.07	3.27	3.45	3.65	3.63	3.83	3.78	3.93	3.92	4.04	3.97	4.09	4.22
22313.0	3.08	3.28	3.46	3.66	3.64	3.84	3.80	3.96	3.94	4.08	4.00	4.13	4.24
22316.0	3.08	3.28	3.46	3.66	3.65	3.86	3.81	3.99	3.97	4.13	4.04	4.19	4.31
22319.0	3.09	3.29	3.47	3.67	3.66	3.87	3.81	4.02	4.00	4.18	4.07	4.24	4.36
22322.0	3.10	3.30	3.48	3.68	3.66	3.88	3.82	4.03	4.01	4.19	4.09	4.26	4.36
22325.0	3.10	3.30	3.48	3.68	3.67	3.89	3.83	4.04	4.01	4.20	4.09	4.26	4.35
22328.0	3.11	3.31	3.49	3.69	3.68	3.90	3.84	4.05	4.02	4.21	4.10	4.27	4.35
22331.0	3.11	3.31	3.50	3.70	3.69	3.90	3.85	4.06	4.03	4.21	4.11	4.28	4.36
22334.0	3.12	3.32	3.50	3.71	3.69	3.91	3.85	4.06	4.04	4.22	4.12	4.28	4.36
22337.0	3.12	3.33	3.51	3.71	3.70	3.92	3.86	4.07	4.04	4.23	4.12	4.29	4.37
22340.0	3.13	3.33	3.52	3.72	3.71	3.93	3.87	4.08	4.05	4.23	4.13	4.29	4.38

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
22343.0	3.14	3.34	3.52	3.73	3.72	3.93	3.88	4.09	4.06	4.24	4.14	4.30	4.39
22346.0	3.14	3.35	3.53	3.74	3.72	3.94	3.88	4.09	4.07	4.25	4.14	4.31	4.40
22348.9	3.14	3.34	3.53	3.73	3.72	3.93	3.87	4.08	4.05	4.22	4.13	4.28	4.38
22351.8	3.14	3.34	3.52	3.72	3.71	3.92	3.86	4.06	4.04	4.20	4.11	4.26	4.36
22354.6	3.14	3.34	3.52	3.71	3.70	3.91	3.85	4.04	4.02	4.18	4.09	4.24	4.33
22357.5	3.14	3.33	3.51	3.71	3.70	3.89	3.84	4.03	4.00	4.16	4.07	4.21	4.30
22360.4	3.14	3.33	3.51	3.70	3.69	3.88	3.83	4.01	3.99	4.14	4.05	4.19	4.28
22363.3	3.14	3.33	3.50	3.69	3.68	3.87	3.82	3.99	3.97	4.12	4.04	4.16	4.25
22366.2	3.13	3.32	3.50	3.68	3.67	3.86	3.81	3.98	3.96	4.09	4.02	4.14	4.22
22369.1	3.13	3.32	3.49	3.68	3.67	3.85	3.80	3.96	3.94	4.07	4.00	4.12	4.20
22371.9	3.13	3.32	3.49	3.67	3.66	3.83	3.79	3.94	3.93	4.05	3.98	4.10	4.17
22374.8	3.13	3.31	3.48	3.66	3.65	3.82	3.78	3.93	3.91	4.03	3.96	4.07	4.15
22377.7	3.13	3.31	3.48	3.65	3.64	3.81	3.77	3.91	3.89	4.01	3.94	4.05	4.12
22380.6	3.13	3.31	3.47	3.65	3.64	3.80	3.76	3.89	3.88	3.99	3.93	4.03	4.09
22383.5	3.12	3.30	3.46	3.64	3.63	3.78	3.74	3.88	3.86	3.97	3.91	4.00	4.07
22386.4	3.12	3.30	3.46	3.63	3.62	3.77	3.73	3.86	3.85	3.95	3.89	3.98	4.04
22389.2	3.12	3.29	3.45	3.62	3.61	3.76	3.72	3.84	3.83	3.92	3.87	3.96	4.02
22392.1	3.12	3.29	3.45	3.61	3.60	3.75	3.71	3.83	3.81	3.90	3.85	3.94	3.99
22395.0	3.11	3.29	3.44	3.60	3.60	3.73	3.70	3.81	3.80	3.88	3.83	3.92	3.97
22397.9	3.11	3.28	3.44	3.60	3.59	3.72	3.69	3.79	3.78	3.86	3.82	3.89	3.94
22400.8	3.11	3.28	3.43	3.59	3.58	3.71	3.68	3.78	3.77	3.84	3.80	3.87	3.92
22403.6	3.10	3.27	3.42	3.58	3.57	3.70	3.66	3.76	3.75	3.82	3.78	3.85	3.90
22406.5	3.10	3.27	3.42	3.57	3.56	3.68	3.65	3.74	3.73	3.80	3.76	3.83	3.87
22409.4	3.10	3.26	3.41	3.56	3.55	3.67	3.64	3.73	3.72	3.78	3.74	3.81	3.85
22412.3	3.10	3.26	3.41	3.55	3.55	3.66	3.63	3.71	3.70	3.76	3.73	3.79	3.83
22415.2	3.09	3.25	3.40	3.54	3.54	3.64	3.62	3.69	3.69	3.74	3.71	3.76	3.80
22418.1	3.09	3.25	3.39	3.54	3.53	3.63	3.61	3.68	3.67	3.72	3.69	3.74	3.78
22420.9	3.08	3.24	3.39	3.53	3.52	3.62	3.59	3.66	3.65	3.70	3.67	3.72	3.76
22423.8	3.08	3.24	3.38	3.52	3.51	3.61	3.58	3.64	3.64	3.68	3.66	3.70	3.74
22426.7	3.08	3.23	3.37	3.51	3.50	3.59	3.57	3.63	3.62	3.66	3.64	3.68	3.71
22429.6	3.07	3.23	3.37	3.50	3.49	3.58	3.56	3.61	3.61	3.64	3.62	3.66	3.69
22432.5	3.07	3.22	3.36	3.49	3.48	3.57	3.55	3.60	3.59	3.62	3.61	3.64	3.67
22435.4	3.06	3.22	3.35	3.48	3.47	3.55	3.53	3.58	3.58	3.60	3.59	3.62	3.65
22438.2	3.06	3.21	3.35	3.47	3.46	3.54	3.52	3.56	3.56	3.59	3.57	3.60	3.63
22441.1	3.06	3.21	3.34	3.46	3.46	3.53	3.51	3.55	3.55	3.57	3.56	3.58	3.61
22444.0	3.05	3.20	3.33	3.45	3.45	3.51	3.50	3.53	3.53	3.55	3.54	3.56	3.59
22447.0	3.05	3.19	3.32	3.44	3.43	3.50	3.49	3.52	3.52	3.53	3.53	3.55	3.57
22450.0	3.05	3.19	3.31	3.43	3.42	3.49	3.47	3.51	3.51	3.52	3.51	3.53	3.56
22453.0	3.04	3.18	3.30	3.42	3.41	3.47	3.46	3.50	3.49	3.51	3.50	3.52	3.55
22456.0	3.04	3.18	3.29	3.40	3.40	3.46	3.45	3.48	3.48	3.50	3.49	3.51	3.54
22459.0	3.04	3.17	3.29	3.39	3.39	3.45	3.44	3.47	3.47	3.48	3.48	3.49	3.52
22462.0	3.04	3.17	3.28	3.38	3.38	3.44	3.43	3.46	3.46	3.47	3.46	3.48	3.51
22465.0	3.04	3.17	3.27	3.37	3.37	3.43	3.41	3.45	3.45	3.46	3.45	3.47	3.50
22468.0	3.04	3.16	3.26	3.36	3.36	3.42	3.40	3.44	3.43	3.45	3.44	3.46	3.49
22471.0	3.04	3.16	3.26	3.36	3.35	3.41	3.39	3.43	3.42	3.44	3.43	3.45	3.47
22474.0	3.04	3.16	3.25	3.35	3.34	3.40	3.38	3.42	3.41	3.43	3.42	3.43	3.46

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
22477.0	3.04	3.16	3.25	3.34	3.33	3.39	3.37	3.40	3.40	3.41	3.41	3.42	3.45
22480.0	3.04	3.16	3.24	3.33	3.32	3.38	3.37	3.39	3.39	3.40	3.40	3.41	3.44
22483.0	3.05	3.16	3.24	3.32	3.32	3.37	3.36	3.38	3.38	3.39	3.39	3.40	3.43
22486.0	3.05	3.16	3.24	3.31	3.31	3.36	3.35	3.38	3.37	3.38	3.38	3.39	3.42
22489.0	3.05	3.16	3.24	3.31	3.30	3.35	3.34	3.37	3.36	3.37	3.37	3.38	3.41
22492.0	3.05	3.16	3.23	3.30	3.30	3.34	3.33	3.36	3.35	3.36	3.36	3.37	3.40
22495.0	3.05	3.16	3.23	3.29	3.29	3.33	3.32	3.35	3.35	3.35	3.35	3.36	3.39
22498.0	3.06	3.16	3.23	3.29	3.29	3.33	3.32	3.34	3.34	3.34	3.34	3.35	3.38
22501.0	3.06	3.16	3.23	3.28	3.28	3.32	3.31	3.33	3.33	3.34	3.33	3.34	3.37
22504.0	3.06	3.17	3.23	3.28	3.28	3.31	3.30	3.32	3.32	3.33	3.32	3.33	3.36
22507.0	3.06	3.17	3.23	3.28	3.27	3.30	3.30	3.32	3.31	3.32	3.32	3.32	3.35
22510.0	3.07	3.17	3.23	3.27	3.27	3.30	3.29	3.31	3.31	3.31	3.31	3.31	3.34
22513.0	3.07	3.18	3.23	3.27	3.27	3.29	3.29	3.30	3.30	3.31	3.30	3.31	3.33
22516.0	3.08	3.18	3.23	3.27	3.27	3.29	3.28	3.29	3.29	3.30	3.30	3.30	3.32
22519.0	3.08	3.19	3.24	3.27	3.26	3.28	3.28	3.29	3.29	3.29	3.29	3.29	3.31
22522.0	3.09	3.19	3.24	3.26	3.26	3.28	3.27	3.28	3.28	3.29	3.29	3.29	3.30
22525.0	3.10	3.20	3.24	3.26	3.26	3.27	3.27	3.28	3.28	3.28	3.28	3.28	3.29
22528.0	3.10	3.20	3.25	3.26	3.26	3.27	3.27	3.27	3.27	3.28	3.28	3.28	3.29
22531.0	3.11	3.21	3.25	3.27	3.27	3.27	3.27	3.27	3.27	3.28	3.28	3.29	3.29
22534.0	3.12	3.21	3.26	3.27	3.27	3.27	3.27	3.28	3.28	3.28	3.28	3.29	3.29
22537.0	3.13	3.22	3.26	3.27	3.27	3.28	3.28	3.28	3.28	3.29	3.29	3.29	3.30
22540.0	3.14	3.23	3.27	3.28	3.28	3.28	3.28	3.29	3.29	3.29	3.29	3.30	3.30
22543.0	3.15	3.23	3.27	3.28	3.28	3.29	3.29	3.29	3.29	3.30	3.30	3.30	3.31
22546.0	3.16	3.24	3.28	3.29	3.29	3.29	3.29	3.30	3.30	3.31	3.30	3.31	3.32
22548.9	3.15	3.24	3.27	3.28	3.28	3.29	3.28	3.29	3.29	3.30	3.29	3.30	3.31
22551.8	3.14	3.23	3.26	3.27	3.27	3.28	3.28	3.28	3.28	3.29	3.28	3.29	3.30
22554.6	3.14	3.22	3.25	3.26	3.26	3.27	3.27	3.27	3.27	3.28	3.27	3.28	3.29
22557.5	3.13	3.21	3.24	3.25	3.25	3.26	3.26	3.26	3.26	3.27	3.27	3.27	3.28
22560.4	3.13	3.21	3.23	3.24	3.24	3.25	3.25	3.25	3.25	3.26	3.25	3.26	3.27
22563.3	3.12	3.20	3.22	3.23	3.23	3.24	3.24	3.24	3.24	3.25	3.24	3.25	3.26
22566.2	3.11	3.19	3.21	3.22	3.22	3.23	3.22	3.23	3.23	3.24	3.23	3.24	3.25
22569.1	3.11	3.18	3.20	3.21	3.21	3.22	3.21	3.22	3.22	3.23	3.22	3.23	3.23
22571.9	3.10	3.17	3.19	3.20	3.20	3.20	3.20	3.21	3.21	3.22	3.21	3.22	3.22
22574.8	3.09	3.16	3.18	3.19	3.19	3.19	3.19	3.20	3.20	3.20	3.20	3.21	3.21
22577.7	3.08	3.15	3.17	3.18	3.18	3.18	3.18	3.19	3.19	3.19	3.19	3.20	3.20
22580.6	3.08	3.14	3.16	3.17	3.17	3.17	3.17	3.18	3.18	3.18	3.18	3.18	3.19
22583.5	3.07	3.13	3.15	3.15	3.15	3.16	3.16	3.17	3.17	3.17	3.17	3.17	3.18
22586.4	3.06	3.12	3.14	3.14	3.14	3.15	3.15	3.15	3.15	3.16	3.16	3.16	3.17
22589.2	3.05	3.11	3.13	3.13	3.13	3.14	3.14	3.14	3.14	3.15	3.14	3.15	3.16
22592.1	3.05	3.10	3.11	3.12	3.12	3.13	3.13	3.13	3.13	3.13	3.13	3.14	3.16
22595.0	3.04	3.09	3.10	3.11	3.11	3.11	3.11	3.12	3.12	3.12	3.12	3.12	3.15
22597.9	3.03	3.08	3.09	3.10	3.10	3.10	3.10	3.11	3.11	3.11	3.11	3.11	3.15
22600.8	3.02	3.07	3.08	3.08	3.08	3.09	3.09	3.09	3.09	3.10	3.09	3.10	3.14
22603.6	3.01	3.06	3.07	3.07	3.07	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.14
22606.5	3.00	3.04	3.05	3.06	3.06	3.06	3.06	3.07	3.07	3.07	3.07	3.07	3.13
22609.4	2.99	3.03	3.04	3.05	3.05	3.05	3.05	3.05	3.05	3.06	3.05	3.07	3.13

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
22612.3	2.98	3.02	3.03	3.03	3.03	3.04	3.04	3.04	3.04	3.05	3.04	3.06	3.12
22615.2	2.97	3.01	3.02	3.02	3.02	3.02	3.02	3.03	3.03	3.04	3.03	3.06	3.12
22618.1	2.96	3.00	3.00	3.01	3.01	3.01	3.01	3.01	3.01	3.04	3.02	3.05	3.11
22620.9	2.95	2.98	2.99	2.99	2.99	3.00	3.00	3.00	3.00	3.03	3.01	3.04	3.11
22623.8	2.94	2.97	2.97	2.98	2.98	2.98	2.98	2.99	2.99	3.02	3.00	3.04	3.10
22626.7	2.93	2.96	2.96	2.97	2.97	2.97	2.97	2.98	2.98	3.02	2.99	3.03	3.10
22629.6	2.91	2.94	2.95	2.95	2.95	2.96	2.95	2.98	2.97	3.01	2.99	3.02	3.09
22632.5	2.90	2.93	2.93	2.94	2.94	2.95	2.94	2.97	2.96	3.00	2.98	3.02	3.09
22635.4	2.89	2.91	2.92	2.92	2.92	2.94	2.93	2.96	2.95	3.00	2.97	3.01	3.08
22638.2	2.88	2.90	2.90	2.91	2.91	2.93	2.92	2.95	2.95	2.99	2.96	3.01	3.08
22641.1	2.87	2.88	2.89	2.89	2.89	2.92	2.91	2.94	2.94	2.98	2.96	3.00	3.08
22644.0	2.86	2.87	2.87	2.88	2.88	2.91	2.90	2.94	2.93	2.98	2.95	2.99	3.07
22647.0	2.85	2.87	2.87	2.88	2.88	2.91	2.90	2.94	2.93	2.98	2.95	3.00	3.08
22650.0	2.85	2.87	2.87	2.88	2.88	2.91	2.90	2.94	2.94	2.99	2.96	3.00	3.08
22653.0	2.85	2.86	2.87	2.88	2.88	2.92	2.90	2.95	2.94	2.99	2.96	3.01	3.09
22656.0	2.84	2.86	2.87	2.89	2.88	2.92	2.91	2.95	2.94	3.00	2.96	3.01	3.09
22659.0	2.84	2.86	2.87	2.89	2.89	2.92	2.91	2.95	2.95	3.00	2.97	3.02	3.10
22662.0	2.84	2.86	2.87	2.89	2.89	2.92	2.91	2.96	2.95	3.00	2.97	3.02	3.11
22665.0	2.84	2.86	2.87	2.89	2.89	2.93	2.91	2.96	2.95	3.01	2.98	3.03	3.11
22668.0	2.83	2.85	2.87	2.89	2.89	2.93	2.92	2.96	2.96	3.01	2.98	3.03	3.12
22671.0	2.83	2.85	2.87	2.89	2.89	2.93	2.92	2.97	2.96	3.02	2.98	3.03	3.12
22674.0	2.83	2.85	2.87	2.89	2.89	2.94	2.92	2.97	2.97	3.02	2.99	3.04	3.13
22677.0	2.83	2.85	2.87	2.90	2.89	2.94	2.92	2.98	2.97	3.03	2.99	3.04	3.13
22680.0	2.82	2.85	2.87	2.90	2.90	2.94	2.93	2.98	2.97	3.03	3.00	3.05	3.14
22683.0	2.82	2.85	2.87	2.90	2.90	2.94	2.93	2.98	2.98	3.04	3.00	3.05	3.15
22686.0	2.82	2.85	2.87	2.90	2.90	2.95	2.93	2.99	2.98	3.04	3.01	3.06	3.15
22689.0	2.82	2.84	2.87	2.90	2.90	2.95	2.94	2.99	2.98	3.05	3.01	3.06	3.16
22692.0	2.82	2.84	2.87	2.91	2.90	2.95	2.94	3.00	2.99	3.05	3.01	3.07	3.16
22695.0	2.81	2.84	2.87	2.91	2.91	2.96	2.94	3.00	2.99	3.06	3.02	3.07	3.17
22698.0	2.81	2.84	2.87	2.91	2.91	2.96	2.94	3.01	3.00	3.06	3.02	3.08	3.18
22701.0	2.81	2.84	2.87	2.91	2.91	2.96	2.95	3.01	3.00	3.07	3.03	3.08	3.18
22704.0	2.81	2.84	2.87	2.91	2.91	2.97	2.95	3.01	3.00	3.07	3.03	3.09	3.19
22707.0	2.81	2.84	2.87	2.92	2.91	2.97	2.95	3.02	3.01	3.08	3.04	3.09	3.19
22710.0	2.80	2.84	2.87	2.92	2.92	2.98	2.96	3.02	3.01	3.08	3.04	3.10	3.20
22713.0	2.80	2.84	2.87	2.92	2.92	2.98	2.96	3.03	3.02	3.09	3.05	3.10	3.21
22716.0	2.80	2.84	2.88	2.92	2.92	2.98	2.96	3.03	3.02	3.09	3.05	3.11	3.21
22719.0	2.80	2.84	2.88	2.93	2.92	2.99	2.97	3.04	3.03	3.10	3.06	3.11	3.22
22722.0	2.80	2.84	2.88	2.93	2.93	2.99	2.97	3.04	3.03	3.10	3.06	3.12	3.22
22725.0	2.79	2.84	2.88	2.93	2.93	2.99	2.97	3.05	3.04	3.11	3.07	3.13	3.23
22728.0	2.79	2.84	2.88	2.93	2.93	3.00	2.98	3.05	3.04	3.11	3.07	3.13	3.24
22731.0	2.79	2.84	2.88	2.94	2.93	3.00	2.98	3.05	3.04	3.12	3.08	3.14	3.24
22734.0	2.79	2.84	2.88	2.94	2.94	3.01	2.98	3.06	3.05	3.12	3.08	3.14	3.25
22737.0	2.79	2.84	2.88	2.94	2.94	3.01	2.99	3.06	3.05	3.13	3.09	3.15	3.25
22740.0	2.79	2.84	2.89	2.95	2.94	3.01	2.99	3.07	3.06	3.14	3.09	3.15	3.26
22743.0	2.79	2.84	2.89	2.95	2.94	3.02	3.00	3.07	3.06	3.14	3.10	3.16	3.26
22746.0	2.79	2.84	2.89	2.95	2.95	3.02	3.00	3.08	3.07	3.15	3.10	3.16	3.27

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
22749.0	2.78	2.84	2.89	2.95	2.95	3.03	3.00	3.08	3.07	3.15	3.11	3.17	3.28
22752.0	2.78	2.84	2.89	2.96	2.95	3.03	3.01	3.09	3.08	3.16	3.11	3.18	3.28
22755.0	2.78	2.84	2.89	2.96	2.96	3.03	3.01	3.09	3.08	3.16	3.12	3.18	3.29
22758.0	2.78	2.84	2.90	2.96	2.96	3.04	3.02	3.10	3.09	3.17	3.12	3.19	3.29
22761.0	2.78	2.84	2.90	2.97	2.96	3.04	3.02	3.11	3.09	3.18	3.13	3.19	3.30
22764.0	2.78	2.84	2.90	2.97	2.97	3.05	3.02	3.11	3.10	3.18	3.13	3.20	3.30
22767.0	2.78	2.84	2.90	2.97	2.97	3.05	3.03	3.12	3.10	3.19	3.14	3.21	3.30
22770.0	2.78	2.84	2.90	2.98	2.97	3.06	3.03	3.12	3.11	3.19	3.15	3.21	3.31
22773.0	2.78	2.84	2.91	2.98	2.98	3.06	3.04	3.13	3.11	3.20	3.15	3.22	3.31
22776.0	2.78	2.84	2.91	2.98	2.98	3.07	3.04	3.13	3.12	3.21	3.16	3.22	3.32
22779.0	2.77	2.85	2.91	2.99	2.98	3.07	3.05	3.14	3.13	3.21	3.16	3.23	3.32
22782.0	2.77	2.85	2.91	2.99	2.99	3.08	3.05	3.14	3.13	3.22	3.17	3.24	3.33
22784.9	2.78	2.85	2.92	3.00	2.99	3.08	3.06	3.15	3.14	3.23	3.18	3.25	3.33
22787.8	2.78	2.85	2.92	3.00	3.00	3.09	3.06	3.16	3.15	3.24	3.18	3.25	3.34
22790.7	2.78	2.86	2.93	3.01	3.00	3.10	3.07	3.17	3.15	3.24	3.19	3.26	3.35
22793.6	2.78	2.86	2.93	3.01	3.01	3.10	3.08	3.17	3.16	3.25	3.20	3.27	3.35
22796.5	2.78	2.86	2.94	3.02	3.02	3.11	3.08	3.18	3.17	3.26	3.21	3.28	3.36
22799.4	2.78	2.87	2.94	3.03	3.02	3.12	3.09	3.19	3.18	3.27	3.22	3.29	3.37
22802.3	2.79	2.87	2.95	3.04	3.03	3.13	3.10	3.20	3.19	3.28	3.23	3.30	3.37
22805.2	2.79	2.88	2.95	3.04	3.04	3.14	3.11	3.21	3.20	3.29	3.24	3.31	3.38
22808.1	2.79	2.88	2.96	3.05	3.05	3.15	3.12	3.22	3.21	3.30	3.25	3.32	3.39
22811.0	2.80	2.89	2.97	3.06	3.05	3.15	3.13	3.23	3.22	3.31	3.26	3.33	3.40
22813.9	2.80	2.89	2.97	3.07	3.06	3.16	3.14	3.24	3.23	3.32	3.27	3.34	3.40
22816.8	2.80	2.90	2.98	3.07	3.07	3.17	3.14	3.25	3.24	3.33	3.28	3.35	3.41
22819.7	2.81	2.90	2.99	3.08	3.08	3.18	3.15	3.26	3.25	3.35	3.29	3.37	3.42
22822.6	2.81	2.91	3.00	3.09	3.09	3.19	3.16	3.27	3.26	3.36	3.30	3.38	3.43
22825.5	2.82	2.92	3.00	3.10	3.10	3.21	3.18	3.28	3.27	3.37	3.31	3.39	3.44
22828.4	2.82	2.92	3.01	3.11	3.11	3.22	3.19	3.30	3.28	3.38	3.33	3.40	3.45
22831.3	2.83	2.93	3.02	3.12	3.12	3.23	3.20	3.31	3.29	3.40	3.34	3.42	3.45
22834.2	2.84	2.94	3.03	3.13	3.13	3.24	3.21	3.32	3.31	3.41	3.35	3.43	3.46
22837.1	2.84	2.95	3.04	3.15	3.14	3.25	3.22	3.34	3.32	3.43	3.37	3.45	3.47
22840.0	2.85	2.96	3.05	3.16	3.15	3.27	3.23	3.35	3.33	3.44	3.38	3.46	3.49
22842.9	2.86	2.96	3.06	3.17	3.16	3.28	3.25	3.36	3.35	3.46	3.40	3.48	3.50
22845.8	2.86	2.97	3.07	3.18	3.18	3.29	3.26	3.38	3.36	3.47	3.41	3.49	3.51
22848.7	2.87	2.98	3.08	3.20	3.19	3.31	3.28	3.39	3.38	3.49	3.43	3.51	3.52
22851.6	2.88	2.99	3.10	3.21	3.20	3.32	3.29	3.41	3.40	3.51	3.44	3.53	3.53
22854.5	2.89	3.01	3.11	3.22	3.22	3.34	3.31	3.43	3.41	3.52	3.46	3.54	3.54
22857.4	2.90	3.02	3.12	3.24	3.23	3.36	3.32	3.44	3.43	3.54	3.48	3.56	3.56
22860.3	2.91	3.03	3.13	3.25	3.25	3.37	3.34	3.46	3.45	3.56	3.50	3.59	3.58
22863.2	2.92	3.04	3.15	3.27	3.26	3.39	3.36	3.48	3.47	3.58	3.51	3.61	3.60
22866.1	2.93	3.05	3.16	3.29	3.28	3.41	3.37	3.50	3.48	3.60	3.53	3.63	3.62
22869.0	2.94	3.07	3.18	3.30	3.30	3.43	3.39	3.52	3.50	3.62	3.55	3.65	3.64
22871.9	2.95	3.08	3.20	3.32	3.31	3.45	3.41	3.54	3.52	3.64	3.58	3.67	3.67
22874.8	2.96	3.10	3.21	3.34	3.33	3.47	3.43	3.56	3.55	3.67	3.60	3.70	3.69
22877.7	2.98	3.11	3.23	3.36	3.35	3.49	3.45	3.59	3.57	3.69	3.62	3.72	3.71
22880.6	2.99	3.13	3.25	3.38	3.37	3.51	3.47	3.61	3.59	3.72	3.64	3.75	3.74

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
22883.5	3.00	3.14	3.27	3.40	3.39	3.53	3.49	3.63	3.62	3.74	3.67	3.78	3.77
22886.4	3.02	3.16	3.28	3.42	3.41	3.56	3.52	3.66	3.64	3.77	3.69	3.81	3.80
22889.3	3.03	3.18	3.31	3.44	3.44	3.58	3.54	3.68	3.67	3.80	3.72	3.83	3.82
22892.2	3.05	3.20	3.33	3.47	3.46	3.61	3.57	3.71	3.69	3.82	3.75	3.87	3.86
22895.1	3.07	3.22	3.35	3.49	3.48	3.63	3.59	3.74	3.72	3.85	3.78	3.90	3.89
22898.0	3.08	3.24	3.37	3.52	3.51	3.66	3.62	3.77	3.75	3.89	3.81	3.93	3.92
22900.9	3.09	3.24	3.37	3.52	3.51	3.66	3.62	3.77	3.75	3.89	3.81	3.93	3.92
22903.8	3.09	3.24	3.38	3.52	3.51	3.67	3.63	3.78	3.76	3.89	3.81	3.94	3.93
22906.6	3.09	3.24	3.38	3.53	3.52	3.67	3.63	3.78	3.76	3.90	3.82	3.94	3.93
22909.5	3.09	3.25	3.38	3.53	3.52	3.67	3.63	3.78	3.76	3.90	3.82	3.95	3.94
22912.4	3.09	3.25	3.38	3.53	3.52	3.68	3.63	3.79	3.77	3.90	3.83	3.95	3.94
22915.3	3.09	3.25	3.39	3.53	3.53	3.68	3.64	3.79	3.77	3.90	3.83	3.95	3.94
22918.2	3.10	3.25	3.39	3.54	3.53	3.68	3.64	3.79	3.77	3.91	3.83	3.96	3.95
22921.1	3.10	3.25	3.39	3.54	3.53	3.69	3.64	3.80	3.78	3.91	3.84	3.96	3.95
22923.9	3.10	3.26	3.39	3.54	3.53	3.69	3.65	3.80	3.78	3.91	3.84	3.97	3.96
22926.8	3.10	3.26	3.40	3.54	3.54	3.69	3.65	3.80	3.78	3.92	3.84	3.97	3.96
22929.7	3.10	3.26	3.40	3.55	3.54	3.70	3.65	3.81	3.79	3.92	3.85	3.97	3.96
22932.6	3.10	3.26	3.40	3.55	3.54	3.70	3.66	3.81	3.79	3.92	3.85	3.98	3.97
22935.5	3.10	3.26	3.40	3.55	3.54	3.70	3.66	3.81	3.79	3.93	3.85	3.98	3.97
22938.4	3.11	3.27	3.40	3.55	3.55	3.70	3.66	3.82	3.80	3.93	3.86	3.99	3.98
22941.2	3.11	3.27	3.41	3.56	3.55	3.71	3.66	3.82	3.80	3.93	3.86	3.99	3.98
22944.1	3.11	3.27	3.41	3.56	3.55	3.71	3.67	3.82	3.80	3.94	3.86	3.99	3.99
22947.0	3.11	3.27	3.41	3.56	3.55	3.71	3.67	3.83	3.81	3.94	3.87	4.00	3.99
22949.9	3.11	3.27	3.41	3.56	3.56	3.72	3.67	3.83	3.81	3.94	3.87	4.00	3.99
22952.8	3.11	3.28	3.41	3.57	3.56	3.72	3.67	3.83	3.81	3.95	3.87	4.01	4.00
22955.6	3.11	3.28	3.42	3.57	3.56	3.72	3.68	3.84	3.81	3.95	3.88	4.01	4.00
22958.5	3.12	3.28	3.42	3.57	3.56	3.72	3.68	3.84	3.82	3.95	3.88	4.01	4.01
22961.4	3.12	3.28	3.42	3.57	3.56	3.73	3.68	3.84	3.82	3.95	3.88	4.02	4.01
22964.3	3.12	3.28	3.42	3.58	3.57	3.73	3.68	3.84	3.82	3.96	3.89	4.02	4.01
22967.2	3.12	3.28	3.42	3.58	3.57	3.73	3.69	3.85	3.83	3.96	3.89	4.03	4.02
22970.1	3.12	3.28	3.43	3.58	3.57	3.73	3.69	3.85	3.83	3.96	3.89	4.03	4.02
22972.9	3.12	3.29	3.43	3.58	3.57	3.74	3.69	3.85	3.83	3.97	3.89	4.03	4.03
22975.8	3.12	3.29	3.43	3.58	3.58	3.74	3.69	3.86	3.83	3.97	3.90	4.04	4.03
22978.7	3.12	3.29	3.43	3.59	3.58	3.74	3.70	3.86	3.84	3.97	3.90	4.04	4.04
22981.6	3.12	3.29	3.43	3.59	3.58	3.74	3.70	3.86	3.84	3.98	3.90	4.05	4.04
22984.5	3.13	3.29	3.43	3.59	3.58	3.75	3.70	3.86	3.84	3.98	3.91	4.05	4.05
22987.4	3.13	3.29	3.44	3.59	3.58	3.75	3.70	3.87	3.85	3.98	3.91	4.05	4.05
22990.2	3.13	3.29	3.44	3.59	3.59	3.75	3.70	3.87	3.85	3.98	3.91	4.06	4.06
22993.1	3.13	3.30	3.44	3.60	3.59	3.75	3.71	3.87	3.85	3.99	3.92	4.06	4.07
22996.0	3.13	3.30	3.44	3.60	3.59	3.76	3.71	3.87	3.85	3.99	3.92	4.07	4.07
22996.0	3.13	3.30	3.44	3.60	3.59	3.76	3.71	3.87	3.85	3.99	3.92	4.07	4.07
23002.2	3.10	3.25	3.37	3.51	3.50	3.63	3.60	3.72	3.70	3.81	3.75	3.88	3.89
23008.3	3.07	3.20	3.31	3.42	3.41	3.52	3.50	3.57	3.56	3.65	3.60	3.72	3.73
23014.0	4.86	5.13	5.32	5.91	5.89	5.92	5.94	5.95	5.94	6.13	6.03	7.12	7.15
23019.7	3.86	4.02	4.07	4.13	4.13	4.20	4.18	4.23	4.23	4.22	4.24	4.73	4.81
23026.8	3.71	3.84	3.88	3.90	3.90	3.90	3.90	3.91	3.91	3.90	3.91	4.44	4.53

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23034.0	3.58	3.67	3.72	3.73	3.73	3.74	3.73	3.74	3.74	3.74	3.74	4.19	4.29
23034.0	3.58	3.67	3.72	3.73	3.73	3.74	3.73	3.74	3.74	3.74	3.74	4.19	4.29
23037.0	3.39	3.48	3.52	3.54	3.54	3.54	3.54	3.54	3.55	3.56	3.55	4.03	4.12
23040.0	3.21	3.31	3.35	3.37	3.37	3.37	3.37	3.38	3.38	3.46	3.40	3.91	3.99
23043.0	3.07	3.16	3.20	3.22	3.22	3.22	3.22	3.28	3.27	3.37	3.31	3.79	3.86
23046.0	2.93	3.03	3.06	3.09	3.09	3.10	3.09	3.19	3.17	3.27	3.22	3.68	3.75
23049.0	2.82	2.91	2.95	2.97	2.97	3.00	2.97	3.10	3.08	3.18	3.14	3.58	3.65
23052.0	2.71	2.80	2.84	2.87	2.87	2.91	2.87	3.01	3.00	3.09	3.04	3.48	3.54
23055.0	2.62	2.70	2.75	2.78	2.78	2.82	2.79	2.93	2.91	3.01	2.96	3.38	3.44
23058.0	2.53	2.62	2.66	2.70	2.69	2.75	2.71	2.85	2.83	2.93	2.88	3.29	3.35
23058.0	3.63	3.74	3.80	3.82	3.82	3.91	3.88	4.05	4.02	4.16	4.08	4.30	4.33
23061.0	3.53	3.64	3.70	3.72	3.72	3.81	3.78	3.95	3.92	4.06	3.97	4.19	4.23
23064.0	3.44	3.54	3.60	3.63	3.63	3.71	3.68	3.85	3.82	3.96	3.88	4.09	4.14
23067.0	3.35	3.45	3.51	3.54	3.54	3.62	3.60	3.76	3.73	3.88	3.79	4.00	4.04
23070.0	3.27	3.36	3.43	3.46	3.46	3.54	3.51	3.68	3.65	3.79	3.71	3.91	3.96
23073.0	3.21	3.29	3.35	3.39	3.38	3.47	3.44	3.60	3.57	3.71	3.63	3.83	3.87
23076.0	3.14	3.22	3.28	3.32	3.31	3.39	3.37	3.53	3.50	3.64	3.55	3.74	3.81
23079.0	3.08	3.15	3.21	3.25	3.25	3.33	3.30	3.46	3.43	3.57	3.49	3.67	3.74
23082.0	3.03	3.09	3.15	3.19	3.19	3.27	3.24	3.39	3.36	3.50	3.42	3.60	3.67
23085.0	2.98	3.04	3.09	3.13	3.13	3.21	3.18	3.33	3.30	3.44	3.36	3.53	3.61
23088.0	2.94	2.99	3.03	3.08	3.08	3.15	3.13	3.27	3.25	3.38	3.30	3.47	3.55
23091.0	2.90	2.94	2.98	3.03	3.03	3.10	3.08	3.21	3.19	3.32	3.24	3.41	3.49
23094.0	2.86	2.90	2.94	2.98	2.98	3.05	3.03	3.16	3.14	3.27	3.19	3.36	3.43
23097.0	2.83	2.86	2.89	2.94	2.93	3.00	2.98	3.10	3.09	3.21	3.14	3.30	3.38
23100.0	2.80	2.82	2.85	2.89	2.89	2.96	2.94	3.05	3.04	3.17	3.09	3.25	3.33
23103.0	2.78	2.79	2.81	2.86	2.85	2.92	2.89	3.00	2.99	3.12	3.04	3.20	3.28
23106.0	2.77	2.77	2.78	2.82	2.81	2.87	2.86	2.96	2.94	3.07	3.00	3.16	3.24
23109.0	2.76	2.77	2.77	2.78	2.78	2.84	2.82	2.92	2.90	3.03	2.95	3.12	3.19
23112.0	2.76	2.77	2.78	2.78	2.78	2.80	2.79	2.88	2.86	2.99	2.90	3.07	3.15
23115.0	2.76	2.77	2.77	2.78	2.78	2.79	2.79	2.84	2.82	2.95	2.86	3.03	3.11
23118.0	2.77	2.77	2.78	2.78	2.78	2.79	2.79	2.80	2.79	2.92	2.82	3.00	3.07
23121.0	2.77	2.77	2.78	2.78	2.78	2.79	2.79	2.80	2.79	2.88	2.80	2.96	3.05
23124.0	2.77	2.77	2.78	2.79	2.79	2.79	2.79	2.80	2.80	2.85	2.80	2.93	3.01
23127.0	2.77	2.78	2.79	2.79	2.79	2.80	2.80	2.81	2.81	2.82	2.81	2.90	2.97
23130.0	2.78	2.79	2.80	2.80	2.80	2.81	2.81	2.82	2.81	2.83	2.82	2.87	2.95
23133.0	2.80	2.81	2.81	2.82	2.82	2.83	2.82	2.83	2.83	2.84	2.84	2.85	2.92
23136.0	2.82	2.82	2.83	2.84	2.84	2.84	2.84	2.85	2.85	2.86	2.85	2.86	2.89
23139.0	2.84	2.85	2.86	2.86	2.86	2.87	2.87	2.88	2.88	2.89	2.88	2.89	2.89
23142.0	2.87	2.88	2.89	2.89	2.89	2.90	2.90	2.91	2.91	2.92	2.91	2.92	2.92
23145.0	2.92	2.92	2.93	2.94	2.94	2.94	2.94	2.95	2.95	2.95	2.95	2.95	2.96
23148.0	2.97	2.98	2.98	2.99	2.99	2.99	2.99	3.00	3.00	3.00	3.00	3.00	3.00
23151.0	2.95	2.96	2.96	2.97	2.97	2.97	2.97	2.98	2.98	2.98	2.98	2.98	2.98
23153.9	2.93	2.94	2.94	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.96	2.96	2.96
23156.9	2.91	2.92	2.92	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.94	2.94
23159.8	2.89	2.90	2.90	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.92	2.92
23162.8	2.87	2.87	2.88	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23165.7	2.85	2.86	2.86	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87
23168.7	2.83	2.83	2.84	2.84	2.84	2.85	2.85	2.84	2.85	2.85	2.85	2.85	2.85
23171.6	2.80	2.81	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.83	2.82	2.83	2.82
23174.6	2.78	2.78	2.79	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
23177.5	2.76	2.76	2.77	2.78	2.78	2.77	2.78	2.77	2.77	2.78	2.78	2.78	2.78
23180.5	2.73	2.74	2.74	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
23183.5	2.71	2.71	2.72	2.73	2.73	2.72	2.73	2.73	2.72	2.73	2.73	2.73	2.74
23186.4	2.68	2.69	2.69	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.74
23189.4	2.66	2.66	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.68	2.67	2.68	2.74
23192.3	2.63	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.65	2.65	2.65	2.75
23195.3	2.60	2.61	2.62	2.61	2.61	2.61	2.61	2.62	2.62	2.62	2.62	2.62	2.73
23198.2	2.57	2.58	2.59	2.58	2.58	2.58	2.58	2.59	2.59	2.59	2.59	2.59	2.74
23201.2	2.55	2.55	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.57	2.56	2.58	2.73
23204.1	2.52	2.52	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.58	2.73
23207.1	2.49	2.49	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.51	2.50	2.57	2.73
23210.0	2.46	2.46	2.47	2.46	2.46	2.47	2.47	2.47	2.47	2.49	2.47	2.57	2.72
23213.0	2.43	2.43	2.44	2.43	2.43	2.44	2.44	2.44	2.44	2.49	2.44	2.56	2.72
23216.0	2.40	2.40	2.40	2.40	2.40	2.41	2.41	2.41	2.41	2.49	2.42	2.56	2.72
23218.9	2.37	2.37	2.37	2.37	2.37	2.38	2.37	2.38	2.38	2.48	2.41	2.56	2.72
23221.9	2.33	2.33	2.33	2.34	2.34	2.34	2.34	2.38	2.36	2.48	2.41	2.55	2.71
23224.8	2.30	2.30	2.30	2.31	2.31	2.31	2.31	2.37	2.36	2.48	2.40	2.55	2.71
23227.8	2.26	2.27	2.27	2.27	2.27	2.29	2.27	2.37	2.35	2.47	2.40	2.55	2.71
23230.7	2.23	2.23	2.23	2.24	2.24	2.28	2.26	2.36	2.35	2.47	2.40	2.54	2.70
23233.7	2.19	2.20	2.19	2.20	2.20	2.28	2.25	2.36	2.35	2.47	2.39	2.54	2.70
23236.6	2.16	2.16	2.16	2.19	2.18	2.27	2.25	2.36	2.34	2.46	2.39	2.54	2.70
23239.6	2.12	2.12	2.12	2.18	2.18	2.27	2.25	2.35	2.34	2.46	2.39	2.54	2.69
23242.5	2.09	2.09	2.11	2.18	2.17	2.27	2.24	2.35	2.33	2.46	2.38	2.53	2.69
23245.5	2.05	2.05	2.10	2.17	2.17	2.26	2.24	2.35	2.33	2.46	2.38	2.53	2.69
23248.5	2.03	2.04	2.09	2.17	2.16	2.26	2.23	2.35	2.33	2.45	2.38	2.53	2.69
23251.4	2.00	2.03	2.09	2.17	2.16	2.25	2.23	2.34	2.33	2.45	2.38	2.53	2.69
23254.4	1.98	2.03	2.08	2.16	2.16	2.25	2.23	2.34	2.32	2.45	2.37	2.53	2.68
23257.3	1.97	2.02	2.08	2.16	2.15	2.25	2.22	2.34	2.32	2.45	2.37	2.52	2.68
23260.3	1.96	2.01	2.07	2.15	2.15	2.25	2.22	2.34	2.32	2.45	2.37	2.52	2.68
23263.2	1.95	2.01	2.07	2.15	2.15	2.24	2.22	2.34	2.32	2.45	2.37	2.52	2.68
23266.2	1.94	2.00	2.06	2.15	2.14	2.24	2.22	2.33	2.32	2.44	2.37	2.52	2.68
23269.1	1.94	2.00	2.06	2.14	2.14	2.24	2.21	2.33	2.31	2.44	2.37	2.51	2.68
23272.1	1.93	1.99	2.06	2.14	2.14	2.24	2.21	2.33	2.31	2.44	2.36	2.51	2.67
23275.0	1.92	1.99	2.05	2.14	2.13	2.24	2.21	2.33	2.31	2.44	2.36	2.51	2.67
23278.0	1.92	1.98	2.05	2.14	2.13	2.23	2.21	2.33	2.31	2.44	2.36	2.51	2.67
23281.0	1.94	2.01	2.08	2.17	2.16	2.27	2.24	2.36	2.35	2.47	2.40	2.55	2.71
23284.0	1.97	2.04	2.11	2.20	2.19	2.30	2.27	2.40	2.38	2.51	2.43	2.58	2.75
23287.0	2.00	2.07	2.14	2.23	2.23	2.34	2.31	2.43	2.42	2.55	2.47	2.62	2.79
23290.0	2.03	2.10	2.17	2.27	2.26	2.37	2.34	2.47	2.45	2.59	2.51	2.66	2.83
23293.0	2.05	2.13	2.20	2.30	2.29	2.41	2.38	2.51	2.49	2.63	2.55	2.70	2.87
23296.0	2.08	2.16	2.24	2.33	2.33	2.44	2.41	2.55	2.53	2.67	2.58	2.75	2.91
23299.0	2.11	2.19	2.27	2.37	2.36	2.48	2.45	2.58	2.56	2.71	2.62	2.79	2.95

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23302.0	2.14	2.22	2.30	2.40	2.40	2.52	2.48	2.62	2.60	2.75	2.66	2.83	3.00
23305.0	2.17	2.25	2.33	2.44	2.43	2.55	2.52	2.66	2.64	2.79	2.70	2.88	3.04
23308.0	2.20	2.29	2.37	2.47	2.47	2.59	2.56	2.70	2.68	2.84	2.74	2.92	3.08
23311.0	2.24	2.32	2.40	2.51	2.50	2.63	2.60	2.74	2.72	2.88	2.79	2.97	3.13
23314.0	2.27	2.35	2.44	2.55	2.54	2.67	2.64	2.79	2.76	2.92	2.83	3.02	3.17
23317.0	2.30	2.39	2.48	2.59	2.58	2.71	2.68	2.83	2.81	2.97	2.87	3.06	3.22
23320.0	2.33	2.42	2.51	2.63	2.62	2.75	2.72	2.87	2.85	3.01	2.92	3.11	3.27
23323.0	2.37	2.46	2.55	2.67	2.66	2.79	2.76	2.92	2.89	3.06	2.96	3.16	3.32
23326.0	2.40	2.49	2.59	2.71	2.70	2.84	2.80	2.96	2.94	3.11	3.01	3.21	3.38
23329.0	2.44	2.53	2.63	2.75	2.74	2.88	2.84	3.01	2.98	3.16	3.05	3.26	3.43
23332.0	2.47	2.57	2.67	2.79	2.78	2.92	2.89	3.05	3.03	3.21	3.10	3.31	3.49
23335.0	2.51	2.61	2.71	2.83	2.83	2.97	2.93	3.10	3.08	3.26	3.15	3.36	3.54
23338.0	2.55	2.65	2.75	2.88	2.87	3.02	2.98	3.15	3.12	3.31	3.20	3.41	3.60
23341.0	2.59	2.69	2.79	2.92	2.91	3.06	3.02	3.20	3.17	3.36	3.25	3.46	3.66
23344.0	2.63	2.73	2.84	2.97	2.96	3.11	3.07	3.25	3.22	3.41	3.30	3.52	3.72
23347.0	2.67	2.77	2.88	3.01	3.01	3.16	3.12	3.30	3.27	3.46	3.35	3.57	3.78
23350.0	2.71	2.82	2.93	3.06	3.05	3.21	3.17	3.35	3.33	3.52	3.40	3.62	3.84
23353.0	2.75	2.86	2.97	3.11	3.10	3.26	3.22	3.41	3.38	3.57	3.46	3.68	3.91
23356.0	2.80	2.91	3.02	3.16	3.15	3.31	3.27	3.46	3.43	3.63	3.51	3.74	3.97
23359.0	2.84	2.95	3.07	3.21	3.20	3.37	3.33	3.52	3.49	3.69	3.57	3.80	4.04
23362.0	2.89	3.00	3.12	3.27	3.26	3.42	3.38	3.57	3.55	3.75	3.63	3.86	4.11
23365.0	2.93	3.05	3.17	3.32	3.31	3.48	3.44	3.63	3.60	3.81	3.69	3.92	4.17
23368.0	2.98	3.10	3.22	3.37	3.36	3.54	3.49	3.69	3.66	3.87	3.75	3.98	4.23
23371.0	3.03	3.15	3.28	3.43	3.42	3.60	3.55	3.76	3.73	3.93	3.81	4.04	4.29
23374.0	3.08	3.20	3.33	3.49	3.48	3.66	3.61	3.82	3.79	3.99	3.88	4.11	4.35
23377.0	3.14	3.26	3.39	3.55	3.54	3.72	3.67	3.88	3.85	4.06	3.94	4.17	4.41
23380.0	3.19	3.31	3.45	3.61	3.60	3.78	3.74	3.95	3.92	4.12	4.00	4.23	4.48
23383.0	3.25	3.37	3.51	3.67	3.66	3.85	3.80	4.02	3.98	4.19	4.07	4.30	4.54
23386.0	3.30	3.43	3.57	3.74	3.72	3.92	3.87	4.09	4.06	4.26	4.14	4.37	4.62
23388.9	3.31	3.44	3.58	3.75	3.74	3.93	3.88	4.10	4.07	4.27	4.15	4.38	4.63
23391.9	3.31	3.45	3.59	3.76	3.75	3.94	3.89	4.11	4.08	4.28	4.17	4.39	4.63
23394.8	3.32	3.46	3.60	3.77	3.76	3.95	3.90	4.12	4.09	4.29	4.18	4.40	4.64
23397.8	3.32	3.47	3.61	3.78	3.77	3.96	3.92	4.13	4.10	4.30	4.19	4.41	4.64
23400.7	3.33	3.48	3.63	3.80	3.79	3.98	3.93	4.14	4.11	4.31	4.20	4.42	4.65
23403.6	3.34	3.49	3.64	3.81	3.80	3.99	3.94	4.15	4.12	4.32	4.21	4.43	4.65
23406.6	3.35	3.50	3.65	3.83	3.81	4.00	3.95	4.17	4.14	4.33	4.22	4.43	4.65
23409.5	3.36	3.52	3.67	3.84	3.83	4.01	3.97	4.18	4.15	4.34	4.23	4.44	4.66
23412.5	3.37	3.53	3.68	3.85	3.84	4.03	3.98	4.18	4.16	4.35	4.24	4.45	4.66
23415.4	3.38	3.55	3.70	3.87	3.86	4.04	3.99	4.19	4.17	4.36	4.25	4.46	4.67
23418.4	3.39	3.56	3.72	3.88	3.87	4.05	4.01	4.21	4.18	4.37	4.26	4.47	4.67
23421.3	3.41	3.58	3.73	3.90	3.89	4.07	4.02	4.22	4.19	4.38	4.27	4.48	4.68
23424.2	3.42	3.60	3.75	3.92	3.91	4.08	4.04	4.23	4.20	4.39	4.28	4.49	4.68
23427.2	3.44	3.62	3.77	3.93	3.92	4.10	4.05	4.24	4.21	4.40	4.29	4.49	4.68
23430.1	3.46	3.64	3.79	3.95	3.94	4.11	4.07	4.25	4.23	4.40	4.30	4.50	4.69
23433.1	3.48	3.66	3.81	3.97	3.96	4.12	4.08	4.26	4.24	4.41	4.31	4.51	4.69
23436.0	3.50	3.68	3.83	3.98	3.97	4.14	4.10	4.28	4.25	4.42	4.32	4.52	4.70

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23438.9	3.52	3.70	3.85	4.00	3.99	4.15	4.11	4.29	4.26	4.43	4.33	4.53	4.70
23441.9	3.54	3.73	3.87	4.02	4.01	4.17	4.13	4.30	4.27	4.44	4.35	4.54	4.71
23444.8	3.56	3.75	3.89	4.04	4.03	4.18	4.14	4.31	4.29	4.45	4.36	4.55	4.71
23447.8	3.59	3.78	3.91	4.05	4.05	4.20	4.16	4.33	4.30	4.47	4.37	4.56	4.72
23450.7	3.62	3.80	3.93	4.07	4.06	4.21	4.18	4.34	4.31	4.48	4.38	4.57	4.73
23453.6	3.65	3.83	3.96	4.09	4.08	4.23	4.19	4.35	4.33	4.49	4.39	4.58	4.73
23456.6	3.68	3.86	3.98	4.11	4.10	4.24	4.21	4.36	4.34	4.50	4.40	4.58	4.74
23459.5	3.71	3.88	4.00	4.13	4.12	4.26	4.23	4.38	4.35	4.50	4.42	4.59	4.75
23462.5	3.74	3.91	4.03	4.15	4.14	4.28	4.24	4.39	4.37	4.51	4.43	4.60	4.75
23465.4	3.78	3.94	4.06	4.17	4.17	4.29	4.26	4.40	4.38	4.52	4.44	4.61	4.76
23468.4	3.82	3.97	4.08	4.19	4.19	4.31	4.28	4.41	4.39	4.53	4.45	4.62	4.77
23471.3	3.86	4.01	4.11	4.22	4.21	4.32	4.29	4.42	4.40	4.54	4.46	4.62	4.78
23474.2	3.90	4.04	4.14	4.24	4.23	4.34	4.31	4.44	4.41	4.55	4.47	4.63	4.79
23477.2	3.94	4.07	4.17	4.26	4.25	4.35	4.33	4.45	4.43	4.56	4.48	4.64	4.80
23480.1	3.99	4.11	4.20	4.28	4.28	4.37	4.34	4.46	4.44	4.57	4.49	4.65	4.81
23483.1	4.03	4.15	4.23	4.30	4.30	4.38	4.36	4.47	4.45	4.58	4.50	4.66	4.82
23486.0	4.08	4.19	4.26	4.33	4.32	4.40	4.38	4.48	4.46	4.59	4.51	4.67	4.83
23488.9	4.03	4.13	4.20	4.27	4.27	4.35	4.33	4.44	4.42	4.56	4.48	4.64	4.80
23491.8	3.98	4.08	4.15	4.22	4.22	4.31	4.29	4.41	4.39	4.53	4.44	4.62	4.79
23494.8	3.93	4.03	4.10	4.18	4.17	4.27	4.24	4.37	4.35	4.50	4.41	4.60	4.79
23497.7	3.88	3.97	4.05	4.13	4.12	4.23	4.20	4.33	4.31	4.47	4.37	4.57	4.76
23500.6	3.82	3.92	4.00	4.08	4.08	4.18	4.16	4.30	4.27	4.44	4.34	4.54	4.73
23503.5	3.77	3.87	3.95	4.04	4.03	4.14	4.11	4.26	4.23	4.41	4.30	4.52	4.72
23506.5	3.72	3.82	3.90	4.00	3.99	4.10	4.07	4.22	4.20	4.38	4.27	4.49	4.70
23509.4	3.67	3.77	3.85	3.95	3.95	4.07	4.03	4.19	4.16	4.35	4.24	4.47	4.68
23512.3	3.62	3.72	3.81	3.91	3.90	4.03	4.00	4.15	4.13	4.32	4.20	4.44	4.66
23515.2	3.57	3.67	3.76	3.87	3.86	3.99	3.96	4.12	4.09	4.29	4.17	4.41	4.64
23518.2	3.52	3.63	3.72	3.83	3.82	3.95	3.92	4.09	4.06	4.26	4.14	4.39	4.62
23521.1	3.47	3.58	3.68	3.79	3.79	3.92	3.88	4.05	4.03	4.23	4.11	4.36	4.59
23524.0	3.42	3.53	3.64	3.75	3.75	3.88	3.85	4.02	3.99	4.21	4.08	4.33	4.57
23526.9	3.37	3.49	3.60	3.72	3.71	3.85	3.81	3.99	3.96	4.18	4.05	4.31	4.55
23529.8	3.33	3.45	3.56	3.68	3.67	3.82	3.78	3.96	3.93	4.15	4.02	4.29	4.53
23532.8	3.28	3.41	3.52	3.64	3.64	3.78	3.74	3.93	3.90	4.13	3.99	4.26	4.51
23535.7	3.24	3.37	3.48	3.61	3.60	3.75	3.71	3.91	3.88	4.10	3.97	4.24	4.49
23538.6	3.20	3.33	3.45	3.57	3.56	3.72	3.68	3.88	3.85	4.08	3.94	4.22	4.47
23541.5	3.16	3.29	3.41	3.54	3.53	3.69	3.65	3.85	3.82	4.06	3.91	4.20	4.45
23544.5	3.12	3.26	3.38	3.51	3.50	3.66	3.62	3.83	3.80	4.03	3.89	4.18	4.44
23547.4	3.08	3.22	3.34	3.48	3.47	3.64	3.59	3.80	3.77	4.01	3.87	4.15	4.42
23550.3	3.04	3.19	3.31	3.44	3.43	3.61	3.56	3.78	3.75	3.99	3.84	4.13	4.40
23553.2	3.01	3.15	3.27	3.41	3.40	3.58	3.54	3.75	3.72	3.97	3.82	4.11	4.38
23556.2	2.97	3.12	3.24	3.39	3.38	3.56	3.51	3.73	3.70	3.95	3.80	4.09	4.37
23559.1	2.94	3.09	3.21	3.36	3.35	3.53	3.48	3.71	3.68	3.93	3.78	4.07	4.35
23562.0	2.91	3.06	3.18	3.33	3.32	3.51	3.46	3.69	3.65	3.91	3.75	4.05	4.33
23565.0	2.92	3.08	3.19	3.35	3.34	3.52	3.47	3.70	3.67	3.92	3.77	4.05	4.36
23568.0	2.94	3.09	3.21	3.36	3.35	3.54	3.49	3.72	3.68	3.93	3.78	4.08	4.36
23571.0	2.95	3.11	3.23	3.38	3.37	3.55	3.50	3.73	3.70	3.95	3.80	4.11	4.36

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23574.0	2.97	3.12	3.24	3.39	3.38	3.57	3.52	3.75	3.71	3.96	3.81	4.11	4.40
23577.0	2.98	3.14	3.26	3.41	3.40	3.58	3.54	3.76	3.73	3.98	3.83	4.12	4.41
23580.0	3.00	3.15	3.28	3.42	3.41	3.60	3.55	3.78	3.74	3.99	3.84	4.14	4.43
23583.0	3.01	3.17	3.29	3.44	3.43	3.61	3.57	3.79	3.76	4.01	3.86	4.15	4.44
23586.0	3.03	3.19	3.31	3.46	3.45	3.63	3.58	3.81	3.77	4.02	3.87	4.16	4.46
23589.0	3.05	3.20	3.33	3.47	3.46	3.65	3.60	3.82	3.79	4.04	3.89	4.18	4.47
23592.0	3.06	3.22	3.34	3.49	3.48	3.66	3.61	3.84	3.80	4.05	3.90	4.20	4.48
23595.0	3.08	3.24	3.36	3.51	3.50	3.68	3.63	3.85	3.82	4.07	3.92	4.21	4.50
23598.0	3.10	3.25	3.38	3.53	3.52	3.69	3.65	3.87	3.84	4.08	3.94	4.23	4.51
23601.0	3.11	3.27	3.40	3.54	3.53	3.71	3.66	3.89	3.85	4.10	3.95	4.24	4.52
23604.0	3.13	3.29	3.42	3.56	3.55	3.73	3.68	3.90	3.87	4.12	3.97	4.26	4.53
23607.0	3.15	3.30	3.43	3.58	3.57	3.75	3.70	3.92	3.89	4.13	3.99	4.27	4.55
23610.0	3.17	3.32	3.45	3.60	3.59	3.76	3.72	3.94	3.90	4.15	4.00	4.29	4.56
23613.0	3.18	3.34	3.47	3.61	3.60	3.78	3.73	3.95	3.92	4.16	4.02	4.31	4.58
23616.0	3.20	3.36	3.49	3.63	3.62	3.80	3.75	3.97	3.94	4.18	4.04	4.32	4.60
23619.0	3.22	3.38	3.51	3.65	3.64	3.81	3.77	3.99	3.95	4.20	4.05	4.34	4.61
23622.0	3.24	3.40	3.53	3.67	3.66	3.83	3.79	4.00	3.97	4.21	4.07	4.36	4.63
23625.0	3.26	3.42	3.55	3.69	3.68	3.85	3.81	4.02	3.99	4.23	4.09	4.37	4.64
23628.0	3.27	3.43	3.57	3.71	3.70	3.87	3.82	4.04	4.01	4.25	4.10	4.39	4.66
23631.0	3.29	3.45	3.59	3.73	3.72	3.89	3.84	4.06	4.02	4.26	4.12	4.40	4.67
23634.0	3.31	3.47	3.60	3.75	3.74	3.91	3.86	4.07	4.04	4.28	4.14	4.42	4.67
23637.0	3.33	3.49	3.62	3.77	3.76	3.92	3.88	4.09	4.06	4.29	4.15	4.43	4.67
23640.0	3.35	3.51	3.64	3.79	3.78	3.94	3.90	4.10	4.07	4.30	4.17	4.44	4.68
23643.0	3.37	3.53	3.66	3.81	3.80	3.96	3.92	4.12	4.09	4.31	4.18	4.44	4.71
23646.0	3.39	3.55	3.68	3.83	3.82	3.98	3.94	4.13	4.10	4.32	4.19	4.46	4.71
23649.0	3.41	3.57	3.71	3.85	3.84	4.00	3.96	4.15	4.12	4.34	4.21	4.47	4.72
23652.0	3.43	3.59	3.73	3.87	3.86	4.02	3.98	4.17	4.14	4.35	4.23	4.48	4.74
23655.0	3.45	3.61	3.75	3.89	3.88	4.04	4.00	4.19	4.16	4.37	4.25	4.50	4.77
23658.0	3.47	3.64	3.77	3.91	3.90	4.06	4.02	4.21	4.18	4.39	4.26	4.52	4.78
23661.0	3.49	3.66	3.79	3.93	3.92	4.08	4.04	4.23	4.20	4.41	4.28	4.53	4.80
23664.0	3.51	3.68	3.81	3.95	3.94	4.10	4.06	4.25	4.22	4.42	4.30	4.55	4.80
23667.0	3.53	3.70	3.84	3.97	3.97	4.13	4.09	4.27	4.24	4.44	4.32	4.57	4.83
23670.0	3.55	3.72	3.86	4.00	3.99	4.15	4.11	4.29	4.26	4.46	4.34	4.58	4.83
23673.0	3.57	3.74	3.88	4.02	4.01	4.17	4.13	4.31	4.28	4.47	4.36	4.59	4.85
23676.0	3.59	3.76	3.91	4.04	4.03	4.19	4.15	4.32	4.30	4.49	4.37	4.60	4.84
23679.0	3.61	3.79	3.93	4.06	4.06	4.21	4.17	4.34	4.31	4.50	4.39	4.61	4.86
23682.0	3.63	3.81	3.95	4.09	4.08	4.23	4.19	4.36	4.33	4.52	4.41	4.63	4.87
23684.9	3.62	3.80	3.95	4.09	4.08	4.23	4.20	4.36	4.34	4.52	4.41	4.63	4.88
23687.8	3.60	3.78	3.94	4.09	4.08	4.24	4.20	4.37	4.34	4.52	4.41	4.63	4.88
23690.7	3.59	3.77	3.93	4.09	4.08	4.24	4.20	4.37	4.34	4.52	4.42	4.63	4.88
23693.6	3.57	3.76	3.93	4.09	4.08	4.24	4.20	4.37	4.35	4.52	4.42	4.63	4.89
23696.5	3.56	3.75	3.92	4.08	4.07	4.24	4.20	4.37	4.35	4.52	4.42	4.63	4.90
23699.5	3.55	3.74	3.91	4.08	4.07	4.24	4.20	4.38	4.35	4.53	4.42	4.63	4.89
23702.4	3.53	3.72	3.90	4.08	4.07	4.24	4.20	4.38	4.35	4.53	4.43	4.63	4.90
23705.3	3.52	3.71	3.89	4.07	4.06	4.24	4.20	4.38	4.36	4.53	4.43	4.63	4.89
23708.2	3.51	3.70	3.88	4.07	4.06	4.24	4.20	4.38	4.36	4.53	4.43	4.63	4.90

Notes

1. Velocities are provided for Hutt River branches only.
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Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23711.1	3.50	3.69	3.87	4.07	4.05	4.24	4.19	4.38	4.36	4.53	4.43	4.63	4.90
23714.0	3.48	3.68	3.86	4.06	4.05	4.24	4.19	4.39	4.36	4.53	4.43	4.63	4.90
23716.9	3.47	3.67	3.85	4.05	4.04	4.23	4.19	4.39	4.36	4.53	4.43	4.64	4.90
23719.8	3.46	3.66	3.84	4.05	4.03	4.23	4.19	4.39	4.36	4.54	4.43	4.64	4.90
23722.7	3.45	3.65	3.83	4.04	4.02	4.23	4.18	4.38	4.36	4.54	4.43	4.64	4.90
23725.6	3.44	3.64	3.82	4.03	4.02	4.23	4.18	4.38	4.35	4.54	4.43	4.64	4.90
23728.5	3.43	3.63	3.81	4.02	4.01	4.22	4.18	4.38	4.35	4.54	4.43	4.64	4.90
23731.5	3.42	3.62	3.80	4.01	4.00	4.22	4.17	4.38	4.35	4.54	4.43	4.64	4.90
23734.4	3.41	3.61	3.79	4.01	3.99	4.22	4.16	4.38	4.35	4.54	4.43	4.64	4.89
23737.3	3.40	3.60	3.78	4.00	3.98	4.21	4.16	4.38	4.34	4.54	4.43	4.64	4.90
23740.2	3.39	3.59	3.77	3.99	3.98	4.20	4.15	4.37	4.34	4.54	4.42	4.64	4.88
23743.1	3.38	3.58	3.76	3.98	3.97	4.20	4.15	4.36	4.33	4.53	4.42	4.64	4.88
23746.0	3.37	3.57	3.75	3.97	3.96	4.19	4.14	4.36	4.33	4.53	4.41	4.63	4.88
23748.9	3.37	3.56	3.75	3.97	3.95	4.19	4.13	4.35	4.32	4.53	4.41	4.63	4.87
23751.8	3.36	3.55	3.74	3.96	3.94	4.18	4.12	4.35	4.32	4.52	4.40	4.63	4.88
23754.7	3.35	3.54	3.73	3.95	3.94	4.17	4.12	4.35	4.31	4.52	4.40	4.62	4.89
23757.6	3.34	3.54	3.72	3.94	3.93	4.17	4.11	4.34	4.31	4.52	4.40	4.63	4.90
23760.5	3.34	3.53	3.71	3.93	3.92	4.16	4.10	4.34	4.30	4.52	4.39	4.63	4.90
23763.5	3.33	3.52	3.71	3.93	3.91	4.15	4.10	4.33	4.30	4.52	4.39	4.63	4.92
23766.4	3.32	3.51	3.70	3.92	3.91	4.15	4.09	4.33	4.30	4.52	4.39	4.64	4.95
23769.3	3.32	3.51	3.69	3.91	3.90	4.14	4.08	4.33	4.29	4.52	4.39	4.65	4.96
23772.2	3.31	3.50	3.68	3.90	3.89	4.13	4.08	4.32	4.29	4.52	4.39	4.66	4.99
23775.1	3.31	3.49	3.68	3.90	3.88	4.13	4.07	4.33	4.29	4.53	4.39	4.68	4.99
23778.0	3.30	3.49	3.67	3.89	3.88	4.12	4.06	4.33	4.29	4.55	4.39	4.69	5.01
23780.9	3.30	3.48	3.66	3.88	3.87	4.12	4.06	4.32	4.29	4.55	4.39	4.69	5.02
23783.8	3.29	3.48	3.66	3.88	3.86	4.11	4.05	4.32	4.28	4.55	4.39	4.70	5.02
23786.7	3.29	3.47	3.65	3.87	3.86	4.11	4.04	4.31	4.28	4.54	4.38	4.69	5.03
23789.6	3.28	3.47	3.65	3.87	3.85	4.10	4.04	4.30	4.27	4.54	4.38	4.69	5.04
23792.5	3.28	3.46	3.64	3.86	3.84	4.09	4.03	4.30	4.26	4.53	4.37	4.69	5.03
23795.5	3.28	3.46	3.63	3.85	3.84	4.09	4.02	4.29	4.26	4.53	4.37	4.68	5.05
23798.4	3.27	3.45	3.63	3.85	3.83	4.08	4.02	4.29	4.25	4.52	4.36	4.68	5.02
23801.3	3.27	3.45	3.62	3.84	3.83	4.07	4.01	4.28	4.25	4.52	4.35	4.67	5.02
23804.2	3.27	3.44	3.62	3.84	3.82	4.07	4.01	4.27	4.24	4.51	4.35	4.67	5.02
23807.1	3.26	3.44	3.61	3.83	3.82	4.06	4.00	4.27	4.23	4.51	4.34	4.67	5.03
23810.0	3.26	3.44	3.61	3.83	3.81	4.06	4.00	4.26	4.23	4.50	4.34	4.66	5.03
23813.0	3.27	3.45	3.62	3.84	3.82	4.07	4.01	4.28	4.24	4.51	4.35	4.68	5.07
23815.9	3.28	3.46	3.63	3.85	3.84	4.08	4.02	4.29	4.26	4.54	4.37	4.70	5.08
23818.9	3.29	3.47	3.65	3.86	3.85	4.10	4.04	4.31	4.27	4.56	4.39	4.72	5.12
23821.8	3.30	3.48	3.66	3.87	3.86	4.11	4.05	4.33	4.30	4.59	4.41	4.76	5.15
23824.8	3.30	3.49	3.67	3.89	3.87	4.13	4.06	4.35	4.32	4.63	4.44	4.79	5.18
23827.7	3.31	3.50	3.68	3.90	3.88	4.14	4.07	4.37	4.33	4.64	4.46	4.82	5.23
23830.7	3.32	3.51	3.69	3.91	3.89	4.15	4.09	4.38	4.34	4.66	4.47	4.84	5.26
23833.6	3.33	3.51	3.70	3.92	3.91	4.16	4.10	4.40	4.36	4.67	4.48	4.85	5.28
23836.6	3.33	3.52	3.71	3.93	3.92	4.18	4.11	4.41	4.37	4.69	4.50	4.87	5.31
23839.5	3.34	3.53	3.72	3.94	3.93	4.19	4.12	4.42	4.38	4.70	4.51	4.88	5.33
23842.5	3.35	3.54	3.73	3.95	3.94	4.20	4.13	4.43	4.39	4.71	4.52	4.89	5.35

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23845.5	3.35	3.55	3.73	3.96	3.95	4.21	4.14	4.44	4.40	4.73	4.53	4.91	5.36
23848.4	3.36	3.55	3.74	3.97	3.96	4.22	4.15	4.46	4.42	4.74	4.54	4.92	5.38
23851.4	3.37	3.56	3.75	3.98	3.97	4.23	4.16	4.47	4.43	4.75	4.56	4.94	5.39
23854.3	3.37	3.57	3.76	3.99	3.97	4.24	4.17	4.48	4.44	4.76	4.57	4.95	5.41
23857.3	3.38	3.57	3.77	4.00	3.98	4.25	4.18	4.49	4.45	4.78	4.58	4.96	5.42
23860.2	3.38	3.58	3.77	4.01	3.99	4.26	4.19	4.50	4.46	4.79	4.59	4.97	5.44
23863.2	3.39	3.59	3.78	4.02	4.00	4.27	4.20	4.51	4.47	4.80	4.60	4.99	5.45
23866.1	3.39	3.59	3.79	4.02	4.01	4.28	4.21	4.52	4.48	4.81	4.61	5.00	5.47
23869.1	3.40	3.60	3.79	4.03	4.02	4.29	4.22	4.53	4.49	4.82	4.62	5.01	5.48
23872.0	3.40	3.61	3.80	4.04	4.02	4.30	4.23	4.54	4.50	4.83	4.63	5.02	5.50
23875.0	3.41	3.61	3.81	4.05	4.03	4.31	4.24	4.55	4.51	4.84	4.64	5.03	5.51
23878.0	3.41	3.62	3.82	4.05	4.04	4.32	4.24	4.56	4.52	4.86	4.65	5.05	5.52
23880.9	3.42	3.62	3.82	4.06	4.05	4.32	4.25	4.57	4.53	4.87	4.66	5.06	5.54
23883.9	3.42	3.63	3.83	4.07	4.05	4.33	4.26	4.58	4.54	4.88	4.67	5.07	5.55
23886.8	3.43	3.64	3.84	4.08	4.06	4.34	4.27	4.59	4.55	4.89	4.68	5.08	5.56
23889.8	3.43	3.64	3.84	4.08	4.07	4.35	4.28	4.60	4.56	4.90	4.69	5.09	5.57
23892.7	3.43	3.65	3.85	4.09	4.08	4.36	4.28	4.61	4.56	4.91	4.70	5.10	5.59
23895.7	3.44	3.65	3.85	4.10	4.08	4.36	4.29	4.62	4.57	4.92	4.71	5.11	5.60
23898.6	3.44	3.66	3.86	4.10	4.09	4.37	4.30	4.62	4.58	4.93	4.72	5.12	5.61
23901.6	3.45	3.66	3.87	4.11	4.10	4.38	4.31	4.63	4.59	4.94	4.73	5.13	5.62
23904.5	3.45	3.66	3.87	4.12	4.10	4.39	4.31	4.64	4.60	4.95	4.74	5.14	5.64
23907.5	3.45	3.67	3.88	4.12	4.11	4.39	4.32	4.65	4.61	4.95	4.75	5.15	5.65
23910.5	3.46	3.67	3.88	4.13	4.12	4.40	4.33	4.66	4.61	4.96	4.75	5.16	5.66
23913.4	3.46	3.68	3.89	4.14	4.12	4.41	4.33	4.67	4.62	4.97	4.76	5.17	5.67
23916.4	3.46	3.68	3.89	4.14	4.13	4.42	4.34	4.67	4.63	4.98	4.77	5.18	5.68
23919.3	3.47	3.68	3.90	4.15	4.13	4.42	4.35	4.68	4.64	4.99	4.78	5.19	5.69
23922.3	3.47	3.69	3.90	4.16	4.14	4.43	4.36	4.69	4.64	5.00	4.79	5.20	5.70
23925.2	3.47	3.69	3.91	4.16	4.15	4.44	4.36	4.70	4.65	5.01	4.79	5.21	5.72
23928.2	3.48	3.70	3.91	4.17	4.15	4.44	4.37	4.70	4.66	5.02	4.80	5.22	5.73
23931.1	3.48	3.70	3.91	4.17	4.16	4.45	4.38	4.71	4.67	5.02	4.81	5.23	5.74
23934.1	3.48	3.70	3.92	4.18	4.16	4.46	4.38	4.72	4.67	5.03	4.82	5.24	5.75
23937.0	3.48	3.71	3.92	4.19	4.17	4.46	4.39	4.73	4.68	5.04	4.82	5.25	5.76
23940.0	3.49	3.71	3.93	4.19	4.17	4.47	4.40	4.73	4.69	5.05	4.83	5.25	5.77
23942.9	3.48	3.71	3.92	4.19	4.17	4.47	4.39	4.73	4.69	5.05	4.83	5.26	5.77
23945.8	3.48	3.70	3.92	4.19	4.17	4.47	4.39	4.73	4.69	5.05	4.83	5.26	5.77
23948.7	3.47	3.70	3.92	4.18	4.17	4.46	4.39	4.73	4.69	5.05	4.83	5.26	5.78
23951.6	3.47	3.70	3.92	4.18	4.16	4.46	4.39	4.73	4.68	5.05	4.83	5.26	5.78
23954.5	3.46	3.69	3.91	4.18	4.16	4.46	4.38	4.73	4.68	5.05	4.83	5.26	5.78
23957.4	3.46	3.69	3.91	4.18	4.16	4.46	4.38	4.73	4.69	5.05	4.83	5.26	5.79
23960.3	3.46	3.69	3.91	4.18	4.16	4.46	4.38	4.73	4.69	5.06	4.83	5.27	5.79
23963.2	3.45	3.68	3.91	4.17	4.16	4.46	4.38	4.73	4.69	5.06	4.84	5.27	5.79
23966.1	3.45	3.68	3.91	4.17	4.16	4.46	4.38	4.74	4.69	5.06	4.84	5.27	5.80
23969.0	3.45	3.68	3.91	4.17	4.16	4.46	4.38	4.74	4.69	5.06	4.84	5.28	5.80
23972.0	3.45	3.68	3.90	4.17	4.16	4.46	4.39	4.74	4.69	5.07	4.84	5.28	5.81
23974.9	3.44	3.68	3.90	4.17	4.16	4.47	4.39	4.74	4.70	5.07	4.85	5.29	5.82
23977.8	3.44	3.68	3.90	4.17	4.16	4.47	4.39	4.75	4.70	5.08	4.85	5.29	5.82

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
23980.7	3.44	3.68	3.90	4.18	4.16	4.47	4.39	4.75	4.70	5.08	4.85	5.30	5.83
23983.6	3.44	3.68	3.90	4.18	4.16	4.48	4.39	4.76	4.71	5.09	4.86	5.30	5.84
23986.5	3.44	3.68	3.91	4.18	4.16	4.48	4.40	4.76	4.71	5.09	4.86	5.31	5.84
23989.4	3.44	3.68	3.91	4.18	4.17	4.48	4.40	4.77	4.72	5.10	4.87	5.32	5.85
23992.3	3.44	3.68	3.91	4.19	4.17	4.49	4.41	4.77	4.72	5.11	4.88	5.32	5.86
23995.2	3.44	3.68	3.91	4.19	4.17	4.50	4.41	4.78	4.73	5.11	4.88	5.33	5.87
23998.1	3.44	3.68	3.92	4.20	4.18	4.50	4.42	4.79	4.74	5.12	4.89	5.34	5.87
24001.0	3.45	3.69	3.92	4.20	4.18	4.51	4.43	4.79	4.74	5.13	4.90	5.35	5.88
24003.9	3.45	3.69	3.93	4.21	4.19	4.51	4.43	4.80	4.75	5.14	4.91	5.36	5.89
24006.8	3.45	3.69	3.93	4.22	4.20	4.52	4.44	4.81	4.76	5.15	4.92	5.37	5.90
24009.7	3.45	3.70	3.94	4.22	4.21	4.53	4.45	4.82	4.77	5.16	4.93	5.38	5.91
24012.6	3.46	3.71	3.94	4.23	4.21	4.54	4.46	4.83	4.78	5.17	4.94	5.39	5.92
24015.5	3.46	3.71	3.95	4.24	4.22	4.55	4.47	4.84	4.79	5.18	4.95	5.40	5.93
24018.4	3.47	3.72	3.96	4.25	4.23	4.56	4.48	4.85	4.80	5.19	4.96	5.41	5.94
24021.3	3.48	3.73	3.97	4.26	4.24	4.57	4.49	4.86	4.81	5.20	4.97	5.42	5.95
24024.2	3.48	3.74	3.98	4.27	4.25	4.59	4.50	4.88	4.83	5.21	4.98	5.43	5.96
24027.1	3.49	3.75	3.99	4.28	4.27	4.60	4.51	4.89	4.84	5.23	5.00	5.44	5.97
24030.0	3.50	3.76	4.00	4.30	4.28	4.61	4.53	4.90	4.85	5.24	5.01	5.46	5.97
24033.0	3.51	3.77	4.02	4.31	4.29	4.63	4.54	4.92	4.87	5.25	5.02	5.47	5.98
24035.9	3.52	3.78	4.03	4.33	4.31	4.64	4.56	4.93	4.88	5.27	5.04	5.48	5.99
24038.8	3.54	3.80	4.05	4.34	4.32	4.66	4.57	4.95	4.90	5.28	5.05	5.49	5.99
24041.7	3.55	3.81	4.06	4.36	4.34	4.67	4.59	4.96	4.91	5.29	5.07	5.50	6.00
24044.6	3.56	3.83	4.08	4.38	4.36	4.69	4.61	4.98	4.93	5.31	5.08	5.51	6.00
24047.5	3.58	3.85	4.10	4.40	4.38	4.71	4.63	4.99	4.95	5.32	5.10	5.52	6.00
24050.4	3.60	3.87	4.12	4.42	4.40	4.73	4.64	5.01	4.96	5.33	5.11	5.53	6.00
24053.3	3.62	3.89	4.14	4.44	4.42	4.75	4.67	5.03	4.98	5.34	5.13	5.54	6.00
24056.2	3.64	3.91	4.16	4.46	4.44	4.77	4.69	5.05	5.00	5.36	5.15	5.54	5.99
24059.1	3.66	3.93	4.19	4.48	4.46	4.79	4.71	5.06	5.02	5.36	5.16	5.55	5.98
24062.0	3.69	3.96	4.21	4.51	4.49	4.81	4.73	5.08	5.03	5.37	5.17	5.55	5.98
24064.9	3.69	3.96	4.22	4.51	4.49	4.82	4.73	5.08	5.04	5.38	5.18	5.56	5.98
24067.8	3.70	3.97	4.22	4.52	4.50	4.82	4.74	5.09	5.05	5.39	5.19	5.57	5.99
24070.8	3.70	3.97	4.23	4.52	4.50	4.83	4.75	5.10	5.05	5.40	5.19	5.57	6.00
24073.7	3.71	3.98	4.23	4.53	4.51	4.83	4.75	5.10	5.06	5.40	5.20	5.58	6.00
24076.6	3.71	3.98	4.24	4.53	4.52	4.84	4.76	5.11	5.07	5.41	5.21	5.59	6.01
24079.6	3.72	3.99	4.24	4.54	4.52	4.84	4.76	5.12	5.07	5.42	5.22	5.60	6.02
24082.5	3.72	3.99	4.25	4.55	4.53	4.85	4.77	5.13	5.08	5.43	5.22	5.61	6.03
24085.4	3.73	4.00	4.25	4.55	4.53	4.86	4.78	5.13	5.09	5.43	5.23	5.62	6.04
24088.3	3.73	4.00	4.26	4.56	4.54	4.86	4.78	5.14	5.09	5.44	5.24	5.63	6.04
24091.3	3.74	4.01	4.26	4.56	4.54	4.87	4.79	5.15	5.10	5.45	5.24	5.63	6.05
24094.2	3.74	4.01	4.27	4.57	4.55	4.87	4.79	5.15	5.11	5.46	5.25	5.64	6.06
24097.1	3.75	4.02	4.27	4.57	4.55	4.88	4.80	5.16	5.11	5.47	5.26	5.65	6.07
24100.0	3.76	4.03	4.28	4.58	4.56	4.89	4.80	5.17	5.12	5.48	5.27	5.66	6.08
24102.9	3.76	4.03	4.29	4.58	4.57	4.89	4.81	5.17	5.13	5.48	5.27	5.67	6.09
24105.9	3.77	4.04	4.29	4.59	4.57	4.90	4.82	5.18	5.13	5.49	5.28	5.68	6.10
24108.8	3.77	4.04	4.30	4.60	4.58	4.91	4.82	5.19	5.14	5.50	5.29	5.69	6.10
24111.7	3.78	4.05	4.30	4.60	4.58	4.91	4.83	5.19	5.15	5.51	5.29	5.70	6.11

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
24114.7	3.79	4.06	4.31	4.61	4.59	4.92	4.84	5.20	5.15	5.52	5.30	5.70	6.12
24117.6	3.79	4.06	4.32	4.61	4.60	4.92	4.84	5.21	5.16	5.52	5.31	5.71	6.13
24120.5	3.80	4.07	4.32	4.62	4.60	4.93	4.85	5.21	5.17	5.53	5.32	5.72	6.14
24123.4	3.80	4.07	4.33	4.63	4.61	4.94	4.85	5.22	5.17	5.54	5.32	5.73	6.15
24126.3	3.81	4.08	4.33	4.63	4.61	4.94	4.86	5.23	5.18	5.55	5.33	5.74	6.16
24129.3	3.82	4.09	4.34	4.64	4.62	4.95	4.87	5.23	5.19	5.56	5.34	5.75	6.17
24132.2	3.83	4.09	4.35	4.65	4.63	4.96	4.87	5.24	5.19	5.56	5.34	5.76	6.18
24135.1	3.83	4.10	4.35	4.65	4.63	4.96	4.88	5.25	5.20	5.57	5.35	5.77	6.19
24138.1	3.84	4.11	4.36	4.66	4.64	4.97	4.89	5.26	5.21	5.58	5.36	5.78	6.20
24141.0	3.85	4.11	4.37	4.67	4.65	4.98	4.89	5.26	5.22	5.59	5.37	5.79	6.21
24143.9	3.85	4.12	4.37	4.67	4.65	4.98	4.90	5.27	5.22	5.60	5.37	5.79	6.22
24146.8	3.86	4.13	4.38	4.68	4.66	4.99	4.91	5.28	5.23	5.60	5.38	5.80	6.23
24149.8	3.87	4.14	4.39	4.69	4.67	5.00	4.92	5.28	5.24	5.61	5.39	5.81	6.24
24152.7	3.88	4.14	4.40	4.69	4.68	5.01	4.92	5.29	5.24	5.62	5.40	5.82	6.25
24155.6	3.89	4.15	4.40	4.70	4.68	5.01	4.93	5.30	5.25	5.63	5.40	5.83	6.26
24158.5	3.89	4.16	4.41	4.71	4.69	5.02	4.94	5.31	5.26	5.64	5.41	5.84	6.27
24161.4	3.90	4.17	4.42	4.72	4.70	5.03	4.94	5.31	5.27	5.64	5.42	5.85	6.28
24164.4	3.91	4.17	4.43	4.72	4.70	5.03	4.95	5.32	5.27	5.65	5.43	5.86	6.30
24167.3	3.92	4.18	4.43	4.73	4.71	5.04	4.96	5.33	5.28	5.66	5.43	5.87	6.31
24170.2	3.93	4.19	4.44	4.74	4.72	5.05	4.97	5.34	5.29	5.67	5.44	5.88	6.32
24173.2	3.94	4.20	4.45	4.75	4.73	5.06	4.97	5.34	5.30	5.68	5.45	5.88	6.33
24176.1	3.95	4.21	4.46	4.75	4.74	5.06	4.98	5.35	5.30	5.68	5.46	5.89	6.34
24179.0	3.96	4.22	4.47	4.76	4.74	5.07	4.99	5.36	5.31	5.69	5.47	5.90	6.36
24181.9	3.93	4.19	4.44	4.73	4.71	5.04	4.96	5.33	5.28	5.66	5.44	5.87	6.34
24184.8	3.91	4.16	4.41	4.70	4.69	5.01	4.93	5.30	5.25	5.64	5.41	5.85	6.32
24187.8	3.88	4.13	4.38	4.68	4.66	4.99	4.90	5.28	5.23	5.61	5.38	5.82	6.30
24190.7	3.85	4.11	4.35	4.65	4.63	4.96	4.87	5.25	5.20	5.58	5.35	5.80	6.29
24193.6	3.83	4.08	4.33	4.62	4.60	4.93	4.85	5.22	5.17	5.56	5.33	5.77	6.27
24196.5	3.80	4.06	4.30	4.59	4.58	4.91	4.82	5.20	5.15	5.53	5.30	5.75	6.25
24199.4	3.78	4.03	4.27	4.57	4.55	4.88	4.80	5.17	5.12	5.51	5.28	5.72	6.23
24202.3	3.75	4.00	4.25	4.54	4.52	4.85	4.77	5.15	5.10	5.49	5.25	5.70	6.21
24205.3	3.73	3.98	4.22	4.52	4.50	4.83	4.74	5.12	5.07	5.46	5.23	5.68	6.19
24208.2	3.70	3.95	4.20	4.49	4.47	4.81	4.72	5.10	5.05	5.44	5.21	5.66	6.17
24211.1	3.68	3.93	4.17	4.47	4.45	4.78	4.70	5.07	5.03	5.42	5.18	5.64	6.16
24214.0	3.65	3.91	4.15	4.44	4.43	4.76	4.67	5.05	5.00	5.40	5.16	5.62	6.14
24216.9	3.63	3.88	4.13	4.42	4.40	4.73	4.65	5.03	4.98	5.38	5.14	5.60	6.12
24219.8	3.61	3.86	4.10	4.40	4.38	4.71	4.63	5.01	4.96	5.35	5.12	5.58	6.10
24222.8	3.58	3.84	4.08	4.38	4.36	4.69	4.60	4.99	4.94	5.33	5.10	5.56	6.09
24225.7	3.56	3.81	4.06	4.35	4.33	4.67	4.58	4.97	4.92	5.31	5.08	5.54	6.07
24228.6	3.54	3.79	4.04	4.33	4.31	4.65	4.56	4.95	4.90	5.30	5.06	5.52	6.06
24231.5	3.52	3.77	4.01	4.31	4.29	4.63	4.54	4.93	4.88	5.28	5.04	5.50	6.04
24234.4	3.49	3.75	3.99	4.29	4.27	4.61	4.52	4.91	4.86	5.26	5.02	5.48	6.03
24237.3	3.47	3.72	3.97	4.27	4.25	4.59	4.50	4.89	4.84	5.24	5.00	5.47	6.01
24240.3	3.45	3.70	3.95	4.25	4.23	4.57	4.48	4.87	4.82	5.22	4.98	5.45	6.00
24243.2	3.43	3.68	3.93	4.23	4.21	4.55	4.46	4.85	4.80	5.20	4.96	5.43	5.99
24246.1	3.41	3.66	3.91	4.21	4.19	4.53	4.44	4.83	4.78	5.19	4.94	5.42	5.97

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
24249.0	3.39	3.64	3.89	4.19	4.17	4.51	4.42	4.81	4.76	5.17	4.93	5.40	5.96
24251.9	3.38	3.63	3.88	4.18	4.16	4.50	4.41	4.80	4.75	5.16	4.92	5.39	5.95
24254.9	3.37	3.62	3.87	4.17	4.15	4.50	4.41	4.80	4.75	5.15	4.91	5.38	5.94
24257.8	3.36	3.62	3.87	4.17	4.15	4.49	4.40	4.79	4.74	5.14	4.90	5.37	5.93
24260.7	3.35	3.61	3.86	4.16	4.14	4.48	4.39	4.78	4.73	5.13	4.89	5.36	5.91
24263.7	3.34	3.60	3.85	4.15	4.13	4.47	4.39	4.78	4.72	5.13	4.89	5.35	5.90
24266.6	3.34	3.59	3.84	4.14	4.12	4.47	4.38	4.77	4.72	5.12	4.88	5.34	5.89
24269.5	3.33	3.58	3.83	4.14	4.12	4.46	4.37	4.76	4.71	5.11	4.87	5.33	5.88
24272.5	3.32	3.58	3.83	4.13	4.11	4.45	4.36	4.76	4.70	5.10	4.87	5.33	5.87
24275.4	3.31	3.57	3.82	4.12	4.10	4.45	4.36	4.75	4.70	5.10	4.86	5.32	5.86
24278.3	3.31	3.56	3.81	4.11	4.09	4.44	4.35	4.74	4.69	5.09	4.85	5.31	5.86
24281.3	3.30	3.55	3.80	4.11	4.09	4.43	4.34	4.74	4.69	5.09	4.85	5.31	5.85
24284.2	3.29	3.55	3.80	4.10	4.08	4.43	4.34	4.73	4.68	5.08	4.84	5.30	5.84
24287.2	3.28	3.54	3.79	4.09	4.07	4.42	4.33	4.73	4.67	5.08	4.84	5.30	5.83
24290.1	3.27	3.53	3.78	4.09	4.07	4.41	4.32	4.72	4.67	5.07	4.83	5.29	5.83
24293.0	3.27	3.52	3.78	4.08	4.06	4.41	4.32	4.71	4.66	5.07	4.83	5.29	5.82
24296.0	3.26	3.52	3.77	4.07	4.05	4.40	4.31	4.71	4.66	5.06	4.82	5.29	5.82
24298.9	3.25	3.51	3.76	4.07	4.05	4.39	4.30	4.70	4.65	5.06	4.82	5.28	5.81
24301.8	3.24	3.50	3.75	4.06	4.04	4.39	4.30	4.70	4.65	5.05	4.81	5.28	5.81
24304.8	3.23	3.50	3.75	4.05	4.03	4.38	4.29	4.69	4.64	5.05	4.81	5.27	5.81
24307.7	3.23	3.49	3.74	4.05	4.03	4.37	4.28	4.69	4.63	5.05	4.80	5.27	5.80
24310.6	3.22	3.48	3.73	4.04	4.02	4.37	4.28	4.68	4.63	5.04	4.80	5.27	5.80
24313.6	3.21	3.48	3.73	4.03	4.01	4.36	4.27	4.68	4.62	5.04	4.79	5.27	5.80
24316.5	3.20	3.47	3.72	4.03	4.01	4.36	4.27	4.67	4.62	5.04	4.79	5.26	5.80
24319.4	3.20	3.46	3.71	4.02	4.00	4.35	4.26	4.66	4.61	5.03	4.78	5.26	5.80
24322.4	3.19	3.46	3.71	4.01	3.99	4.34	4.25	4.66	4.61	5.03	4.78	5.26	5.80
24325.3	3.18	3.45	3.70	4.01	3.99	4.34	4.25	4.65	4.60	5.02	4.77	5.25	5.80
24328.2	3.17	3.44	3.69	4.00	3.98	4.33	4.24	4.65	4.59	5.02	4.77	5.25	5.80
24331.2	3.16	3.43	3.69	3.99	3.97	4.33	4.24	4.64	4.59	5.01	4.76	5.25	5.80
24334.1	3.16	3.43	3.68	3.99	3.97	4.32	4.23	4.64	4.58	5.01	4.75	5.25	5.80
24337.0	3.15	3.42	3.68	3.98	3.96	4.31	4.22	4.63	4.58	5.01	4.75	5.24	5.80
24340.0	3.14	3.41	3.67	3.98	3.96	4.31	4.22	4.63	4.57	5.00	4.74	5.24	5.80
24342.9	3.13	3.41	3.66	3.97	3.95	4.30	4.21	4.62	4.57	5.00	4.74	5.24	5.80
24345.8	3.13	3.40	3.66	3.96	3.94	4.30	4.21	4.62	4.56	4.99	4.73	5.23	5.80
24348.8	3.12	3.39	3.65	3.96	3.94	4.29	4.20	4.61	4.56	4.99	4.73	5.23	5.80
24351.7	3.11	3.39	3.65	3.95	3.93	4.29	4.19	4.61	4.55	4.98	4.72	5.23	5.80
24354.7	3.11	3.38	3.64	3.95	3.93	4.28	4.19	4.60	4.55	4.98	4.72	5.22	5.80
24357.6	3.10	3.37	3.63	3.94	3.92	4.27	4.18	4.59	4.54	4.98	4.71	5.22	5.80
24360.5	3.09	3.37	3.63	3.94	3.92	4.27	4.18	4.59	4.54	4.97	4.71	5.22	5.80
24363.5	3.08	3.36	3.62	3.93	3.91	4.26	4.17	4.58	4.53	4.97	4.70	5.21	5.80
24366.4	3.08	3.35	3.62	3.92	3.90	4.26	4.17	4.58	4.53	4.96	4.70	5.21	5.80
24369.3	3.07	3.35	3.61	3.92	3.90	4.25	4.16	4.57	4.52	4.96	4.70	5.21	5.80
24372.3	3.06	3.34	3.60	3.91	3.89	4.25	4.16	4.57	4.52	4.95	4.69	5.20	5.80
24375.2	3.06	3.33	3.60	3.91	3.89	4.24	4.15	4.56	4.51	4.95	4.69	5.20	5.80
24378.1	3.05	3.33	3.59	3.90	3.88	4.24	4.15	4.56	4.51	4.94	4.68	5.19	5.80
24381.1	3.04	3.32	3.59	3.90	3.88	4.23	4.14	4.56	4.50	4.94	4.68	5.19	5.80

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
24384.0	3.04	3.31	3.58	3.89	3.87	4.23	4.14	4.55	4.50	4.94	4.67	5.19	5.80
24386.7	3.05	3.33	3.59	3.90	3.88	4.24	4.14	4.56	4.50	4.94	4.68	5.19	5.79
24389.4	3.06	3.34	3.60	3.91	3.89	4.24	4.15	4.56	4.51	4.95	4.68	5.19	5.79
24392.1	3.08	3.35	3.61	3.92	3.90	4.25	4.16	4.57	4.51	4.95	4.69	5.19	5.78
24394.9	3.09	3.37	3.62	3.93	3.91	4.26	4.17	4.57	4.52	4.95	4.69	5.19	5.76
24397.6	3.11	3.38	3.63	3.94	3.92	4.26	4.17	4.58	4.52	4.95	4.69	5.19	5.75
24400.3	3.12	3.39	3.64	3.94	3.92	4.27	4.18	4.58	4.53	4.95	4.70	5.19	5.73
24403.0	3.14	3.40	3.65	3.95	3.93	4.27	4.18	4.58	4.53	4.95	4.70	5.18	5.71
24405.7	3.15	3.41	3.66	3.96	3.94	4.28	4.19	4.58	4.53	4.94	4.70	5.17	5.69
24408.4	3.17	3.43	3.67	3.96	3.94	4.28	4.19	4.58	4.53	4.93	4.69	5.15	5.68
24411.1	3.18	3.44	3.68	3.97	3.95	4.28	4.19	4.58	4.53	4.92	4.69	5.14	5.66
24413.9	3.20	3.45	3.68	3.97	3.95	4.28	4.19	4.57	4.52	4.91	4.68	5.13	5.65
24416.6	3.21	3.46	3.69	3.97	3.96	4.28	4.19	4.57	4.52	4.90	4.67	5.11	5.64
24419.3	3.22	3.46	3.70	3.97	3.96	4.27	4.19	4.56	4.51	4.89	4.67	5.11	5.63
24422.0	3.24	3.47	3.70	3.97	3.96	4.27	4.19	4.55	4.50	4.88	4.66	5.10	5.62
24424.9	3.23	3.47	3.70	3.97	3.95	4.26	4.18	4.54	4.50	4.88	4.65	5.09	5.61
24427.9	3.23	3.46	3.69	3.96	3.95	4.26	4.18	4.54	4.49	4.87	4.64	5.08	5.60
24430.8	3.22	3.46	3.69	3.96	3.94	4.25	4.17	4.53	4.49	4.86	4.64	5.08	5.60
24433.8	3.22	3.45	3.68	3.95	3.94	4.25	4.17	4.53	4.48	4.86	4.63	5.07	5.59
24436.7	3.22	3.45	3.68	3.95	3.93	4.24	4.16	4.52	4.47	4.85	4.63	5.06	5.58
24439.7	3.21	3.45	3.67	3.94	3.93	4.24	4.16	4.52	4.47	4.85	4.62	5.06	5.57
24442.6	3.21	3.44	3.67	3.94	3.92	4.23	4.15	4.51	4.46	4.84	4.61	5.05	5.56
24445.6	3.20	3.44	3.66	3.93	3.92	4.22	4.14	4.50	4.46	4.83	4.61	5.04	5.56
24448.5	3.20	3.43	3.66	3.93	3.91	4.22	4.14	4.50	4.45	4.83	4.60	5.04	5.55
24451.5	3.19	3.43	3.65	3.92	3.91	4.21	4.13	4.49	4.45	4.82	4.60	5.03	5.54
24454.4	3.19	3.42	3.65	3.92	3.90	4.21	4.13	4.49	4.44	4.81	4.59	5.02	5.53
24457.4	3.18	3.42	3.64	3.91	3.90	4.20	4.12	4.48	4.43	4.81	4.58	5.01	5.52
24460.3	3.18	3.41	3.64	3.91	3.89	4.20	4.12	4.47	4.43	4.80	4.58	5.01	5.51
24463.3	3.17	3.41	3.63	3.90	3.88	4.19	4.11	4.47	4.42	4.79	4.57	5.00	5.51
24466.2	3.17	3.40	3.63	3.90	3.88	4.18	4.10	4.46	4.41	4.78	4.56	4.99	5.50
24469.2	3.17	3.40	3.62	3.89	3.87	4.18	4.10	4.45	4.41	4.78	4.56	4.99	5.49
24472.1	3.16	3.39	3.62	3.88	3.87	4.17	4.09	4.45	4.40	4.77	4.55	4.98	5.48
24475.1	3.16	3.39	3.61	3.88	3.86	4.17	4.09	4.44	4.40	4.76	4.54	4.97	5.47
24478.0	3.15	3.38	3.61	3.87	3.86	4.16	4.08	4.44	4.39	4.76	4.54	4.96	5.46
24481.0	3.15	3.38	3.60	3.87	3.85	4.15	4.07	4.43	4.38	4.75	4.53	4.95	5.45
24483.9	3.14	3.37	3.60	3.86	3.84	4.15	4.07	4.42	4.38	4.74	4.52	4.95	5.44
24486.9	3.14	3.37	3.59	3.86	3.84	4.14	4.06	4.42	4.37	4.73	4.52	4.94	5.43
24489.8	3.13	3.36	3.58	3.85	3.83	4.13	4.06	4.41	4.36	4.73	4.51	4.93	5.42
24492.8	3.13	3.36	3.58	3.84	3.83	4.13	4.05	4.40	4.36	4.72	4.50	4.92	5.41
24495.7	3.12	3.35	3.57	3.84	3.82	4.12	4.04	4.39	4.35	4.71	4.50	4.91	5.40
24498.7	3.12	3.35	3.57	3.83	3.82	4.11	4.04	4.39	4.34	4.70	4.49	4.91	5.39
24501.6	3.11	3.34	3.56	3.83	3.81	4.11	4.03	4.38	4.34	4.69	4.48	4.90	5.38
24504.6	3.11	3.34	3.56	3.82	3.80	4.10	4.02	4.37	4.33	4.69	4.47	4.89	5.37
24507.5	3.10	3.33	3.55	3.81	3.80	4.09	4.02	4.37	4.32	4.68	4.47	4.88	5.36
24510.4	3.10	3.32	3.55	3.81	3.79	4.09	4.01	4.36	4.31	4.67	4.46	4.87	5.35
24513.4	3.09	3.32	3.54	3.80	3.78	4.08	4.00	4.35	4.31	4.66	4.45	4.86	5.33

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
24516.3	3.09	3.31	3.53	3.79	3.78	4.07	4.00	4.34	4.30	4.65	4.44	4.85	5.32
24519.3	3.08	3.31	3.53	3.79	3.77	4.07	3.99	4.34	4.29	4.65	4.44	4.84	5.31
24522.2	3.08	3.30	3.52	3.78	3.77	4.06	3.98	4.33	4.28	4.64	4.43	4.83	5.30
24525.2	3.07	3.30	3.52	3.78	3.76	4.05	3.98	4.32	4.28	4.63	4.42	4.82	5.29
24528.1	3.06	3.29	3.51	3.77	3.75	4.05	3.97	4.31	4.27	4.62	4.41	4.82	5.28
24531.1	3.06	3.29	3.50	3.76	3.75	4.04	3.96	4.31	4.26	4.61	4.40	4.81	5.26
24534.0	3.05	3.28	3.50	3.76	3.74	4.03	3.96	4.30	4.25	4.60	4.40	4.80	5.25
24537.0	3.05	3.27	3.49	3.75	3.73	4.02	3.95	4.29	4.25	4.59	4.39	4.79	5.24
24539.9	3.04	3.27	3.49	3.74	3.73	4.02	3.94	4.28	4.24	4.58	4.38	4.78	5.23
24542.9	3.04	3.26	3.48	3.74	3.72	4.01	3.93	4.27	4.23	4.57	4.37	4.77	5.21
24545.8	3.03	3.26	3.47	3.73	3.71	4.00	3.93	4.27	4.22	4.57	4.36	4.76	5.20
24548.8	3.03	3.25	3.47	3.72	3.71	4.00	3.92	4.26	4.21	4.56	4.35	4.75	5.19
24551.7	3.02	3.24	3.46	3.71	3.70	3.99	3.91	4.25	4.21	4.55	4.34	4.74	5.18
24554.7	3.01	3.24	3.45	3.71	3.69	3.98	3.91	4.24	4.20	4.54	4.34	4.72	5.16
24557.6	3.01	3.23	3.45	3.70	3.68	3.97	3.90	4.23	4.19	4.53	4.33	4.71	5.15
24560.6	3.00	3.23	3.44	3.69	3.68	3.97	3.89	4.22	4.18	4.52	4.32	4.70	5.13
24563.5	3.00	3.22	3.43	3.69	3.67	3.96	3.88	4.22	4.17	4.51	4.31	4.69	5.12
24566.5	2.99	3.21	3.43	3.68	3.66	3.95	3.88	4.21	4.16	4.50	4.30	4.68	5.11
24569.4	2.98	3.21	3.42	3.67	3.66	3.94	3.87	4.20	4.16	4.49	4.29	4.67	5.09
24572.4	2.98	3.20	3.41	3.67	3.65	3.93	3.86	4.19	4.15	4.48	4.28	4.66	5.08
24575.3	2.97	3.19	3.41	3.66	3.64	3.93	3.85	4.18	4.14	4.47	4.27	4.65	5.07
24578.3	2.97	3.19	3.40	3.65	3.63	3.92	3.84	4.17	4.13	4.46	4.26	4.63	5.05
24581.2	2.96	3.18	3.39	3.64	3.63	3.91	3.84	4.16	4.12	4.44	4.25	4.62	5.04
24584.2	2.95	3.17	3.39	3.64	3.62	3.90	3.83	4.15	4.11	4.43	4.24	4.61	5.02
24587.1	2.95	3.17	3.38	3.63	3.61	3.89	3.82	4.14	4.10	4.42	4.23	4.60	5.00
24590.1	2.94	3.16	3.37	3.62	3.60	3.88	3.81	4.13	4.09	4.41	4.22	4.59	4.99
24593.0	2.94	3.16	3.37	3.61	3.60	3.88	3.80	4.12	4.08	4.40	4.21	4.57	4.97
24595.9	2.93	3.15	3.36	3.61	3.59	3.87	3.80	4.12	4.08	4.40	4.21	4.57	4.97
24598.8	2.93	3.15	3.36	3.60	3.59	3.87	3.79	4.11	4.07	4.39	4.20	4.57	4.97
24601.7	2.92	3.14	3.35	3.60	3.58	3.86	3.79	4.11	4.07	4.39	4.20	4.56	4.96
24604.6	2.92	3.14	3.35	3.59	3.58	3.86	3.78	4.10	4.06	4.38	4.20	4.56	4.96
24607.6	2.92	3.13	3.34	3.59	3.57	3.85	3.78	4.10	4.06	4.38	4.19	4.55	4.96
24610.5	2.91	3.13	3.34	3.58	3.57	3.84	3.77	4.09	4.05	4.38	4.19	4.55	4.95
24613.4	2.91	3.12	3.33	3.58	3.56	3.84	3.77	4.09	4.05	4.37	4.18	4.54	4.95
24616.3	2.90	3.12	3.33	3.57	3.56	3.83	3.76	4.08	4.04	4.37	4.18	4.54	4.95
24619.2	2.90	3.12	3.32	3.57	3.55	3.83	3.76	4.08	4.04	4.36	4.17	4.54	4.94
24622.1	2.89	3.11	3.32	3.56	3.55	3.82	3.75	4.07	4.03	4.36	4.17	4.53	4.94
24625.0	2.89	3.11	3.31	3.56	3.54	3.82	3.75	4.07	4.03	4.35	4.16	4.53	4.94
24627.9	2.89	3.10	3.31	3.55	3.54	3.81	3.74	4.06	4.02	4.35	4.16	4.52	4.93
24630.9	2.88	3.10	3.30	3.55	3.53	3.81	3.74	4.06	4.02	4.34	4.15	4.52	4.93
24633.8	2.88	3.09	3.30	3.54	3.53	3.80	3.73	4.05	4.01	4.34	4.15	4.52	4.93
24636.7	2.87	3.09	3.29	3.54	3.52	3.80	3.73	4.05	4.01	4.33	4.14	4.51	4.92
24639.6	2.87	3.08	3.29	3.53	3.52	3.79	3.72	4.04	4.00	4.33	4.14	4.51	4.92
24642.5	2.86	3.08	3.29	3.53	3.51	3.79	3.71	4.04	4.00	4.33	4.13	4.50	4.91
24645.4	2.86	3.07	3.28	3.52	3.51	3.78	3.71	4.03	3.99	4.32	4.13	4.50	4.91
24648.3	2.86	3.07	3.28	3.52	3.50	3.77	3.70	4.03	3.99	4.32	4.12	4.49	4.91

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
24651.2	2.85	3.07	3.27	3.51	3.50	3.77	3.70	4.02	3.98	4.31	4.11	4.49	4.90
24654.1	2.85	3.06	3.27	3.51	3.49	3.76	3.69	4.02	3.97	4.31	4.11	4.48	4.90
24657.1	2.84	3.06	3.26	3.50	3.49	3.76	3.69	4.01	3.97	4.30	4.10	4.48	4.90
24660.0	2.84	3.05	3.26	3.50	3.48	3.75	3.68	4.01	3.96	4.30	4.10	4.48	4.89
24662.9	2.83	3.05	3.25	3.49	3.48	3.75	3.68	4.00	3.96	4.29	4.09	4.47	4.89
24665.8	2.83	3.04	3.25	3.49	3.47	3.74	3.67	3.99	3.95	4.29	4.09	4.47	4.89
24668.7	2.82	3.04	3.24	3.48	3.47	3.74	3.67	3.99	3.95	4.28	4.08	4.46	4.88
24671.6	2.82	3.03	3.24	3.47	3.46	3.73	3.66	3.98	3.94	4.28	4.08	4.46	4.88
24674.5	2.81	3.03	3.23	3.47	3.45	3.73	3.65	3.98	3.94	4.27	4.07	4.45	4.88
24677.4	2.81	3.02	3.23	3.46	3.45	3.72	3.65	3.97	3.93	4.27	4.07	4.45	4.87
24680.4	2.81	3.02	3.22	3.46	3.44	3.71	3.64	3.97	3.93	4.26	4.06	4.44	4.87
24683.3	2.80	3.01	3.22	3.45	3.44	3.71	3.64	3.96	3.92	4.26	4.06	4.44	4.86
24686.2	2.80	3.01	3.21	3.45	3.43	3.70	3.63	3.96	3.91	4.25	4.05	4.44	4.86
24689.1	2.79	3.00	3.21	3.44	3.43	3.70	3.63	3.95	3.91	4.25	4.05	4.43	4.86
24692.0	2.79	3.00	3.20	3.44	3.42	3.69	3.62	3.95	3.90	4.24	4.04	4.43	4.85
24695.0	2.78	2.99	3.20	3.43	3.42	3.69	3.62	3.94	3.90	4.24	4.04	4.42	4.84
24697.9	2.77	2.99	3.19	3.43	3.41	3.68	3.61	3.94	3.90	4.24	4.03	4.41	4.84
24700.9	2.77	2.98	3.18	3.42	3.41	3.68	3.61	3.93	3.89	4.23	4.03	4.41	4.83
24703.9	2.76	2.97	3.18	3.42	3.40	3.67	3.60	3.93	3.89	4.22	4.03	4.40	4.82
24706.9	2.76	2.97	3.17	3.41	3.40	3.67	3.60	3.93	3.88	4.22	4.02	4.39	4.81
24709.8	2.75	2.96	3.17	3.41	3.39	3.67	3.59	3.92	3.88	4.21	4.02	4.39	4.80
24712.8	2.74	2.96	3.16	3.40	3.39	3.66	3.59	3.92	3.88	4.20	4.01	4.38	4.79
24715.8	2.74	2.95	3.15	3.40	3.38	3.66	3.58	3.91	3.87	4.20	4.01	4.38	4.78
24718.7	2.73	2.94	3.15	3.39	3.38	3.65	3.58	3.91	3.87	4.19	4.00	4.37	4.77
24721.7	2.73	2.94	3.14	3.39	3.37	3.65	3.58	3.91	3.86	4.19	4.00	4.37	4.76
24724.7	2.72	2.93	3.14	3.38	3.37	3.65	3.57	3.90	3.86	4.18	3.99	4.36	4.75
24727.6	2.71	2.93	3.13	3.38	3.36	3.64	3.57	3.90	3.86	4.18	3.99	4.35	4.74
24730.6	2.71	2.92	3.13	3.37	3.36	3.64	3.57	3.89	3.85	4.17	3.98	4.35	4.73
24733.6	2.70	2.92	3.12	3.37	3.36	3.64	3.56	3.89	3.85	4.17	3.98	4.34	4.72
24736.6	2.70	2.91	3.12	3.37	3.35	3.63	3.56	3.88	3.84	4.16	3.97	4.33	4.71
24739.5	2.69	2.91	3.12	3.36	3.35	3.63	3.56	3.88	3.84	4.16	3.97	4.32	4.70
24742.5	2.68	2.90	3.11	3.36	3.34	3.62	3.55	3.88	3.83	4.15	3.96	4.31	4.69
24745.5	2.68	2.90	3.11	3.36	3.34	3.62	3.55	3.87	3.83	4.14	3.96	4.30	4.68
24748.4	2.67	2.89	3.10	3.35	3.34	3.62	3.55	3.87	3.83	4.14	3.95	4.29	4.66
24751.4	2.67	2.89	3.10	3.35	3.33	3.61	3.54	3.86	3.82	4.13	3.95	4.28	4.65
24754.4	2.66	2.88	3.10	3.35	3.33	3.61	3.54	3.86	3.82	4.12	3.95	4.26	4.64
24757.4	2.66	2.88	3.09	3.34	3.33	3.61	3.54	3.85	3.81	4.11	3.94	4.25	4.63
24760.3	2.65	2.87	3.09	3.34	3.33	3.60	3.53	3.85	3.81	4.10	3.94	4.24	4.61
24763.3	2.65	2.87	3.08	3.34	3.32	3.60	3.53	3.84	3.81	4.09	3.93	4.23	4.60
24766.3	2.64	2.87	3.08	3.34	3.32	3.60	3.53	3.84	3.80	4.07	3.92	4.22	4.58
24769.2	2.64	2.86	3.08	3.33	3.32	3.59	3.52	3.84	3.80	4.06	3.92	4.20	4.57
24772.2	2.63	2.86	3.08	3.33	3.31	3.59	3.52	3.83	3.79	4.05	3.91	4.19	4.55
24775.2	2.63	2.85	3.07	3.33	3.31	3.59	3.52	3.83	3.79	4.04	3.90	4.18	4.53
24778.1	2.63	2.85	3.07	3.33	3.31	3.58	3.51	3.82	3.78	4.02	3.89	4.16	4.52
24781.1	2.62	2.85	3.07	3.32	3.31	3.58	3.51	3.81	3.78	4.01	3.88	4.15	4.50
24784.1	2.62	2.85	3.07	3.32	3.30	3.58	3.51	3.80	3.77	4.00	3.86	4.14	4.48

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
24787.1	2.61	2.84	3.06	3.32	3.30	3.58	3.51	3.79	3.76	3.99	3.85	4.12	4.46
24790.0	2.61	2.84	3.06	3.32	3.30	3.57	3.50	3.78	3.75	3.97	3.84	4.11	4.43
24793.0	2.61	2.84	3.06	3.31	3.30	3.57	3.50	3.76	3.74	3.96	3.83	4.09	4.41
24793.0	2.61	2.84	3.06	3.31	3.30	3.57	3.50	3.76	3.74	3.96	3.83	4.09	4.41
24796.0	2.63	2.85	3.04	3.22	3.20	3.46	3.41	3.67	3.64	3.91	3.75	4.05	4.34
24799.0	2.65	2.86	3.03	3.12	3.11	3.36	3.32	3.58	3.55	3.86	3.68	4.01	4.27
24802.0	2.69	2.90	3.08	3.25	3.24	3.42	3.38	3.59	3.56	3.84	3.67	3.97	4.27
24805.0	2.72	2.94	3.15	3.39	3.37	3.47	3.45	3.60	3.58	3.82	3.66	3.93	4.28
24808.0	2.75	2.98	3.19	3.44	3.42	3.62	3.56	3.76	3.74	3.94	3.81	4.05	4.37
24811.0	2.78	3.02	3.23	3.48	3.47	3.77	3.69	3.92	3.91	4.06	3.96	4.18	4.47
24813.0	2.43	2.64	2.84	3.08	3.06	3.34	3.27	3.54	3.51	3.74	3.61	3.88	4.25
24815.0	3.00	3.26	3.50	3.77	3.75	4.07	3.99	4.36	4.31	4.49	4.43	4.58	4.86
24818.0	3.01	3.27	3.51	3.77	3.76	4.08	3.99	4.32	4.29	4.43	4.36	4.53	4.81
24821.0	3.02	3.29	3.51	3.78	3.76	4.08	4.00	4.28	4.27	4.38	4.30	4.48	4.76
24824.0	3.04	3.30	3.52	3.79	3.77	4.08	4.01	4.22	4.20	4.33	4.25	4.44	4.70
24827.0	3.05	3.32	3.53	3.80	3.78	4.07	4.01	4.16	4.15	4.29	4.19	4.40	4.65
24830.0	3.07	3.33	3.54	3.80	3.79	4.03	3.99	4.11	4.09	4.25	4.15	4.38	4.68
24833.0	3.08	3.33	3.54	3.81	3.80	3.99	3.98	4.06	4.04	4.22	4.10	4.36	4.70
24836.0	3.10	3.34	3.55	3.81	3.80	3.93	3.92	4.02	4.00	4.22	4.09	4.36	4.72
24839.0	3.11	3.35	3.56	3.81	3.80	3.88	3.86	3.99	3.96	4.21	4.08	4.35	4.74
24842.0	3.13	3.36	3.57	3.77	3.76	3.85	3.82	4.02	3.99	4.23	4.08	4.41	4.76
24845.0	3.15	3.37	3.58	3.73	3.73	3.81	3.78	4.04	4.02	4.26	4.09	4.46	4.78
24848.0	3.16	3.38	3.59	3.69	3.69	3.86	3.80	4.07	4.05	4.32	4.13	4.50	4.81
24851.0	3.18	3.39	3.60	3.66	3.65	3.91	3.83	4.10	4.07	4.38	4.17	4.53	4.84
24854.0	3.19	3.40	3.57	3.70	3.69	3.95	3.87	4.16	4.12	4.43	4.24	4.57	4.87
24857.0	3.20	3.41	3.54	3.75	3.73	3.99	3.92	4.22	4.18	4.48	4.31	4.60	4.90
24860.0	3.22	3.43	3.59	3.82	3.80	4.07	3.99	4.30	4.26	4.52	4.38	4.64	4.93
24863.0	3.24	3.45	3.65	3.89	3.87	4.14	4.08	4.38	4.34	4.56	4.45	4.67	4.97
24863.0	3.24	3.45	3.65	3.89	3.87	4.14	4.08	4.38	4.34	4.56	4.45	4.67	4.97
24865.7	3.20	3.42	3.62	3.86	3.85	4.12	4.05	4.36	4.32	4.54	4.43	4.66	4.96
24868.3	3.17	3.39	3.59	3.84	3.83	4.10	4.03	4.34	4.30	4.53	4.41	4.65	4.95
24871.0	3.14	3.36	3.57	3.82	3.80	4.08	4.01	4.32	4.28	4.51	4.39	4.63	4.94
24873.7	3.11	3.33	3.54	3.80	3.78	4.06	3.99	4.30	4.26	4.50	4.37	4.62	4.93
24876.3	3.08	3.30	3.52	3.77	3.76	4.04	3.97	4.28	4.24	4.48	4.35	4.61	4.92
24879.0	3.05	3.28	3.49	3.75	3.73	4.02	3.94	4.26	4.22	4.47	4.34	4.59	4.91
24881.7	3.02	3.25	3.47	3.73	3.71	3.99	3.92	4.24	4.20	4.45	4.32	4.58	4.90
24884.3	2.99	3.22	3.44	3.70	3.69	3.97	3.90	4.22	4.18	4.43	4.30	4.57	4.89
24887.0	2.96	3.19	3.42	3.68	3.66	3.95	3.88	4.20	4.16	4.42	4.28	4.55	4.89
24889.7	2.93	3.17	3.39	3.66	3.64	3.93	3.86	4.18	4.14	4.40	4.26	4.54	4.88
24892.3	2.90	3.14	3.37	3.63	3.62	3.91	3.84	4.16	4.12	4.39	4.25	4.53	4.87
24895.0	2.87	3.11	3.34	3.61	3.59	3.89	3.81	4.14	4.10	4.37	4.23	4.51	4.86
24898.0	2.87	3.11	3.34	3.61	3.59	3.89	3.81	4.14	4.10	4.37	4.23	4.51	4.86
24900.9	2.87	3.11	3.34	3.61	3.59	3.89	3.81	4.14	4.10	4.37	4.22	4.51	4.86
24903.9	2.87	3.11	3.34	3.61	3.59	3.89	3.81	4.14	4.10	4.37	4.22	4.51	4.86
24906.9	2.87	3.11	3.34	3.61	3.59	3.89	3.81	4.14	4.10	4.37	4.22	4.51	4.86
24909.9	2.87	3.11	3.34	3.61	3.59	3.89	3.81	4.14	4.09	4.36	4.22	4.51	4.86

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
24912.8	2.87	3.11	3.34	3.61	3.59	3.89	3.81	4.13	4.09	4.36	4.22	4.51	4.86
24915.8	2.87	3.11	3.34	3.61	3.59	3.89	3.81	4.13	4.09	4.36	4.21	4.51	4.86
24918.8	2.87	3.11	3.33	3.61	3.59	3.89	3.81	4.13	4.09	4.36	4.21	4.51	4.86
24921.7	2.87	3.10	3.33	3.60	3.59	3.89	3.81	4.13	4.09	4.36	4.21	4.50	4.86
24924.7	2.87	3.10	3.33	3.60	3.59	3.89	3.81	4.13	4.09	4.36	4.21	4.50	4.86
24927.7	2.87	3.10	3.33	3.60	3.59	3.89	3.81	4.13	4.09	4.36	4.21	4.50	4.87
24930.6	2.87	3.10	3.33	3.60	3.59	3.89	3.81	4.13	4.09	4.36	4.21	4.50	4.87
24933.6	2.86	3.10	3.33	3.60	3.59	3.89	3.81	4.13	4.09	4.36	4.21	4.50	4.87
24936.6	2.86	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.09	4.35	4.20	4.50	4.87
24939.6	2.86	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.20	4.50	4.87
24942.5	2.86	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.20	4.50	4.87
24945.5	2.86	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.20	4.50	4.87
24948.5	2.86	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.20	4.50	4.87
24951.4	2.86	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.20	4.50	4.88
24954.4	2.86	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.20	4.50	4.88
24957.4	2.86	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.20	4.50	4.88
24960.4	2.86	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.20	4.50	4.88
24963.3	2.87	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.19	4.50	4.88
24966.3	2.87	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.19	4.50	4.88
24969.3	2.87	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.19	4.50	4.89
24972.2	2.87	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.08	4.35	4.19	4.50	4.89
24975.2	2.87	3.10	3.33	3.60	3.58	3.89	3.81	4.12	4.09	4.35	4.19	4.50	4.89
24978.2	2.87	3.10	3.32	3.60	3.58	3.89	3.81	4.12	4.09	4.35	4.19	4.50	4.89
24981.1	2.87	3.10	3.32	3.60	3.58	3.89	3.81	4.12	4.09	4.35	4.19	4.51	4.89
24984.1	2.87	3.10	3.32	3.60	3.58	3.90	3.82	4.12	4.09	4.35	4.19	4.51	4.90
24987.1	2.87	3.10	3.33	3.60	3.58	3.90	3.82	4.12	4.09	4.35	4.19	4.51	4.90
24990.1	2.87	3.10	3.33	3.60	3.58	3.90	3.82	4.12	4.09	4.35	4.19	4.51	4.90
24993.0	2.87	3.10	3.33	3.60	3.58	3.90	3.82	4.12	4.09	4.35	4.19	4.51	4.90
24996.0	2.87	3.10	3.33	3.60	3.58	3.90	3.82	4.12	4.09	4.35	4.19	4.51	4.91
24998.9	2.87	3.10	3.33	3.60	3.58	3.90	3.82	4.12	4.09	4.35	4.19	4.51	4.91
25001.8	2.87	3.10	3.33	3.60	3.58	3.90	3.82	4.12	4.09	4.35	4.19	4.51	4.91
25004.6	2.87	3.10	3.33	3.60	3.58	3.90	3.82	4.12	4.09	4.35	4.19	4.51	4.92
25007.5	2.87	3.11	3.33	3.60	3.58	3.89	3.82	4.12	4.09	4.35	4.19	4.51	4.92
25010.4	2.88	3.11	3.33	3.60	3.58	3.89	3.82	4.12	4.09	4.35	4.19	4.51	4.92
25013.3	2.88	3.11	3.33	3.60	3.58	3.89	3.82	4.12	4.09	4.35	4.19	4.52	4.93
25016.2	2.88	3.11	3.33	3.60	3.58	3.89	3.82	4.12	4.09	4.35	4.19	4.52	4.93
25019.1	2.88	3.11	3.33	3.60	3.58	3.89	3.82	4.12	4.09	4.35	4.19	4.52	4.93
25021.9	2.88	3.11	3.33	3.60	3.59	3.89	3.82	4.12	4.08	4.35	4.19	4.52	4.94
25024.8	2.88	3.11	3.33	3.60	3.59	3.89	3.82	4.12	4.08	4.35	4.19	4.52	4.94
25027.7	2.88	3.11	3.33	3.60	3.59	3.89	3.82	4.12	4.08	4.35	4.19	4.52	4.94
25030.6	2.88	3.11	3.33	3.60	3.59	3.89	3.82	4.12	4.08	4.35	4.19	4.52	4.95
25033.5	2.88	3.11	3.34	3.60	3.59	3.89	3.82	4.12	4.08	4.35	4.19	4.52	4.95
25036.4	2.88	3.11	3.34	3.61	3.59	3.89	3.82	4.12	4.08	4.35	4.19	4.52	4.95
25039.2	2.89	3.12	3.34	3.61	3.59	3.89	3.82	4.12	4.08	4.35	4.19	4.52	4.96
25042.1	2.89	3.12	3.34	3.61	3.59	3.89	3.82	4.11	4.08	4.35	4.19	4.53	4.96
25045.0	2.89	3.12	3.34	3.61	3.59	3.89	3.82	4.11	4.08	4.35	4.19	4.53	4.96

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
25047.9	2.89	3.12	3.34	3.61	3.59	3.89	3.82	4.11	4.08	4.35	4.19	4.53	4.96
25050.8	2.89	3.12	3.34	3.61	3.59	3.89	3.82	4.11	4.08	4.36	4.19	4.53	4.97
25053.6	2.89	3.12	3.34	3.61	3.59	3.89	3.82	4.11	4.08	4.36	4.19	4.53	4.97
25056.5	2.89	3.12	3.34	3.61	3.59	3.89	3.82	4.11	4.08	4.36	4.19	4.53	4.97
25059.4	2.89	3.12	3.35	3.61	3.59	3.89	3.82	4.11	4.08	4.36	4.19	4.53	4.97
25062.3	2.90	3.13	3.35	3.61	3.59	3.89	3.82	4.11	4.08	4.36	4.19	4.53	4.97
25065.2	2.90	3.13	3.35	3.61	3.60	3.89	3.82	4.11	4.08	4.36	4.19	4.53	4.98
25068.1	2.90	3.13	3.35	3.61	3.60	3.90	3.82	4.11	4.08	4.36	4.19	4.53	4.98
25070.9	2.90	3.13	3.35	3.61	3.60	3.90	3.82	4.11	4.08	4.35	4.18	4.53	4.97
25073.8	2.90	3.13	3.35	3.62	3.60	3.90	3.83	4.11	4.08	4.35	4.18	4.53	4.97
25076.7	2.90	3.13	3.36	3.62	3.60	3.90	3.83	4.11	4.07	4.35	4.18	4.52	4.96
25079.6	2.91	3.14	3.36	3.62	3.60	3.90	3.83	4.11	4.07	4.35	4.18	4.52	4.96
25082.5	2.91	3.14	3.36	3.62	3.60	3.90	3.83	4.10	4.07	4.34	4.18	4.52	4.96
25085.4	2.91	3.14	3.36	3.62	3.60	3.90	3.83	4.10	4.07	4.34	4.17	4.52	4.95
25088.2	2.91	3.14	3.36	3.62	3.60	3.91	3.83	4.10	4.07	4.34	4.17	4.52	4.95
25091.1	2.91	3.14	3.36	3.62	3.61	3.91	3.83	4.10	4.07	4.34	4.17	4.51	4.95
25094.0	2.91	3.14	3.37	3.62	3.61	3.91	3.84	4.10	4.07	4.34	4.17	4.51	4.95
25096.9	2.92	3.15	3.37	3.63	3.61	3.91	3.84	4.10	4.07	4.34	4.17	4.51	4.95
25099.9	2.92	3.15	3.38	3.63	3.62	3.91	3.84	4.11	4.08	4.34	4.18	4.51	4.95
25102.8	2.93	3.16	3.38	3.64	3.62	3.92	3.85	4.11	4.08	4.34	4.18	4.51	4.95
25105.8	2.93	3.16	3.39	3.65	3.63	3.92	3.85	4.11	4.08	4.34	4.18	4.51	4.95
25108.7	2.94	3.17	3.39	3.65	3.64	3.92	3.86	4.11	4.08	4.34	4.18	4.51	4.95
25111.6	2.94	3.17	3.40	3.66	3.64	3.93	3.86	4.12	4.09	4.35	4.19	4.52	4.95
25114.6	2.94	3.18	3.40	3.66	3.65	3.93	3.87	4.12	4.09	4.35	4.19	4.52	4.95
25117.5	2.95	3.18	3.41	3.67	3.65	3.94	3.87	4.13	4.10	4.35	4.20	4.52	4.96
25120.4	2.95	3.19	3.42	3.68	3.66	3.94	3.87	4.13	4.10	4.36	4.20	4.53	4.96
25123.4	2.96	3.20	3.42	3.68	3.67	3.94	3.88	4.14	4.11	4.36	4.21	4.53	4.97
25126.3	2.96	3.20	3.43	3.69	3.67	3.95	3.88	4.14	4.11	4.37	4.21	4.54	4.97
25129.3	2.97	3.21	3.43	3.70	3.68	3.95	3.89	4.15	4.12	4.37	4.22	4.54	4.97
25132.2	2.97	3.21	3.44	3.70	3.68	3.96	3.89	4.15	4.12	4.38	4.22	4.54	4.98
25135.1	2.98	3.22	3.45	3.71	3.69	3.96	3.90	4.16	4.13	4.38	4.23	4.55	4.98
25138.1	2.98	3.22	3.45	3.71	3.70	3.97	3.90	4.16	4.13	4.39	4.23	4.55	4.99
25141.0	2.98	3.23	3.46	3.72	3.70	3.97	3.91	4.17	4.14	4.39	4.24	4.56	4.99
25143.9	2.99	3.23	3.46	3.73	3.71	3.98	3.91	4.17	4.14	4.39	4.24	4.56	5.00
25146.9	2.99	3.24	3.47	3.73	3.72	3.98	3.92	4.18	4.15	4.40	4.25	4.57	5.00
25149.8	3.00	3.25	3.48	3.74	3.72	3.99	3.93	4.18	4.15	4.40	4.25	4.57	5.01
25152.8	3.00	3.25	3.48	3.75	3.73	4.00	3.93	4.19	4.16	4.41	4.26	4.58	5.01
25155.7	3.01	3.26	3.49	3.76	3.74	4.00	3.94	4.20	4.16	4.42	4.26	4.58	5.02
25158.6	3.01	3.26	3.50	3.76	3.75	4.01	3.95	4.20	4.17	4.42	4.27	4.59	5.03
25161.6	3.02	3.27	3.50	3.77	3.75	4.01	3.95	4.21	4.18	4.43	4.28	4.59	5.03
25164.5	3.02	3.27	3.51	3.78	3.76	4.02	3.96	4.21	4.18	4.43	4.28	4.60	5.04
25167.4	3.03	3.28	3.52	3.78	3.77	4.03	3.97	4.22	4.19	4.44	4.29	4.60	5.04
25170.4	3.03	3.29	3.52	3.79	3.78	4.03	3.97	4.22	4.19	4.44	4.30	4.61	5.05
25173.3	3.04	3.29	3.53	3.80	3.78	4.04	3.98	4.23	4.20	4.45	4.30	4.62	5.05
25176.3	3.04	3.30	3.54	3.81	3.79	4.05	3.99	4.24	4.21	4.45	4.31	4.62	5.06
25179.2	3.05	3.30	3.55	3.82	3.80	4.05	3.99	4.24	4.21	4.46	4.31	4.63	5.07

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
25182.1	3.05	3.31	3.55	3.82	3.81	4.06	4.00	4.25	4.22	4.47	4.32	4.63	5.07
25185.1	3.06	3.32	3.56	3.83	3.81	4.07	4.01	4.26	4.22	4.47	4.33	4.64	5.08
25188.0	3.06	3.32	3.57	3.84	3.82	4.07	4.02	4.26	4.23	4.48	4.33	4.65	5.09
25191.0	3.06	3.32	3.57	3.83	3.82	4.06	4.01	4.25	4.22	4.47	4.32	4.63	5.07
25194.0	3.06	3.32	3.56	3.83	3.81	4.06	4.00	4.24	4.21	4.46	4.31	4.62	5.06
25197.0	3.06	3.32	3.56	3.82	3.81	4.05	3.99	4.23	4.20	4.45	4.30	4.61	5.05
25200.0	3.06	3.32	3.56	3.82	3.80	4.04	3.98	4.22	4.19	4.43	4.29	4.60	5.04
25203.0	3.05	3.32	3.56	3.81	3.80	4.03	3.98	4.21	4.18	4.42	4.28	4.59	5.03
25206.0	3.05	3.32	3.56	3.81	3.79	4.02	3.97	4.20	4.17	4.41	4.27	4.58	5.02
25209.0	3.05	3.31	3.55	3.80	3.79	4.01	3.96	4.19	4.16	4.40	4.26	4.57	5.01
25212.0	3.05	3.31	3.55	3.80	3.78	4.01	3.95	4.18	4.15	4.39	4.25	4.56	5.00
25215.0	3.05	3.31	3.55	3.79	3.78	4.00	3.95	4.17	4.14	4.38	4.24	4.55	4.99
25218.0	3.05	3.31	3.55	3.79	3.77	3.99	3.94	4.16	4.13	4.37	4.23	4.54	4.98
25221.0	3.05	3.31	3.55	3.78	3.77	3.98	3.93	4.15	4.13	4.36	4.22	4.53	4.97
25224.0	3.05	3.31	3.54	3.78	3.76	3.97	3.92	4.14	4.11	4.35	4.20	4.51	4.96
25227.0	3.05	3.31	3.54	3.77	3.76	3.97	3.92	4.13	4.10	4.33	4.19	4.50	4.94
25230.0	3.04	3.31	3.54	3.77	3.75	3.96	3.91	4.12	4.09	4.32	4.18	4.49	4.93
25233.0	3.04	3.31	3.54	3.76	3.75	3.95	3.90	4.11	4.08	4.31	4.17	4.48	4.92
25236.0	3.04	3.31	3.54	3.76	3.75	3.94	3.89	4.10	4.07	4.30	4.16	4.47	4.91
25239.0	3.04	3.30	3.54	3.75	3.74	3.93	3.89	4.09	4.06	4.29	4.15	4.46	4.90
25242.0	3.04	3.30	3.54	3.75	3.74	3.92	3.88	4.08	4.05	4.28	4.14	4.45	4.89
25245.0	3.04	3.30	3.54	3.74	3.73	3.92	3.87	4.07	4.04	4.27	4.13	4.43	4.87
25248.0	3.04	3.30	3.53	3.74	3.73	3.91	3.87	4.06	4.03	4.26	4.12	4.42	4.86
25251.0	3.04	3.30	3.53	3.74	3.73	3.90	3.86	4.05	4.02	4.25	4.11	4.41	4.85
25254.0	3.04	3.30	3.53	3.73	3.72	3.89	3.85	4.04	4.02	4.24	4.10	4.40	4.84
25257.0	3.04	3.30	3.53	3.73	3.72	3.89	3.85	4.03	4.01	4.22	4.09	4.39	4.83
25260.0	3.04	3.30	3.53	3.73	3.71	3.88	3.84	4.02	4.00	4.21	4.08	4.38	4.82
25263.0	3.04	3.30	3.53	3.72	3.71	3.87	3.83	4.01	3.99	4.20	4.07	4.37	4.81
25266.0	3.04	3.30	3.53	3.72	3.71	3.86	3.83	4.00	3.98	4.19	4.06	4.36	4.79
25269.0	3.03	3.30	3.53	3.72	3.71	3.86	3.82	3.99	3.97	4.18	4.05	4.34	4.78
25272.0	3.03	3.30	3.53	3.71	3.70	3.85	3.81	3.98	3.96	4.17	4.04	4.33	4.77
25275.0	3.03	3.30	3.53	3.71	3.70	3.84	3.81	3.97	3.95	4.16	4.03	4.32	4.76
25278.0	3.03	3.30	3.53	3.71	3.70	3.84	3.80	3.96	3.94	4.15	4.02	4.31	4.75
25281.0	3.03	3.30	3.53	3.70	3.69	3.83	3.80	3.95	3.93	4.14	4.01	4.30	4.74
25284.0	3.03	3.30	3.53	3.70	3.69	3.82	3.79	3.95	3.92	4.13	4.00	4.29	4.73
25287.0	3.03	3.30	3.53	3.70	3.69	3.82	3.78	3.94	3.91	4.12	3.99	4.28	4.71
25290.0	3.03	3.29	3.53	3.70	3.69	3.81	3.78	3.93	3.91	4.11	3.98	4.27	4.70
25293.0	3.03	3.29	3.53	3.70	3.69	3.81	3.78	3.93	3.91	4.11	3.98	4.27	4.70
25295.9	3.03	3.29	3.53	3.70	3.69	3.81	3.78	3.93	3.91	4.11	3.98	4.27	4.71
25298.9	3.03	3.29	3.53	3.70	3.69	3.82	3.79	3.93	3.91	4.11	3.98	4.27	4.71
25301.9	3.04	3.29	3.53	3.70	3.69	3.82	3.79	3.93	3.91	4.11	3.98	4.27	4.71
25304.8	3.04	3.29	3.52	3.70	3.69	3.82	3.79	3.93	3.91	4.11	3.98	4.27	4.71
25307.8	3.04	3.30	3.52	3.70	3.69	3.83	3.79	3.94	3.92	4.10	3.98	4.26	4.70
25310.8	3.04	3.30	3.52	3.70	3.69	3.83	3.80	3.94	3.92	4.10	3.98	4.26	4.70
25313.8	3.04	3.30	3.52	3.70	3.70	3.83	3.80	3.94	3.92	4.10	3.99	4.26	4.69
25316.7	3.05	3.30	3.52	3.71	3.70	3.83	3.80	3.94	3.92	4.10	3.99	4.26	4.69

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
25319.7	3.05	3.30	3.52	3.71	3.70	3.84	3.81	3.94	3.93	4.10	3.99	4.25	4.69
25322.7	3.05	3.30	3.52	3.71	3.70	3.84	3.81	3.94	3.93	4.10	3.99	4.25	4.69
25325.6	3.05	3.30	3.52	3.71	3.70	3.84	3.81	3.95	3.93	4.10	3.99	4.25	4.69
25328.6	3.05	3.30	3.52	3.71	3.70	3.85	3.81	3.95	3.93	4.10	3.99	4.25	4.68
25331.6	3.06	3.31	3.52	3.71	3.70	3.85	3.82	3.95	3.93	4.10	3.99	4.25	4.68
25334.5	3.06	3.31	3.52	3.72	3.71	3.85	3.82	3.95	3.94	4.10	3.99	4.25	4.68
25337.5	3.06	3.31	3.52	3.72	3.71	3.86	3.82	3.96	3.94	4.09	4.00	4.25	4.67
25340.5	3.07	3.31	3.52	3.72	3.71	3.86	3.83	3.96	3.94	4.09	4.00	4.24	4.67
25343.4	3.07	3.32	3.52	3.72	3.71	3.86	3.83	3.96	3.95	4.09	4.00	4.24	4.66
25346.4	3.07	3.32	3.52	3.72	3.71	3.87	3.83	3.97	3.95	4.09	4.00	4.24	4.66
25349.4	3.07	3.32	3.53	3.72	3.71	3.87	3.84	3.97	3.95	4.09	4.01	4.24	4.66
25352.3	3.08	3.33	3.53	3.72	3.71	3.87	3.84	3.97	3.96	4.10	4.01	4.24	4.66
25355.3	3.08	3.33	3.53	3.73	3.71	3.88	3.84	3.98	3.96	4.10	4.01	4.24	4.66
25358.3	3.08	3.33	3.53	3.73	3.72	3.88	3.85	3.98	3.96	4.10	4.02	4.24	4.66
25361.3	3.09	3.34	3.53	3.73	3.72	3.89	3.85	3.98	3.97	4.10	4.02	4.24	4.65
25364.2	3.09	3.34	3.54	3.73	3.72	3.89	3.85	3.99	3.97	4.10	4.02	4.24	4.65
25367.2	3.10	3.35	3.54	3.73	3.72	3.89	3.86	3.99	3.97	4.10	4.02	4.24	4.65
25370.2	3.10	3.35	3.54	3.73	3.72	3.90	3.86	3.99	3.98	4.11	4.03	4.23	4.64
25373.1	3.11	3.36	3.55	3.74	3.73	3.90	3.86	4.00	3.98	4.11	4.03	4.24	4.64
25376.1	3.11	3.36	3.55	3.74	3.73	3.91	3.87	4.00	3.99	4.11	4.04	4.24	4.64
25379.1	3.11	3.37	3.55	3.74	3.73	3.91	3.87	4.01	3.99	4.12	4.04	4.24	4.64
25382.0	3.12	3.37	3.56	3.74	3.73	3.92	3.87	4.01	4.00	4.12	4.04	4.24	4.64
25385.0	3.12	3.38	3.56	3.75	3.74	3.92	3.88	4.02	4.01	4.12	4.05	4.25	4.64
25387.9	3.12	3.38	3.56	3.75	3.73	3.92	3.88	4.02	4.01	4.13	4.05	4.25	4.64
25390.8	3.12	3.37	3.56	3.74	3.73	3.92	3.88	4.03	4.01	4.13	4.06	4.25	4.64
25393.7	3.11	3.37	3.55	3.74	3.73	3.92	3.88	4.03	4.02	4.13	4.06	4.26	4.63
25396.6	3.11	3.36	3.55	3.74	3.73	3.92	3.88	4.04	4.02	4.14	4.07	4.26	4.63
25399.4	3.10	3.36	3.55	3.74	3.73	3.92	3.88	4.04	4.02	4.14	4.07	4.26	4.63
25402.3	3.10	3.35	3.55	3.74	3.73	3.92	3.88	4.04	4.03	4.14	4.07	4.27	4.64
25405.2	3.10	3.35	3.54	3.74	3.72	3.92	3.88	4.05	4.03	4.15	4.08	4.27	4.64
25408.1	3.09	3.34	3.54	3.73	3.72	3.92	3.88	4.05	4.03	4.15	4.09	4.28	4.64
25411.0	3.09	3.34	3.54	3.73	3.72	3.92	3.87	4.05	4.04	4.15	4.09	4.28	4.64
25413.9	3.09	3.34	3.53	3.73	3.72	3.92	3.87	4.06	4.04	4.16	4.09	4.28	4.64
25416.8	3.09	3.33	3.53	3.73	3.72	3.92	3.87	4.06	4.04	4.16	4.10	4.29	4.64
25419.7	3.08	3.33	3.53	3.73	3.72	3.92	3.87	4.06	4.04	4.17	4.10	4.29	4.64
25422.6	3.08	3.33	3.53	3.73	3.71	3.92	3.87	4.07	4.05	4.17	4.11	4.30	4.64
25425.4	3.08	3.32	3.53	3.73	3.71	3.92	3.87	4.07	4.05	4.18	4.11	4.30	4.64
25428.3	3.08	3.32	3.52	3.72	3.71	3.92	3.87	4.07	4.05	4.18	4.12	4.31	4.64
25431.2	3.08	3.32	3.52	3.72	3.71	3.92	3.87	4.08	4.05	4.18	4.12	4.31	4.65
25434.1	3.08	3.32	3.52	3.72	3.71	3.92	3.87	4.08	4.05	4.19	4.13	4.32	4.65
25437.0	3.07	3.31	3.52	3.72	3.71	3.92	3.87	4.08	4.05	4.20	4.13	4.32	4.66
25439.9	3.07	3.31	3.51	3.72	3.71	3.92	3.87	4.08	4.06	4.20	4.13	4.33	4.66
25442.8	3.07	3.31	3.51	3.72	3.70	3.92	3.87	4.08	4.06	4.21	4.14	4.34	4.67
25445.7	3.07	3.31	3.51	3.72	3.70	3.92	3.87	4.09	4.06	4.22	4.14	4.34	4.67
25448.6	3.07	3.31	3.51	3.72	3.70	3.92	3.87	4.09	4.06	4.22	4.14	4.35	4.68
25451.4	3.07	3.30	3.51	3.71	3.70	3.92	3.87	4.09	4.06	4.23	4.15	4.35	4.68

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
25454.3	3.07	3.30	3.51	3.71	3.70	3.92	3.87	4.09	4.07	4.23	4.15	4.36	4.69
25457.2	3.07	3.30	3.50	3.71	3.70	3.92	3.87	4.09	4.07	4.24	4.15	4.37	4.70
25460.1	3.07	3.30	3.50	3.71	3.70	3.92	3.87	4.10	4.07	4.25	4.16	4.37	4.70
25463.0	3.08	3.30	3.50	3.71	3.70	3.92	3.87	4.10	4.07	4.25	4.16	4.38	4.71
25465.9	3.08	3.30	3.50	3.71	3.70	3.92	3.87	4.10	4.07	4.26	4.16	4.39	4.72
25468.8	3.08	3.30	3.50	3.71	3.70	3.92	3.87	4.10	4.07	4.27	4.17	4.40	4.72
25471.7	3.08	3.30	3.50	3.71	3.70	3.92	3.87	4.10	4.08	4.27	4.17	4.41	4.73
25474.6	3.09	3.30	3.50	3.71	3.70	3.92	3.87	4.11	4.08	4.28	4.17	4.42	4.74
25477.4	3.09	3.30	3.50	3.71	3.69	3.92	3.87	4.11	4.08	4.29	4.17	4.43	4.74
25480.3	3.09	3.31	3.50	3.71	3.69	3.92	3.87	4.11	4.08	4.29	4.18	4.43	4.75
25483.2	3.10	3.31	3.50	3.71	3.69	3.92	3.87	4.11	4.08	4.30	4.18	4.44	4.76
25486.1	3.10	3.31	3.50	3.71	3.69	3.92	3.87	4.11	4.08	4.30	4.18	4.45	4.77
25489.0	3.11	3.31	3.50	3.71	3.69	3.92	3.87	4.12	4.08	4.31	4.18	4.46	4.77
25491.9	3.11	3.32	3.50	3.71	3.70	3.92	3.87	4.12	4.08	4.30	4.18	4.45	4.77
25494.8	3.12	3.32	3.50	3.71	3.70	3.92	3.87	4.11	4.08	4.30	4.18	4.45	4.76
25497.7	3.12	3.32	3.51	3.71	3.70	3.93	3.87	4.11	4.08	4.30	4.18	4.45	4.75
25500.6	3.13	3.33	3.51	3.71	3.70	3.93	3.87	4.11	4.08	4.30	4.18	4.44	4.74
25503.6	3.13	3.33	3.51	3.72	3.70	3.93	3.87	4.11	4.08	4.29	4.18	4.44	4.73
25506.5	3.14	3.34	3.52	3.72	3.71	3.93	3.87	4.11	4.08	4.29	4.18	4.43	4.72
25509.4	3.14	3.34	3.52	3.72	3.71	3.93	3.87	4.11	4.08	4.29	4.18	4.43	4.71
25512.3	3.15	3.35	3.52	3.72	3.71	3.93	3.87	4.11	4.08	4.28	4.18	4.42	4.70
25515.2	3.16	3.35	3.53	3.72	3.71	3.93	3.87	4.11	4.08	4.28	4.18	4.42	4.69
25518.1	3.16	3.36	3.53	3.73	3.71	3.93	3.88	4.11	4.08	4.28	4.17	4.42	4.69
25521.0	3.17	3.36	3.54	3.73	3.72	3.93	3.88	4.11	4.08	4.27	4.17	4.42	4.68
25523.9	3.18	3.37	3.54	3.73	3.72	3.93	3.88	4.11	4.08	4.27	4.17	4.41	4.67
25526.9	3.19	3.38	3.54	3.73	3.72	3.93	3.88	4.11	4.08	4.26	4.17	4.41	4.65
25529.8	3.19	3.38	3.55	3.73	3.72	3.93	3.88	4.11	4.08	4.26	4.16	4.41	4.65
25532.7	3.20	3.39	3.55	3.74	3.73	3.93	3.88	4.10	4.08	4.26	4.16	4.40	4.64
25535.6	3.21	3.39	3.56	3.74	3.73	3.93	3.88	4.10	4.08	4.25	4.16	4.40	4.63
25538.5	3.22	3.40	3.56	3.74	3.73	3.93	3.88	4.10	4.07	4.25	4.16	4.40	4.63
25541.4	3.23	3.41	3.57	3.74	3.73	3.93	3.88	4.10	4.07	4.25	4.15	4.40	4.62
25544.3	3.24	3.41	3.57	3.75	3.73	3.93	3.88	4.10	4.07	4.24	4.15	4.40	4.61
25547.2	3.25	3.42	3.58	3.75	3.74	3.93	3.88	4.10	4.07	4.24	4.15	4.40	4.60
25550.1	3.26	3.43	3.58	3.75	3.74	3.93	3.88	4.09	4.07	4.24	4.15	4.40	4.59
25553.1	3.27	3.44	3.58	3.75	3.74	3.93	3.88	4.09	4.07	4.24	4.14	4.40	4.59
25556.0	3.28	3.44	3.59	3.75	3.74	3.93	3.89	4.09	4.06	4.24	4.14	4.40	4.58
25558.9	3.29	3.45	3.60	3.76	3.75	3.93	3.89	4.09	4.06	4.23	4.14	4.40	4.57
25561.8	3.30	3.46	3.60	3.76	3.75	3.93	3.89	4.09	4.06	4.23	4.14	4.40	4.56
25564.7	3.31	3.47	3.61	3.76	3.75	3.93	3.89	4.08	4.06	4.23	4.14	4.40	4.55
25567.6	3.33	3.48	3.61	3.76	3.75	3.93	3.89	4.08	4.06	4.23	4.14	4.39	4.54
25570.5	3.34	3.49	3.62	3.77	3.76	3.93	3.89	4.08	4.06	4.23	4.13	4.39	4.53
25573.4	3.36	3.50	3.62	3.77	3.76	3.93	3.89	4.08	4.06	4.23	4.13	4.39	4.52
25576.4	3.37	3.51	3.63	3.77	3.76	3.93	3.89	4.08	4.06	4.23	4.13	4.39	4.51
25579.3	3.39	3.52	3.63	3.77	3.76	3.93	3.89	4.08	4.06	4.23	4.13	4.39	4.50
25582.2	3.40	3.53	3.64	3.78	3.77	3.93	3.89	4.08	4.06	4.23	4.14	4.39	4.49
25585.1	3.42	3.54	3.65	3.78	3.77	3.93	3.89	4.08	4.06	4.23	4.14	4.38	4.48

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
25588.0	3.44	3.55	3.65	3.78	3.77	3.93	3.89	4.08	4.06	4.23	4.14	4.38	4.47
25590.8	3.43	3.54	3.64	3.77	3.76	3.92	3.88	4.07	4.05	4.22	4.13	4.36	4.46
25593.7	3.42	3.53	3.63	3.75	3.75	3.91	3.87	4.06	4.04	4.21	4.12	4.35	4.45
25596.5	3.40	3.51	3.62	3.74	3.73	3.90	3.86	4.05	4.02	4.19	4.11	4.34	4.44
25599.3	3.39	3.50	3.60	3.73	3.72	3.89	3.84	4.04	4.01	4.18	4.09	4.33	4.43
25602.2	3.38	3.49	3.59	3.72	3.71	3.88	3.83	4.03	4.00	4.16	4.08	4.31	4.41
25605.0	3.36	3.47	3.58	3.71	3.70	3.86	3.82	4.02	3.99	4.15	4.07	4.30	4.40
25607.8	3.35	3.46	3.56	3.69	3.68	3.85	3.81	4.01	3.98	4.14	4.06	4.29	4.39
25610.7	3.34	3.45	3.55	3.68	3.67	3.84	3.80	4.00	3.97	4.13	4.05	4.28	4.38
25613.5	3.32	3.43	3.54	3.67	3.66	3.83	3.79	3.98	3.96	4.11	4.04	4.27	4.37
25616.3	3.31	3.42	3.52	3.66	3.65	3.82	3.77	3.97	3.95	4.10	4.03	4.25	4.36
25619.2	3.30	3.41	3.51	3.64	3.63	3.81	3.76	3.96	3.94	4.09	4.01	4.24	4.35
25622.0	3.29	3.39	3.50	3.63	3.62	3.80	3.75	3.95	3.92	4.07	4.00	4.23	4.34
25624.8	3.27	3.38	3.48	3.62	3.61	3.79	3.74	3.94	3.91	4.06	3.99	4.22	4.33
25627.7	3.26	3.37	3.47	3.61	3.60	3.78	3.73	3.93	3.90	4.05	3.98	4.21	4.32
25630.5	3.24	3.35	3.46	3.60	3.59	3.76	3.72	3.91	3.89	4.04	3.97	4.20	4.31
25633.3	3.23	3.34	3.45	3.58	3.57	3.75	3.71	3.90	3.88	4.03	3.95	4.19	4.30
25636.2	3.22	3.32	3.43	3.57	3.56	3.74	3.70	3.89	3.87	4.02	3.94	4.18	4.30
25639.0	3.20	3.31	3.42	3.56	3.55	3.73	3.68	3.88	3.86	4.01	3.93	4.17	4.29
25641.8	3.19	3.30	3.41	3.55	3.54	3.72	3.67	3.87	3.84	3.99	3.92	4.16	4.28
25644.7	3.18	3.28	3.39	3.54	3.53	3.71	3.66	3.86	3.83	3.98	3.91	4.15	4.28
25647.5	3.16	3.27	3.38	3.53	3.52	3.70	3.65	3.84	3.82	3.97	3.90	4.14	4.27
25650.3	3.15	3.26	3.37	3.51	3.50	3.68	3.64	3.83	3.81	3.96	3.88	4.13	4.26
25653.2	3.13	3.24	3.36	3.50	3.49	3.67	3.63	3.82	3.80	3.95	3.87	4.12	4.24
25656.0	3.12	3.23	3.34	3.49	3.48	3.66	3.62	3.81	3.78	3.94	3.86	4.11	4.24
25658.8	3.10	3.22	3.33	3.48	3.47	3.65	3.60	3.80	3.77	3.93	3.85	4.11	4.23
25661.7	3.09	3.20	3.32	3.47	3.46	3.64	3.59	3.79	3.76	3.92	3.84	4.10	4.22
25664.5	3.07	3.19	3.31	3.46	3.45	3.63	3.58	3.77	3.75	3.91	3.83	4.09	4.20
25667.3	3.06	3.18	3.29	3.44	3.43	3.61	3.57	3.76	3.74	3.90	3.81	4.08	4.19
25670.2	3.05	3.16	3.28	3.43	3.42	3.60	3.56	3.75	3.73	3.89	3.80	4.07	4.18
25673.0	3.03	3.15	3.27	3.42	3.41	3.59	3.55	3.74	3.72	3.88	3.79	4.06	4.17
25676.0	3.03	3.15	3.27	3.43	3.42	3.60	3.55	3.75	3.72	3.89	3.80	4.07	4.17
25679.0	3.03	3.15	3.27	3.43	3.42	3.60	3.56	3.75	3.73	3.89	3.81	4.07	4.17
25682.0	3.02	3.15	3.27	3.43	3.42	3.61	3.56	3.76	3.73	3.90	3.81	4.08	4.18
25685.0	3.02	3.15	3.28	3.44	3.43	3.62	3.57	3.77	3.74	3.90	3.82	4.08	4.19
25688.0	3.02	3.15	3.28	3.44	3.43	3.62	3.57	3.77	3.75	3.91	3.82	4.09	4.20
25691.0	3.01	3.14	3.28	3.44	3.43	3.63	3.58	3.78	3.76	3.92	3.83	4.10	4.21
25694.0	3.01	3.14	3.28	3.45	3.44	3.63	3.58	3.79	3.76	3.93	3.84	4.11	4.22
25697.0	3.00	3.14	3.28	3.45	3.44	3.64	3.59	3.79	3.77	3.94	3.84	4.12	4.23
25700.0	3.00	3.14	3.28	3.45	3.44	3.64	3.59	3.80	3.78	3.94	3.85	4.13	4.25
25703.0	2.99	3.13	3.28	3.46	3.44	3.65	3.60	3.81	3.78	3.96	3.86	4.15	4.27
25706.0	2.99	3.13	3.28	3.46	3.45	3.65	3.60	3.82	3.79	3.97	3.87	4.17	4.29
25709.0	2.98	3.13	3.28	3.46	3.45	3.66	3.61	3.82	3.80	3.98	3.87	4.18	4.31
25709.0	2.98	3.13	3.28	3.46	3.45	3.66	3.61	3.82	3.80	3.98	3.87	4.18	4.31
25723.0	2.47	2.64	2.81	3.00	2.99	3.19	3.14	3.35	3.32	3.52	3.40	3.72	3.90
25737.0	2.11	2.29	2.45	2.64	2.63	2.82	2.77	2.98	2.95	3.15	3.03	3.34	3.55

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
25750.5	3.29	3.56	3.82	4.13	4.11	4.44	4.35	4.71	4.66	5.02	4.81	5.25	5.44
25791.0	4.04	4.38	4.70	5.08	5.05	5.48	5.38	5.84	5.79	6.26	5.98	6.47	6.59
25791.0	4.04	4.38	4.70	5.08	5.05	5.48	5.38	5.84	5.79	6.26	5.98	6.47	6.59
25793.9	3.87	4.20	4.51	4.88	4.85	5.26	5.16	5.61	5.55	6.01	5.74	6.24	6.43
25796.8	3.71	4.04	4.34	4.69	4.67	5.06	4.96	5.40	5.34	5.78	5.52	6.02	6.29
25799.7	3.59	3.91	4.20	4.54	4.52	4.89	4.80	5.21	5.16	5.59	5.33	5.81	6.14
25802.6	3.48	3.78	4.07	4.39	4.37	4.73	4.64	5.04	4.99	5.40	5.15	5.62	5.99
25805.4	3.38	3.68	3.96	4.28	4.26	4.60	4.52	4.90	4.85	5.24	5.01	5.46	5.82
25808.3	3.30	3.59	3.86	4.17	4.15	4.48	4.40	4.76	4.71	5.10	4.87	5.30	5.66
25811.2	3.23	3.51	3.77	4.08	4.06	4.38	4.30	4.65	4.61	4.97	4.75	5.17	5.51
25814.1	3.17	3.44	3.69	3.99	3.97	4.29	4.21	4.55	4.50	4.85	4.64	5.04	5.38
25817.0	3.12	3.38	3.63	3.92	3.90	4.21	4.13	4.46	4.42	4.76	4.55	4.94	5.26
25819.9	3.07	3.33	3.57	3.85	3.83	4.14	4.06	4.38	4.34	4.66	4.47	4.84	5.15
25822.8	3.04	3.29	3.52	3.79	3.78	4.08	4.00	4.32	4.28	4.59	4.40	4.76	5.06
25825.7	3.00	3.25	3.48	3.74	3.72	4.02	3.94	4.25	4.22	4.52	4.34	4.68	4.96
25828.6	2.98	3.22	3.45	3.70	3.68	3.97	3.90	4.21	4.17	4.46	4.29	4.62	4.89
25831.4	2.95	3.20	3.42	3.66	3.65	3.92	3.85	4.16	4.12	4.41	4.24	4.56	4.82
25834.3	2.94	3.18	3.39	3.64	3.62	3.89	3.82	4.12	4.08	4.37	4.20	4.52	4.76
25837.2	2.93	3.16	3.37	3.61	3.59	3.85	3.79	4.08	4.04	4.33	4.16	4.47	4.70
25840.1	2.92	3.16	3.37	3.60	3.58	3.83	3.77	4.05	4.01	4.29	4.13	4.44	4.66
25843.0	2.92	3.15	3.36	3.58	3.57	3.81	3.75	4.02	3.98	4.26	4.10	4.41	4.61
25845.9	2.93	3.15	3.36	3.58	3.57	3.81	3.75	4.02	3.99	4.26	4.10	4.41	4.61
25848.8	2.94	3.16	3.37	3.59	3.58	3.81	3.75	4.02	3.99	4.26	4.10	4.41	4.62
25851.8	2.95	3.17	3.37	3.59	3.58	3.82	3.76	4.02	3.99	4.26	4.10	4.41	4.62
25854.7	2.96	3.18	3.38	3.59	3.58	3.82	3.76	4.03	3.99	4.26	4.10	4.40	4.62
25857.6	2.96	3.18	3.38	3.60	3.58	3.82	3.76	4.03	3.99	4.26	4.10	4.40	4.62
25860.5	2.97	3.19	3.38	3.60	3.59	3.82	3.76	4.03	3.99	4.26	4.11	4.40	4.62
25863.4	2.98	3.20	3.39	3.60	3.59	3.82	3.76	4.03	3.99	4.26	4.10	4.40	4.62
25866.3	2.99	3.20	3.39	3.60	3.59	3.82	3.76	4.03	3.99	4.26	4.10	4.40	4.62
25869.3	3.00	3.21	3.39	3.60	3.59	3.82	3.76	4.03	3.99	4.26	4.10	4.40	4.62
25872.2	3.01	3.21	3.40	3.60	3.59	3.82	3.76	4.03	3.99	4.26	4.10	4.39	4.62
25875.1	3.02	3.22	3.40	3.60	3.59	3.82	3.76	4.03	3.99	4.25	4.10	4.39	4.62
25878.0	3.03	3.22	3.40	3.60	3.59	3.82	3.76	4.02	3.99	4.25	4.09	4.39	4.62
25880.9	3.03	3.23	3.40	3.60	3.59	3.82	3.76	4.02	3.99	4.25	4.09	4.39	4.62
25883.8	3.04	3.23	3.40	3.60	3.59	3.82	3.76	4.02	3.98	4.24	4.09	4.38	4.62
25886.8	3.05	3.23	3.40	3.60	3.59	3.82	3.76	4.01	3.98	4.24	4.08	4.38	4.63
25889.7	3.05	3.24	3.40	3.60	3.59	3.81	3.75	4.01	3.98	4.23	4.08	4.38	4.63
25892.6	3.06	3.24	3.40	3.60	3.58	3.81	3.75	4.00	3.97	4.23	4.07	4.37	4.62
25895.5	3.06	3.24	3.40	3.59	3.58	3.80	3.75	4.00	3.97	4.23	4.07	4.37	4.63
25898.4	3.07	3.24	3.40	3.59	3.58	3.80	3.74	3.99	3.96	4.22	4.06	4.37	4.62
25901.3	3.07	3.24	3.40	3.59	3.57	3.80	3.74	3.99	3.95	4.22	4.06	4.36	4.62
25904.3	3.08	3.24	3.39	3.58	3.57	3.79	3.73	3.98	3.95	4.21	4.05	4.36	4.62
25907.2	3.08	3.24	3.39	3.58	3.57	3.78	3.73	3.97	3.94	4.21	4.05	4.36	4.62
25910.1	3.08	3.24	3.39	3.57	3.56	3.78	3.72	3.97	3.94	4.20	4.04	4.35	4.61
25913.0	3.08	3.23	3.38	3.57	3.55	3.77	3.71	3.96	3.93	4.20	4.03	4.35	4.61
25916.0	3.08	3.23	3.37	3.56	3.55	3.76	3.70	3.95	3.92	4.19	4.02	4.34	4.60

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
25919.0	3.07	3.22	3.37	3.55	3.54	3.75	3.70	3.94	3.91	4.18	4.02	4.33	4.58
25922.0	3.07	3.21	3.36	3.54	3.53	3.74	3.69	3.93	3.90	4.17	4.01	4.32	4.57
25925.0	3.06	3.21	3.35	3.53	3.52	3.73	3.68	3.92	3.89	4.16	3.99	4.30	4.56
25928.0	3.05	3.20	3.34	3.52	3.51	3.72	3.67	3.91	3.88	4.14	3.98	4.29	4.54
25931.0	3.05	3.19	3.33	3.51	3.50	3.71	3.66	3.90	3.87	4.13	3.97	4.27	4.53
25934.0	3.04	3.18	3.32	3.50	3.49	3.70	3.65	3.89	3.86	4.12	3.96	4.25	4.51
25937.0	3.03	3.17	3.32	3.49	3.48	3.69	3.63	3.88	3.84	4.10	3.95	4.24	4.50
25940.0	3.02	3.16	3.30	3.48	3.47	3.68	3.62	3.86	3.83	4.08	3.93	4.22	4.48
25943.0	3.02	3.15	3.29	3.47	3.46	3.66	3.61	3.85	3.82	4.07	3.92	4.20	4.47
25946.0	3.01	3.14	3.28	3.46	3.44	3.65	3.60	3.83	3.80	4.05	3.90	4.19	4.45
25949.0	3.00	3.13	3.27	3.44	3.43	3.64	3.58	3.82	3.79	4.03	3.88	4.17	4.44
25952.0	2.99	3.12	3.26	3.43	3.42	3.62	3.57	3.80	3.77	4.01	3.87	4.15	4.42
25955.0	2.98	3.11	3.25	3.42	3.41	3.61	3.56	3.78	3.75	4.00	3.85	4.13	4.40
25958.0	2.97	3.10	3.23	3.40	3.39	3.59	3.54	3.77	3.74	3.98	3.83	4.12	4.39
25961.0	2.96	3.09	3.22	3.39	3.38	3.57	3.52	3.75	3.72	3.96	3.82	4.10	4.37
25964.0	2.94	3.07	3.20	3.37	3.36	3.56	3.51	3.73	3.70	3.94	3.80	4.08	4.34
25967.0	2.93	3.06	3.19	3.35	3.34	3.54	3.49	3.71	3.68	3.93	3.78	4.07	4.32
25969.9	2.92	3.05	3.19	3.35	3.34	3.54	3.49	3.72	3.69	3.93	3.78	4.07	4.32
25972.9	2.92	3.05	3.19	3.35	3.34	3.54	3.49	3.72	3.69	3.93	3.78	4.07	4.33
25975.8	2.91	3.05	3.18	3.35	3.34	3.54	3.49	3.72	3.69	3.94	3.79	4.08	4.33
25978.8	2.90	3.04	3.18	3.35	3.34	3.54	3.49	3.72	3.69	3.94	3.79	4.08	4.34
25981.7	2.90	3.04	3.18	3.35	3.34	3.54	3.49	3.72	3.69	3.94	3.79	4.08	4.34
25984.6	2.89	3.04	3.18	3.35	3.34	3.55	3.49	3.73	3.70	3.95	3.80	4.08	4.35
25987.6	2.89	3.04	3.18	3.36	3.34	3.55	3.50	3.73	3.70	3.95	3.80	4.08	4.36
25990.5	2.89	3.04	3.18	3.36	3.35	3.55	3.50	3.73	3.70	3.96	3.80	4.09	4.37
25993.5	2.89	3.04	3.18	3.36	3.35	3.56	3.50	3.74	3.71	3.96	3.81	4.09	4.38
25996.4	2.88	3.04	3.18	3.36	3.35	3.56	3.50	3.74	3.71	3.96	3.81	4.09	4.39
25999.4	2.88	3.04	3.19	3.37	3.35	3.56	3.51	3.75	3.72	3.97	3.82	4.10	4.40
26002.3	2.88	3.04	3.19	3.37	3.36	3.57	3.51	3.75	3.72	3.97	3.82	4.10	4.41
26005.2	2.88	3.04	3.19	3.37	3.36	3.57	3.52	3.76	3.73	3.97	3.83	4.11	4.43
26008.2	2.88	3.04	3.19	3.38	3.37	3.58	3.52	3.77	3.73	3.98	3.83	4.12	4.44
26011.1	2.89	3.05	3.20	3.38	3.37	3.58	3.53	3.77	3.74	3.99	3.84	4.12	4.45
26014.1	2.89	3.05	3.20	3.39	3.38	3.59	3.53	3.78	3.75	3.99	3.85	4.13	4.46
26017.0	2.89	3.05	3.21	3.39	3.38	3.60	3.54	3.79	3.75	4.00	3.85	4.14	4.47
26019.9	2.89	3.06	3.21	3.40	3.39	3.60	3.55	3.79	3.76	4.01	3.86	4.15	4.48
26022.9	2.90	3.06	3.22	3.41	3.40	3.61	3.56	3.80	3.77	4.02	3.87	4.16	4.50
26025.8	2.90	3.07	3.23	3.41	3.40	3.62	3.56	3.81	3.78	4.03	3.88	4.18	4.51
26028.8	2.91	3.08	3.24	3.42	3.41	3.63	3.57	3.82	3.79	4.04	3.89	4.19	4.52
26031.7	2.92	3.08	3.24	3.43	3.42	3.64	3.58	3.83	3.80	4.06	3.90	4.20	4.54
26034.6	2.92	3.09	3.25	3.44	3.43	3.65	3.59	3.84	3.81	4.07	3.91	4.22	4.55
26037.6	2.93	3.10	3.26	3.45	3.44	3.66	3.60	3.85	3.82	4.09	3.92	4.23	4.56
26040.5	2.94	3.11	3.27	3.46	3.45	3.67	3.62	3.87	3.83	4.10	3.94	4.25	4.57
26043.5	2.95	3.12	3.28	3.48	3.46	3.69	3.63	3.88	3.85	4.12	3.96	4.27	4.58
26046.4	2.96	3.13	3.29	3.49	3.48	3.70	3.64	3.90	3.87	4.14	3.98	4.29	4.59
26049.4	2.97	3.15	3.31	3.50	3.49	3.72	3.66	3.92	3.88	4.16	4.00	4.30	4.59
26052.3	2.99	3.16	3.32	3.52	3.51	3.73	3.68	3.94	3.91	4.18	4.02	4.32	4.60

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
26055.2	3.00	3.17	3.34	3.53	3.52	3.75	3.69	3.96	3.93	4.20	4.04	4.34	4.61
26058.2	3.02	3.19	3.35	3.55	3.54	3.78	3.71	3.99	3.95	4.22	4.06	4.36	4.62
26061.1	3.03	3.21	3.37	3.57	3.56	3.80	3.74	4.01	3.98	4.24	4.09	4.38	4.62
26064.1	3.05	3.22	3.39	3.59	3.58	3.83	3.76	4.04	4.00	4.27	4.11	4.39	4.63
26067.0	3.07	3.24	3.41	3.62	3.60	3.85	3.79	4.06	4.03	4.29	4.14	4.40	4.63
26069.9	3.07	3.25	3.41	3.63	3.61	3.86	3.80	4.07	4.04	4.30	4.14	4.41	4.64
26072.8	3.08	3.25	3.42	3.63	3.62	3.87	3.81	4.08	4.05	4.30	4.15	4.41	4.65
26075.6	3.08	3.25	3.43	3.64	3.63	3.88	3.81	4.09	4.05	4.31	4.16	4.42	4.66
26078.5	3.08	3.26	3.43	3.65	3.64	3.89	3.82	4.10	4.06	4.32	4.17	4.43	4.67
26081.4	3.08	3.26	3.44	3.66	3.64	3.90	3.83	4.11	4.07	4.33	4.18	4.44	4.68
26084.3	3.09	3.27	3.45	3.67	3.65	3.91	3.84	4.11	4.08	4.34	4.19	4.45	4.69
26087.2	3.09	3.27	3.45	3.68	3.66	3.92	3.85	4.12	4.09	4.34	4.19	4.46	4.70
26090.1	3.10	3.28	3.46	3.68	3.67	3.93	3.86	4.13	4.10	4.35	4.20	4.47	4.71
26092.9	3.10	3.29	3.47	3.69	3.68	3.93	3.87	4.14	4.11	4.36	4.21	4.48	4.72
26095.8	3.10	3.29	3.48	3.70	3.69	3.94	3.88	4.15	4.12	4.37	4.22	4.48	4.73
26098.7	3.11	3.30	3.48	3.71	3.70	3.95	3.89	4.16	4.13	4.38	4.23	4.49	4.74
26101.6	3.11	3.30	3.49	3.72	3.71	3.97	3.90	4.17	4.14	4.39	4.24	4.50	4.75
26104.5	3.12	3.31	3.50	3.73	3.72	3.98	3.91	4.18	4.15	4.40	4.25	4.51	4.76
26107.4	3.12	3.32	3.51	3.74	3.73	3.99	3.92	4.19	4.16	4.41	4.26	4.52	4.78
26110.2	3.13	3.32	3.52	3.75	3.74	4.00	3.93	4.20	4.17	4.42	4.27	4.54	4.79
26113.1	3.13	3.33	3.53	3.76	3.75	4.01	3.94	4.21	4.18	4.43	4.28	4.55	4.80
26116.0	3.14	3.34	3.54	3.77	3.76	4.02	3.95	4.22	4.19	4.44	4.29	4.56	4.81
26118.9	3.14	3.35	3.55	3.79	3.77	4.03	3.97	4.23	4.20	4.45	4.30	4.57	4.82
26121.8	3.15	3.35	3.56	3.80	3.78	4.04	3.98	4.24	4.21	4.46	4.31	4.58	4.83
26124.6	3.15	3.36	3.57	3.81	3.79	4.05	3.99	4.26	4.22	4.47	4.32	4.59	4.85
26127.5	3.16	3.37	3.58	3.82	3.81	4.07	4.00	4.27	4.24	4.48	4.34	4.60	4.86
26130.4	3.16	3.38	3.59	3.83	3.82	4.08	4.01	4.28	4.25	4.49	4.35	4.61	4.87
26133.3	3.17	3.39	3.60	3.84	3.83	4.09	4.03	4.29	4.26	4.50	4.36	4.63	4.88
26136.2	3.18	3.40	3.61	3.86	3.84	4.10	4.04	4.30	4.27	4.51	4.37	4.64	4.90
26139.1	3.18	3.40	3.62	3.87	3.85	4.12	4.05	4.32	4.29	4.53	4.39	4.65	4.91
26141.9	3.19	3.41	3.63	3.88	3.87	4.13	4.07	4.33	4.30	4.54	4.40	4.66	4.92
26144.8	3.20	3.42	3.64	3.90	3.88	4.15	4.08	4.34	4.31	4.55	4.41	4.68	4.94
26147.7	3.21	3.43	3.66	3.91	3.89	4.16	4.09	4.36	4.33	4.56	4.42	4.69	4.95
26150.6	3.21	3.44	3.67	3.92	3.91	4.17	4.11	4.37	4.34	4.58	4.44	4.70	4.97
26153.5	3.22	3.45	3.68	3.94	3.92	4.19	4.12	4.39	4.35	4.59	4.45	4.72	4.98
26156.4	3.23	3.46	3.69	3.95	3.94	4.20	4.14	4.40	4.37	4.60	4.47	4.73	5.00
26159.2	3.24	3.48	3.71	3.97	3.95	4.22	4.15	4.42	4.38	4.62	4.48	4.74	5.01
26162.1	3.25	3.49	3.72	3.98	3.97	4.23	4.17	4.43	4.40	4.63	4.50	4.76	5.03
26165.0	3.26	3.50	3.73	4.00	3.98	4.25	4.19	4.45	4.42	4.65	4.51	4.77	5.05
26167.9	3.26	3.50	3.73	4.00	3.98	4.25	4.18	4.44	4.41	4.65	4.51	4.77	5.04
26170.9	3.26	3.50	3.73	4.00	3.98	4.25	4.18	4.44	4.41	4.64	4.51	4.77	5.04
26173.8	3.26	3.50	3.73	4.00	3.98	4.25	4.18	4.44	4.41	4.64	4.51	4.77	5.04
26176.7	3.26	3.50	3.73	4.00	3.98	4.24	4.18	4.44	4.41	4.64	4.50	4.76	5.03
26179.6	3.26	3.50	3.73	4.00	3.98	4.24	4.18	4.44	4.41	4.64	4.50	4.76	5.03
26182.6	3.27	3.51	3.73	4.00	3.98	4.24	4.18	4.44	4.40	4.64	4.50	4.76	5.03
26185.5	3.27	3.51	3.74	4.00	3.98	4.24	4.18	4.43	4.40	4.64	4.50	4.76	5.02

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
26188.4	3.27	3.51	3.74	4.00	3.98	4.24	4.18	4.43	4.40	4.63	4.50	4.76	5.02
26191.4	3.27	3.51	3.74	4.00	3.98	4.24	4.18	4.43	4.40	4.63	4.50	4.75	5.02
26194.3	3.28	3.51	3.74	4.00	3.98	4.24	4.18	4.43	4.40	4.63	4.50	4.75	5.02
26197.2	3.28	3.52	3.74	4.00	3.98	4.24	4.18	4.43	4.40	4.63	4.50	4.75	5.01
26200.1	3.28	3.52	3.74	4.00	3.99	4.24	4.18	4.43	4.40	4.63	4.50	4.75	5.01
26203.1	3.28	3.52	3.75	4.00	3.99	4.24	4.18	4.43	4.40	4.63	4.50	4.75	5.01
26206.0	3.29	3.52	3.75	4.00	3.99	4.24	4.18	4.43	4.40	4.63	4.50	4.75	5.01
26208.9	3.29	3.53	3.75	4.01	3.99	4.24	4.18	4.43	4.40	4.63	4.50	4.75	5.00
26211.9	3.29	3.53	3.75	4.01	3.99	4.24	4.19	4.43	4.40	4.63	4.50	4.75	5.00
26214.8	3.30	3.53	3.76	4.01	4.00	4.25	4.19	4.43	4.40	4.63	4.50	4.74	5.00
26217.7	3.30	3.54	3.76	4.01	4.00	4.25	4.19	4.43	4.40	4.63	4.50	4.74	4.99
26220.6	3.30	3.54	3.76	4.02	4.00	4.25	4.19	4.44	4.41	4.63	4.50	4.74	4.99
26223.6	3.31	3.55	3.77	4.02	4.00	4.25	4.19	4.44	4.41	4.63	4.50	4.74	4.99
26226.5	3.31	3.55	3.77	4.02	4.01	4.26	4.20	4.44	4.41	4.63	4.50	4.74	4.99
26229.4	3.32	3.55	3.77	4.02	4.01	4.26	4.20	4.44	4.41	4.63	4.50	4.74	4.99
26232.4	3.32	3.56	3.78	4.03	4.01	4.26	4.20	4.44	4.41	4.63	4.50	4.74	4.98
26235.3	3.32	3.56	3.78	4.03	4.02	4.27	4.21	4.44	4.42	4.63	4.51	4.75	4.98
26238.2	3.33	3.57	3.79	4.04	4.02	4.27	4.21	4.45	4.42	4.63	4.51	4.75	4.98
26241.1	3.33	3.57	3.79	4.04	4.03	4.27	4.22	4.45	4.42	4.64	4.51	4.75	4.98
26244.1	3.34	3.58	3.80	4.05	4.03	4.28	4.22	4.45	4.43	4.64	4.51	4.75	4.98
26247.0	3.34	3.58	3.80	4.05	4.04	4.28	4.23	4.46	4.43	4.64	4.52	4.75	4.98
26249.9	3.35	3.59	3.81	4.06	4.04	4.29	4.23	4.46	4.43	4.64	4.52	4.75	4.98
26252.9	3.35	3.59	3.81	4.06	4.05	4.29	4.24	4.46	4.44	4.64	4.52	4.75	4.98
26255.8	3.36	3.60	3.82	4.07	4.05	4.30	4.24	4.47	4.44	4.65	4.53	4.76	4.98
26258.7	3.37	3.61	3.83	4.07	4.06	4.30	4.25	4.47	4.45	4.65	4.53	4.76	4.98
26261.6	3.37	3.61	3.83	4.08	4.06	4.31	4.25	4.48	4.45	4.65	4.54	4.76	4.98
26264.6	3.38	3.62	3.84	4.08	4.07	4.32	4.26	4.48	4.46	4.66	4.54	4.76	4.98
26267.5	3.38	3.63	3.85	4.09	4.08	4.32	4.27	4.49	4.46	4.66	4.55	4.77	4.98
26270.4	3.39	3.63	3.86	4.10	4.08	4.33	4.27	4.50	4.47	4.66	4.55	4.77	4.99
26273.4	3.40	3.64	3.86	4.11	4.09	4.34	4.28	4.50	4.48	4.67	4.56	4.77	4.99
26276.3	3.41	3.65	3.87	4.11	4.10	4.35	4.29	4.51	4.48	4.67	4.56	4.78	4.99
26279.2	3.41	3.66	3.88	4.12	4.11	4.35	4.30	4.52	4.49	4.68	4.57	4.78	4.99
26282.1	3.42	3.66	3.89	4.13	4.12	4.36	4.30	4.52	4.50	4.68	4.58	4.78	4.99
26285.1	3.43	3.67	3.90	4.14	4.13	4.37	4.31	4.53	4.51	4.69	4.58	4.79	4.99
26288.0	3.44	3.68	3.91	4.15	4.13	4.38	4.32	4.54	4.52	4.70	4.59	4.79	5.00
26291.0	3.42	3.66	3.89	4.13	4.11	4.36	4.30	4.52	4.49	4.67	4.57	4.77	4.98
26294.0	3.41	3.65	3.87	4.11	4.09	4.33	4.27	4.50	4.47	4.65	4.55	4.75	4.96
26297.0	3.40	3.64	3.85	4.09	4.07	4.31	4.25	4.48	4.45	4.63	4.53	4.73	4.94
26300.0	3.39	3.62	3.84	4.07	4.05	4.29	4.23	4.45	4.43	4.61	4.50	4.71	4.92
26303.0	3.38	3.61	3.82	4.05	4.03	4.27	4.21	4.43	4.41	4.59	4.48	4.69	4.90
26306.0	3.37	3.60	3.80	4.03	4.02	4.25	4.19	4.41	4.39	4.57	4.46	4.67	4.88
26309.0	3.36	3.59	3.79	4.01	4.00	4.23	4.17	4.39	4.37	4.55	4.44	4.65	4.86
26312.0	3.35	3.58	3.78	3.99	3.98	4.21	4.15	4.37	4.35	4.53	4.42	4.63	4.84
26315.0	3.35	3.57	3.76	3.98	3.97	4.19	4.13	4.35	4.33	4.51	4.40	4.61	4.82
26318.0	3.34	3.56	3.75	3.96	3.95	4.17	4.11	4.33	4.31	4.49	4.39	4.59	4.80
26321.0	3.33	3.55	3.74	3.95	3.94	4.15	4.10	4.31	4.29	4.47	4.37	4.57	4.78

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
26324.0	3.33	3.54	3.73	3.93	3.92	4.13	4.08	4.30	4.27	4.45	4.35	4.55	4.76
26327.0	3.32	3.53	3.72	3.92	3.91	4.11	4.06	4.28	4.25	4.44	4.33	4.54	4.74
26330.0	3.31	3.53	3.71	3.91	3.90	4.10	4.05	4.26	4.23	4.42	4.31	4.52	4.72
26333.0	3.31	3.52	3.70	3.90	3.89	4.08	4.03	4.24	4.22	4.40	4.29	4.50	4.70
26336.0	3.30	3.51	3.70	3.88	3.87	4.07	4.02	4.22	4.20	4.38	4.28	4.48	4.69
26339.0	3.30	3.51	3.69	3.87	3.86	4.05	4.01	4.21	4.18	4.37	4.26	4.46	4.67
26342.0	3.30	3.50	3.68	3.86	3.85	4.04	3.99	4.19	4.17	4.35	4.24	4.45	4.65
26345.0	3.29	3.50	3.68	3.85	3.84	4.03	3.98	4.18	4.15	4.33	4.23	4.43	4.63
26348.0	3.29	3.50	3.67	3.85	3.84	4.01	3.97	4.16	4.14	4.31	4.21	4.41	4.61
26351.0	3.29	3.49	3.67	3.84	3.83	4.00	3.96	4.15	4.12	4.30	4.20	4.40	4.60
26354.0	3.29	3.49	3.66	3.83	3.82	3.99	3.95	4.13	4.11	4.28	4.18	4.38	4.58
26357.0	3.29	3.49	3.66	3.82	3.81	3.98	3.94	4.12	4.09	4.27	4.17	4.36	4.56
26360.0	3.29	3.48	3.65	3.82	3.81	3.97	3.93	4.10	4.08	4.25	4.15	4.35	4.55
26363.0	3.29	3.48	3.65	3.81	3.80	3.96	3.92	4.09	4.07	4.24	4.14	4.33	4.53
26366.0	3.29	3.48	3.65	3.81	3.80	3.95	3.91	4.08	4.05	4.22	4.12	4.32	4.51
26369.0	3.29	3.48	3.65	3.80	3.80	3.94	3.91	4.06	4.04	4.21	4.11	4.30	4.50
26372.0	3.29	3.48	3.64	3.80	3.79	3.93	3.90	4.05	4.03	4.19	4.10	4.29	4.48
26375.0	3.29	3.48	3.64	3.80	3.79	3.93	3.89	4.04	4.02	4.18	4.09	4.27	4.46
26378.0	3.30	3.48	3.64	3.80	3.79	3.92	3.89	4.03	4.01	4.17	4.07	4.26	4.44
26381.0	3.30	3.49	3.64	3.79	3.79	3.91	3.88	4.02	4.00	4.15	4.06	4.24	4.43
26384.0	3.30	3.49	3.64	3.79	3.79	3.91	3.88	4.01	3.99	4.14	4.05	4.23	4.41
26387.0	3.31	3.49	3.65	3.79	3.79	3.90	3.88	4.00	3.98	4.13	4.04	4.22	4.39
26390.0	3.31	3.49	3.65	3.79	3.79	3.90	3.87	3.99	3.98	4.12	4.03	4.20	4.38
26393.0	3.32	3.50	3.65	3.79	3.79	3.90	3.87	3.98	3.97	4.10	4.02	4.19	4.36
26396.0	3.33	3.50	3.65	3.80	3.79	3.89	3.87	3.98	3.96	4.09	4.01	4.18	4.35
26399.0	3.34	3.51	3.65	3.80	3.79	3.89	3.87	3.97	3.96	4.08	4.00	4.16	4.33
26402.0	3.35	3.51	3.66	3.80	3.79	3.89	3.87	3.96	3.95	4.07	3.99	4.15	4.32
26404.9	3.33	3.50	3.64	3.78	3.78	3.87	3.85	3.95	3.93	4.05	3.98	4.14	4.30
26407.9	3.32	3.49	3.63	3.77	3.76	3.86	3.84	3.93	3.92	4.04	3.96	4.12	4.29
26410.8	3.31	3.47	3.61	3.75	3.74	3.84	3.82	3.92	3.90	4.03	3.95	4.11	4.27
26413.7	3.30	3.46	3.60	3.73	3.73	3.83	3.80	3.90	3.89	4.01	3.93	4.09	4.26
26416.7	3.29	3.45	3.58	3.72	3.71	3.81	3.79	3.89	3.87	4.00	3.92	4.08	4.24
26419.6	3.28	3.43	3.57	3.70	3.69	3.79	3.77	3.87	3.86	3.98	3.90	4.06	4.23
26422.5	3.26	3.42	3.55	3.68	3.68	3.78	3.75	3.86	3.84	3.96	3.89	4.05	4.21
26425.5	3.25	3.40	3.53	3.66	3.66	3.76	3.74	3.84	3.83	3.95	3.87	4.03	4.20
26428.4	3.24	3.39	3.52	3.65	3.64	3.74	3.72	3.83	3.81	3.93	3.86	4.02	4.18
26431.3	3.23	3.37	3.50	3.63	3.62	3.73	3.70	3.81	3.79	3.92	3.84	4.00	4.17
26434.3	3.21	3.36	3.48	3.61	3.60	3.71	3.68	3.79	3.78	3.90	3.83	3.99	4.15
26437.2	3.20	3.34	3.47	3.59	3.59	3.69	3.67	3.78	3.76	3.89	3.81	3.97	4.14
26440.1	3.18	3.33	3.45	3.57	3.57	3.67	3.65	3.76	3.75	3.87	3.79	3.96	4.12
26443.0	3.17	3.31	3.43	3.56	3.55	3.66	3.63	3.74	3.73	3.86	3.78	3.94	4.11
26446.0	3.16	3.29	3.41	3.54	3.53	3.64	3.61	3.73	3.71	3.84	3.76	3.93	4.09
26448.9	3.14	3.28	3.40	3.52	3.51	3.62	3.60	3.71	3.70	3.82	3.74	3.91	4.08
26451.8	3.13	3.26	3.38	3.50	3.49	3.60	3.58	3.69	3.68	3.81	3.73	3.89	4.06
26454.8	3.11	3.24	3.36	3.48	3.47	3.59	3.56	3.68	3.66	3.79	3.71	3.88	4.05
26457.7	3.09	3.23	3.34	3.46	3.46	3.57	3.54	3.66	3.64	3.77	3.69	3.86	4.03

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
26460.6	3.08	3.21	3.32	3.44	3.44	3.55	3.52	3.64	3.63	3.76	3.68	3.85	4.02
26463.6	3.06	3.19	3.30	3.42	3.42	3.53	3.50	3.63	3.61	3.74	3.66	3.83	4.00
26466.5	3.05	3.17	3.28	3.41	3.40	3.51	3.49	3.61	3.59	3.73	3.64	3.81	3.99
26469.4	3.03	3.15	3.26	3.39	3.38	3.50	3.47	3.59	3.58	3.71	3.63	3.80	3.97
26472.4	3.01	3.14	3.25	3.37	3.36	3.48	3.45	3.57	3.56	3.69	3.61	3.78	3.95
26475.3	3.00	3.12	3.23	3.35	3.34	3.46	3.43	3.56	3.54	3.68	3.59	3.77	3.94
26478.2	2.98	3.10	3.21	3.33	3.32	3.44	3.41	3.54	3.52	3.66	3.58	3.75	3.92
26481.2	2.96	3.08	3.19	3.31	3.30	3.42	3.39	3.52	3.51	3.64	3.56	3.73	3.91
26484.1	2.94	3.06	3.17	3.29	3.28	3.41	3.38	3.51	3.49	3.63	3.54	3.72	3.89
26487.0	2.92	3.04	3.15	3.27	3.26	3.39	3.36	3.49	3.47	3.61	3.52	3.70	3.88
26490.0	2.91	3.02	3.13	3.25	3.25	3.37	3.34	3.47	3.45	3.59	3.51	3.68	3.86
26492.9	2.89	3.00	3.11	3.23	3.23	3.35	3.32	3.45	3.44	3.58	3.49	3.67	3.84
26495.8	2.87	2.98	3.09	3.21	3.21	3.33	3.30	3.44	3.42	3.56	3.47	3.65	3.83
26498.8	2.85	2.96	3.07	3.19	3.19	3.31	3.28	3.42	3.40	3.54	3.46	3.64	3.81
26501.7	2.83	2.95	3.05	3.18	3.17	3.30	3.27	3.40	3.38	3.53	3.44	3.62	3.80
26504.6	2.81	2.93	3.03	3.16	3.15	3.28	3.25	3.38	3.37	3.51	3.42	3.60	3.78
26507.5	2.79	2.91	3.01	3.14	3.13	3.26	3.23	3.37	3.35	3.49	3.40	3.59	3.76
26510.5	2.77	2.89	2.99	3.12	3.11	3.24	3.21	3.35	3.33	3.48	3.39	3.57	3.75
26513.4	2.75	2.87	2.97	3.10	3.09	3.22	3.19	3.33	3.31	3.46	3.37	3.55	3.73
26516.3	2.73	2.85	2.95	3.08	3.07	3.21	3.17	3.31	3.30	3.44	3.35	3.54	3.71
26519.3	2.72	2.83	2.93	3.06	3.05	3.19	3.15	3.30	3.28	3.43	3.34	3.52	3.70
26522.2	2.70	2.81	2.91	3.04	3.03	3.17	3.14	3.28	3.26	3.41	3.32	3.50	3.68
26525.1	2.68	2.79	2.89	3.02	3.02	3.15	3.12	3.26	3.24	3.39	3.30	3.49	3.66
26528.1	2.66	2.77	2.87	3.01	3.00	3.13	3.10	3.25	3.23	3.38	3.29	3.47	3.65
26531.0	2.64	2.75	2.86	2.99	2.98	3.12	3.08	3.23	3.21	3.36	3.27	3.45	3.63
26534.0	2.64	2.75	2.86	2.99	2.98	3.12	3.08	3.23	3.21	3.36	3.27	3.45	3.63
26537.0	2.64	2.75	2.86	2.99	2.98	3.12	3.08	3.23	3.21	3.36	3.27	3.45	3.63
26539.9	2.64	2.75	2.86	2.99	2.98	3.12	3.08	3.23	3.21	3.36	3.27	3.45	3.62
26542.9	2.64	2.75	2.86	2.99	2.98	3.12	3.08	3.23	3.21	3.36	3.27	3.45	3.62
26545.9	2.64	2.75	2.86	2.99	2.98	3.12	3.08	3.23	3.21	3.36	3.27	3.45	3.62
26548.9	2.64	2.75	2.86	2.99	2.98	3.12	3.08	3.23	3.21	3.36	3.27	3.45	3.61
26551.8	2.64	2.75	2.86	2.99	2.98	3.12	3.08	3.23	3.21	3.36	3.27	3.45	3.61
26554.8	2.64	2.75	2.86	2.99	2.98	3.12	3.08	3.23	3.21	3.36	3.27	3.45	3.61
26557.8	2.64	2.75	2.86	2.99	2.98	3.12	3.08	3.23	3.21	3.36	3.27	3.45	3.61
26560.8	2.64	2.75	2.86	2.99	2.98	3.12	3.08	3.23	3.21	3.36	3.27	3.45	3.61
26563.7	2.64	2.75	2.86	2.99	2.98	3.12	3.09	3.23	3.21	3.36	3.27	3.45	3.60
26566.7	2.64	2.75	2.86	2.99	2.98	3.12	3.09	3.23	3.21	3.36	3.27	3.45	3.60
26569.7	2.64	2.75	2.86	2.99	2.98	3.12	3.09	3.23	3.21	3.36	3.27	3.45	3.60
26572.7	2.64	2.75	2.86	2.99	2.98	3.12	3.09	3.23	3.21	3.36	3.27	3.45	3.60
26575.6	2.64	2.75	2.86	2.99	2.98	3.12	3.09	3.23	3.21	3.36	3.27	3.45	3.60
26578.6	2.64	2.75	2.86	2.99	2.99	3.12	3.09	3.23	3.21	3.36	3.27	3.45	3.60
26581.6	2.64	2.75	2.86	2.99	2.99	3.12	3.09	3.23	3.21	3.36	3.27	3.45	3.59
26584.6	2.64	2.75	2.86	2.99	2.99	3.12	3.09	3.23	3.21	3.36	3.27	3.44	3.59
26587.5	2.64	2.75	2.86	3.00	2.99	3.13	3.09	3.23	3.21	3.36	3.27	3.44	3.59
26590.5	2.64	2.75	2.86	3.00	2.99	3.13	3.09	3.23	3.22	3.36	3.27	3.44	3.58
26593.5	2.64	2.75	2.87	3.00	2.99	3.13	3.09	3.23	3.22	3.36	3.27	3.44	3.58

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
26596.5	2.64	2.76	2.87	3.00	2.99	3.13	3.09	3.24	3.22	3.36	3.27	3.44	3.58
26599.5	2.64	2.76	2.87	3.00	2.99	3.13	3.10	3.24	3.22	3.36	3.28	3.44	3.58
26602.4	2.64	2.76	2.87	3.00	2.99	3.13	3.10	3.24	3.22	3.36	3.28	3.44	3.58
26605.4	2.64	2.76	2.87	3.00	2.99	3.13	3.10	3.24	3.22	3.36	3.28	3.45	3.57
26608.4	2.64	2.76	2.87	3.00	3.00	3.13	3.10	3.24	3.22	3.37	3.28	3.45	3.57
26611.4	2.64	2.76	2.87	3.00	3.00	3.13	3.10	3.24	3.22	3.37	3.28	3.45	3.57
26614.3	2.64	2.76	2.87	3.01	3.00	3.14	3.10	3.24	3.22	3.37	3.28	3.45	3.57
26617.3	2.64	2.76	2.87	3.01	3.00	3.14	3.10	3.24	3.22	3.37	3.28	3.45	3.57
26620.3	2.65	2.76	2.87	3.01	3.00	3.14	3.10	3.24	3.23	3.37	3.28	3.45	3.57
26623.3	2.65	2.76	2.88	3.01	3.00	3.14	3.11	3.25	3.23	3.37	3.28	3.45	3.56
26626.2	2.65	2.76	2.88	3.01	3.00	3.14	3.11	3.25	3.23	3.37	3.29	3.45	3.56
26629.2	2.65	2.77	2.88	3.01	3.00	3.14	3.11	3.25	3.23	3.37	3.29	3.45	3.56
26632.2	2.65	2.77	2.88	3.01	3.01	3.15	3.11	3.25	3.23	3.37	3.29	3.45	3.56
26635.2	2.65	2.77	2.88	3.02	3.01	3.15	3.11	3.25	3.23	3.37	3.29	3.45	3.56
26638.1	2.65	2.77	2.88	3.02	3.01	3.15	3.11	3.25	3.24	3.37	3.29	3.45	3.55
26641.1	2.65	2.77	2.88	3.02	3.01	3.15	3.12	3.26	3.24	3.37	3.29	3.45	3.55
26644.1	2.65	2.77	2.89	3.02	3.01	3.15	3.12	3.26	3.24	3.38	3.30	3.45	3.55
26647.1	2.65	2.77	2.89	3.02	3.02	3.15	3.12	3.26	3.24	3.38	3.30	3.45	3.55
26650.0	2.65	2.77	2.89	3.02	3.02	3.16	3.12	3.26	3.24	3.38	3.30	3.45	3.55
26653.0	2.66	2.78	2.89	3.03	3.02	3.16	3.13	3.26	3.25	3.38	3.30	3.45	3.55
26656.0	2.66	2.78	2.89	3.03	3.02	3.16	3.13	3.27	3.25	3.38	3.30	3.45	3.55
26658.9	2.66	2.78	2.89	3.03	3.02	3.16	3.13	3.27	3.25	3.38	3.30	3.45	3.54
26661.9	2.66	2.78	2.89	3.03	3.02	3.16	3.13	3.27	3.25	3.38	3.30	3.45	3.54
26664.8	2.66	2.78	2.89	3.03	3.02	3.16	3.13	3.27	3.25	3.38	3.30	3.45	3.54
26667.8	2.66	2.78	2.89	3.03	3.02	3.16	3.13	3.27	3.25	3.38	3.30	3.45	3.54
26670.7	2.67	2.78	2.89	3.03	3.02	3.16	3.13	3.27	3.25	3.38	3.30	3.45	3.53
26673.6	2.67	2.78	2.89	3.03	3.02	3.16	3.12	3.27	3.25	3.38	3.30	3.45	3.53
26676.6	2.67	2.78	2.89	3.03	3.02	3.16	3.12	3.27	3.25	3.38	3.30	3.45	3.53
26679.5	2.67	2.78	2.89	3.03	3.02	3.16	3.12	3.27	3.25	3.38	3.30	3.45	3.53
26682.5	2.67	2.78	2.89	3.03	3.02	3.16	3.12	3.27	3.25	3.38	3.30	3.44	3.52
26685.4	2.68	2.79	2.89	3.03	3.02	3.16	3.12	3.27	3.25	3.38	3.30	3.44	3.52
26688.4	2.68	2.79	2.89	3.03	3.02	3.16	3.12	3.26	3.25	3.38	3.30	3.44	3.52
26691.3	2.68	2.79	2.90	3.03	3.02	3.16	3.12	3.26	3.25	3.38	3.30	3.44	3.52
26694.2	2.68	2.79	2.90	3.03	3.02	3.16	3.12	3.26	3.25	3.38	3.30	3.44	3.51
26697.2	2.68	2.79	2.90	3.02	3.02	3.16	3.12	3.26	3.25	3.38	3.30	3.44	3.51
26700.1	2.69	2.79	2.90	3.02	3.02	3.16	3.12	3.26	3.25	3.38	3.30	3.44	3.51
26703.1	2.69	2.79	2.90	3.02	3.02	3.16	3.12	3.26	3.25	3.37	3.30	3.44	3.51
26706.0	2.69	2.80	2.90	3.02	3.02	3.16	3.12	3.26	3.25	3.37	3.30	3.44	3.51
26708.9	2.69	2.80	2.90	3.02	3.02	3.15	3.12	3.26	3.25	3.37	3.30	3.44	3.50
26711.9	2.69	2.80	2.90	3.03	3.02	3.15	3.12	3.26	3.24	3.37	3.30	3.43	3.50
26714.8	2.70	2.80	2.90	3.03	3.02	3.15	3.12	3.26	3.24	3.37	3.30	3.43	3.50
26717.8	2.70	2.80	2.90	3.03	3.02	3.15	3.12	3.26	3.24	3.37	3.30	3.43	3.49
26720.7	2.70	2.81	2.90	3.03	3.02	3.15	3.12	3.26	3.24	3.37	3.30	3.43	3.49
26723.6	2.70	2.81	2.91	3.03	3.02	3.15	3.12	3.26	3.24	3.37	3.30	3.43	3.49
26726.6	2.70	2.81	2.91	3.03	3.02	3.16	3.12	3.26	3.24	3.37	3.30	3.43	3.49
26729.5	2.71	2.81	2.91	3.03	3.02	3.16	3.12	3.26	3.24	3.37	3.30	3.43	3.48

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
26732.5	2.71	2.81	2.91	3.03	3.02	3.16	3.12	3.26	3.24	3.37	3.30	3.43	3.48
26735.4	2.71	2.81	2.91	3.03	3.02	3.16	3.12	3.26	3.24	3.37	3.30	3.42	3.48
26738.4	2.71	2.82	2.91	3.03	3.03	3.16	3.12	3.26	3.24	3.37	3.30	3.42	3.48
26741.3	2.71	2.82	2.92	3.03	3.03	3.16	3.12	3.26	3.24	3.37	3.30	3.42	3.47
26744.2	2.71	2.82	2.92	3.03	3.03	3.16	3.12	3.26	3.24	3.37	3.30	3.42	3.47
26747.2	2.72	2.82	2.92	3.03	3.03	3.16	3.12	3.26	3.24	3.37	3.30	3.42	3.47
26750.1	2.72	2.83	2.92	3.04	3.03	3.16	3.12	3.26	3.24	3.37	3.30	3.42	3.47
26753.1	2.72	2.83	2.92	3.04	3.03	3.16	3.13	3.26	3.24	3.36	3.30	3.42	3.47
26756.0	2.72	2.83	2.92	3.04	3.03	3.16	3.13	3.26	3.24	3.36	3.30	3.42	3.47
26758.9	2.71	2.82	2.92	3.03	3.03	3.15	3.12	3.26	3.24	3.36	3.29	3.42	3.46
26761.7	2.71	2.82	2.91	3.03	3.02	3.15	3.12	3.25	3.24	3.36	3.29	3.41	3.46
26764.6	2.70	2.81	2.90	3.02	3.02	3.14	3.11	3.25	3.23	3.35	3.29	3.41	3.46
26767.4	2.69	2.80	2.90	3.01	3.01	3.14	3.11	3.25	3.23	3.35	3.28	3.41	3.45
26770.3	2.68	2.79	2.89	3.01	3.00	3.13	3.10	3.24	3.22	3.35	3.28	3.40	3.45
26773.2	2.67	2.79	2.88	3.00	3.00	3.13	3.10	3.24	3.22	3.34	3.27	3.40	3.45
26776.0	2.67	2.78	2.88	3.00	2.99	3.13	3.09	3.23	3.21	3.34	3.27	3.40	3.44
26778.9	2.66	2.77	2.87	2.99	2.98	3.12	3.09	3.23	3.21	3.34	3.27	3.39	3.44
26781.8	2.65	2.76	2.86	2.98	2.98	3.11	3.08	3.22	3.21	3.33	3.26	3.39	3.44
26784.6	2.64	2.76	2.86	2.98	2.97	3.11	3.08	3.22	3.20	3.33	3.26	3.38	3.43
26787.5	2.63	2.75	2.85	2.97	2.97	3.10	3.07	3.22	3.20	3.32	3.25	3.38	3.43
26790.3	2.63	2.74	2.84	2.97	2.96	3.10	3.06	3.21	3.19	3.32	3.25	3.38	3.43
26793.2	2.62	2.73	2.83	2.96	2.95	3.09	3.06	3.21	3.19	3.32	3.24	3.37	3.42
26796.1	2.61	2.73	2.83	2.95	2.95	3.09	3.05	3.20	3.18	3.31	3.24	3.37	3.42
26798.9	2.60	2.72	2.82	2.95	2.94	3.08	3.05	3.20	3.18	3.31	3.23	3.36	3.41
26801.8	2.59	2.71	2.81	2.94	2.93	3.08	3.04	3.19	3.17	3.30	3.23	3.36	3.41
26804.6	2.59	2.70	2.80	2.93	2.93	3.07	3.04	3.19	3.17	3.30	3.23	3.36	3.41
26807.5	2.58	2.70	2.80	2.93	2.92	3.07	3.03	3.18	3.16	3.29	3.22	3.35	3.40
26810.4	2.57	2.69	2.79	2.92	2.91	3.06	3.02	3.18	3.15	3.29	3.22	3.35	3.40
26813.2	2.56	2.68	2.78	2.91	2.91	3.05	3.02	3.17	3.15	3.28	3.21	3.34	3.39
26816.1	2.55	2.67	2.77	2.90	2.90	3.05	3.01	3.16	3.14	3.28	3.20	3.34	3.39
26818.9	2.54	2.66	2.77	2.90	2.89	3.04	3.00	3.16	3.14	3.27	3.20	3.33	3.39
26821.8	2.53	2.65	2.76	2.89	2.88	3.04	3.00	3.15	3.13	3.27	3.19	3.33	3.38
26824.7	2.53	2.65	2.75	2.88	2.88	3.03	2.99	3.15	3.13	3.26	3.19	3.32	3.38
26827.5	2.52	2.64	2.74	2.88	2.87	3.02	2.99	3.14	3.12	3.26	3.18	3.32	3.37
26830.4	2.51	2.63	2.73	2.87	2.86	3.02	2.98	3.14	3.12	3.25	3.18	3.31	3.37
26833.3	2.50	2.62	2.73	2.86	2.86	3.01	2.97	3.13	3.11	3.25	3.17	3.31	3.37
26836.1	2.49	2.61	2.72	2.86	2.85	3.00	2.97	3.12	3.10	3.24	3.16	3.30	3.36
26839.0	2.48	2.60	2.71	2.85	2.84	3.00	2.96	3.12	3.10	3.23	3.16	3.30	3.36
26841.8	2.47	2.60	2.70	2.84	2.83	2.99	2.95	3.11	3.09	3.23	3.15	3.29	3.35
26844.7	2.46	2.59	2.69	2.83	2.83	2.99	2.95	3.11	3.09	3.22	3.15	3.29	3.35
26847.6	2.46	2.58	2.69	2.83	2.82	2.98	2.94	3.10	3.08	3.22	3.14	3.28	3.34
26850.4	2.45	2.57	2.68	2.82	2.81	2.97	2.93	3.09	3.07	3.21	3.13	3.28	3.34
26853.3	2.44	2.56	2.67	2.81	2.80	2.97	2.93	3.09	3.07	3.21	3.13	3.27	3.34
26856.1	2.43	2.55	2.66	2.80	2.80	2.96	2.92	3.08	3.06	3.20	3.12	3.27	3.33
26859.0	2.42	2.54	2.65	2.80	2.79	2.95	2.91	3.08	3.05	3.20	3.12	3.26	3.33
26861.8	2.42	2.54	2.65	2.79	2.78	2.95	2.91	3.07	3.05	3.19	3.11	3.26	3.32

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
26864.7	2.41	2.53	2.64	2.79	2.78	2.94	2.90	3.07	3.05	3.19	3.11	3.26	3.32
26867.5	2.40	2.53	2.64	2.78	2.78	2.94	2.90	3.07	3.05	3.19	3.11	3.25	3.32
26870.4	2.40	2.52	2.63	2.78	2.77	2.94	2.90	3.07	3.04	3.19	3.11	3.25	3.31
26873.2	2.39	2.52	2.63	2.78	2.77	2.93	2.89	3.06	3.04	3.18	3.10	3.25	3.31
26876.1	2.39	2.51	2.62	2.77	2.76	2.93	2.89	3.06	3.04	3.18	3.10	3.24	3.31
26878.9	2.38	2.51	2.62	2.77	2.76	2.93	2.89	3.06	3.04	3.18	3.10	3.24	3.30
26881.8	2.38	2.50	2.61	2.76	2.76	2.92	2.88	3.06	3.03	3.17	3.10	3.24	3.30
26884.6	2.37	2.49	2.61	2.76	2.75	2.92	2.88	3.05	3.03	3.17	3.09	3.23	3.30
26887.5	2.37	2.49	2.60	2.76	2.75	2.92	2.87	3.05	3.03	3.17	3.09	3.23	3.30
26890.3	2.36	2.48	2.60	2.75	2.74	2.91	2.87	3.05	3.03	3.16	3.09	3.22	3.30
26893.2	2.35	2.48	2.59	2.75	2.74	2.91	2.87	3.04	3.02	3.16	3.08	3.22	3.30
26896.0	2.35	2.47	2.59	2.74	2.74	2.91	2.86	3.04	3.02	3.16	3.08	3.22	3.31
26898.8	2.34	2.47	2.59	2.74	2.73	2.90	2.86	3.04	3.02	3.15	3.08	3.22	3.31
26901.7	2.34	2.46	2.58	2.74	2.73	2.90	2.86	3.04	3.01	3.15	3.07	3.21	3.31
26904.5	2.33	2.46	2.58	2.73	2.72	2.90	2.85	3.03	3.01	3.15	3.07	3.21	3.32
26907.4	2.33	2.45	2.57	2.73	2.72	2.89	2.85	3.03	3.01	3.14	3.07	3.21	3.33
26910.2	2.32	2.45	2.57	2.72	2.72	2.89	2.85	3.03	3.01	3.14	3.06	3.21	3.35
26913.1	2.32	2.44	2.56	2.72	2.71	2.89	2.85	3.02	3.00	3.14	3.06	3.21	3.36
26915.9	2.31	2.44	2.56	2.72	2.71	2.89	2.84	3.02	3.00	3.13	3.06	3.21	3.37
26918.8	2.31	2.43	2.55	2.71	2.70	2.88	2.84	3.02	3.00	3.13	3.05	3.20	3.37
26921.6	2.30	2.43	2.55	2.71	2.70	2.88	2.84	3.01	2.99	3.13	3.05	3.20	3.38
26924.5	2.30	2.42	2.55	2.71	2.70	2.88	2.83	3.01	2.99	3.12	3.05	3.20	3.40
26927.3	2.30	2.42	2.54	2.70	2.69	2.88	2.83	3.01	2.99	3.12	3.04	3.21	3.41
26930.2	2.33	2.41	2.54	2.70	2.69	2.87	2.83	3.00	2.98	3.12	3.04	3.21	3.43
26933.0	2.37	2.41	2.53	2.70	2.69	2.87	2.82	3.00	2.98	3.12	3.04	3.21	3.43
26933.0	2.37	2.41	2.53	2.70	2.69	2.87	2.82	3.00	2.98	3.12	3.04	3.21	3.43
26951.0	3.80	3.80	4.09	4.49	4.49	4.49	4.49	4.49	4.49	5.01	4.49	5.42	5.47
26969.0	2.78	2.91	3.05	3.23	3.22	3.43	3.37	3.58	3.56	3.77	3.64	3.90	4.24
26969.0	2.78	2.91	3.05	3.23	3.22	3.43	3.37	3.58	3.56	3.77	3.64	3.90	4.24
26971.8	2.78	2.92	3.05	3.23	3.22	3.43	3.37	3.58	3.55	3.77	3.64	3.90	4.24
26974.6	2.78	2.92	3.06	3.23	3.22	3.42	3.37	3.57	3.55	3.76	3.63	3.90	4.24
26977.5	2.78	2.92	3.06	3.23	3.22	3.42	3.37	3.57	3.54	3.76	3.63	3.90	4.24
26980.3	2.79	2.92	3.06	3.23	3.22	3.41	3.37	3.57	3.54	3.76	3.62	3.89	4.24
26983.1	2.79	2.93	3.06	3.23	3.22	3.41	3.37	3.56	3.54	3.76	3.62	3.89	4.24
26985.9	2.79	2.93	3.07	3.23	3.22	3.41	3.36	3.56	3.53	3.75	3.62	3.89	4.24
26988.7	2.80	2.94	3.07	3.23	3.22	3.40	3.36	3.55	3.53	3.75	3.61	3.89	4.24
26991.5	2.80	2.94	3.07	3.23	3.22	3.40	3.36	3.55	3.53	3.75	3.61	3.88	4.23
26994.4	2.81	2.94	3.07	3.23	3.22	3.40	3.35	3.55	3.52	3.74	3.61	3.88	4.23
26997.2	2.81	2.94	3.07	3.23	3.22	3.39	3.35	3.54	3.52	3.74	3.60	3.88	4.22
27000.0	2.82	2.95	3.07	3.23	3.22	3.39	3.35	3.54	3.51	3.74	3.60	3.87	4.22
27002.8	2.82	2.95	3.08	3.23	3.22	3.39	3.34	3.53	3.51	3.73	3.59	3.87	4.21
27005.6	2.82	2.95	3.08	3.22	3.22	3.38	3.34	3.53	3.51	3.73	3.59	3.86	4.21
27008.5	2.83	2.96	3.08	3.22	3.21	3.38	3.34	3.53	3.50	3.72	3.58	3.86	4.21
27011.3	2.83	2.96	3.08	3.22	3.21	3.38	3.33	3.52	3.50	3.72	3.58	3.85	4.20
27014.1	2.84	2.96	3.08	3.22	3.21	3.37	3.33	3.52	3.49	3.71	3.57	3.85	4.20
27016.9	2.84	2.97	3.08	3.22	3.21	3.37	3.33	3.51	3.49	3.71	3.57	3.84	4.19

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
27019.7	2.85	2.97	3.08	3.21	3.21	3.36	3.32	3.51	3.48	3.70	3.57	3.84	4.19
27022.5	2.86	2.97	3.08	3.21	3.20	3.36	3.32	3.51	3.48	3.70	3.56	3.84	4.18
27025.4	2.86	2.97	3.08	3.21	3.20	3.36	3.32	3.50	3.48	3.70	3.56	3.83	4.18
27028.2	2.87	2.98	3.08	3.21	3.20	3.35	3.31	3.50	3.47	3.69	3.55	3.83	4.18
27031.0	2.87	2.98	3.08	3.20	3.19	3.35	3.31	3.49	3.47	3.69	3.55	3.82	4.17
27033.9	2.88	2.98	3.08	3.21	3.20	3.36	3.32	3.50	3.48	3.70	3.56	3.83	4.17
27036.7	2.89	2.99	3.09	3.22	3.21	3.37	3.33	3.51	3.48	3.70	3.57	3.83	4.18
27039.6	2.89	3.00	3.10	3.23	3.22	3.37	3.33	3.52	3.49	3.71	3.57	3.84	4.19
27042.5	2.90	3.01	3.11	3.24	3.23	3.38	3.34	3.53	3.50	3.72	3.58	3.85	4.19
27045.3	2.90	3.02	3.12	3.25	3.24	3.39	3.35	3.54	3.51	3.73	3.59	3.86	4.20
27048.2	2.91	3.02	3.13	3.25	3.25	3.40	3.36	3.54	3.52	3.74	3.60	3.87	4.20
27051.1	2.91	3.03	3.13	3.26	3.26	3.41	3.37	3.55	3.53	3.74	3.61	3.87	4.21
27053.9	2.92	3.04	3.14	3.27	3.26	3.42	3.38	3.56	3.54	3.75	3.62	3.87	4.21
27056.8	2.93	3.05	3.15	3.28	3.27	3.43	3.39	3.57	3.55	3.75	3.62	3.88	4.21
27059.7	2.93	3.06	3.16	3.29	3.28	3.44	3.40	3.58	3.56	3.76	3.63	3.89	4.22
27062.6	2.94	3.06	3.17	3.30	3.29	3.45	3.41	3.59	3.57	3.77	3.64	3.90	4.23
27065.4	2.94	3.07	3.18	3.31	3.30	3.46	3.42	3.60	3.57	3.78	3.65	3.91	4.24
27068.3	2.95	3.08	3.19	3.32	3.31	3.47	3.43	3.61	3.59	3.79	3.66	3.92	4.24
27071.2	2.95	3.09	3.20	3.33	3.32	3.48	3.44	3.62	3.60	3.80	3.67	3.92	4.25
27074.0	2.96	3.10	3.21	3.34	3.33	3.49	3.45	3.63	3.61	3.81	3.69	3.93	4.26
27076.9	2.96	3.10	3.22	3.35	3.34	3.50	3.46	3.64	3.62	3.82	3.70	3.94	4.27
27079.8	2.97	3.11	3.22	3.36	3.35	3.51	3.47	3.65	3.63	3.83	3.71	3.95	4.27
27082.6	2.98	3.12	3.23	3.37	3.36	3.52	3.48	3.66	3.64	3.84	3.72	3.96	4.28
27085.5	2.98	3.13	3.24	3.38	3.37	3.53	3.49	3.67	3.65	3.85	3.73	3.97	4.29
27088.4	2.99	3.13	3.25	3.39	3.38	3.54	3.50	3.68	3.66	3.86	3.74	3.98	4.31
27091.2	2.99	3.14	3.26	3.40	3.39	3.55	3.51	3.70	3.67	3.88	3.75	4.00	4.32
27094.1	3.00	3.15	3.27	3.41	3.40	3.56	3.52	3.71	3.68	3.89	3.76	4.01	4.33
27097.0	3.00	3.16	3.28	3.42	3.41	3.57	3.53	3.72	3.69	3.90	3.77	4.02	4.34
27099.8	3.01	3.17	3.29	3.43	3.42	3.58	3.54	3.73	3.70	3.90	3.78	4.02	4.34
27102.7	3.02	3.17	3.30	3.44	3.43	3.59	3.55	3.74	3.71	3.91	3.79	4.03	4.35
27105.6	3.02	3.18	3.31	3.45	3.45	3.61	3.56	3.75	3.72	3.92	3.80	4.04	4.37
27108.4	3.03	3.19	3.33	3.47	3.46	3.62	3.58	3.76	3.74	3.94	3.81	4.05	4.38
27111.3	3.03	3.20	3.34	3.48	3.47	3.63	3.59	3.77	3.75	3.95	3.83	4.07	4.39
27114.2	3.04	3.21	3.35	3.49	3.48	3.64	3.60	3.78	3.76	3.96	3.84	4.08	4.40
27117.1	3.04	3.22	3.36	3.50	3.49	3.65	3.61	3.80	3.77	3.97	3.85	4.09	4.41
27119.9	3.05	3.22	3.37	3.51	3.50	3.66	3.62	3.81	3.78	3.98	3.86	4.10	4.42
27122.8	3.05	3.23	3.38	3.53	3.52	3.68	3.64	3.82	3.80	4.00	3.87	4.11	4.43
27125.7	3.06	3.24	3.39	3.54	3.53	3.69	3.65	3.83	3.81	4.01	3.89	4.13	4.44
27128.5	3.06	3.25	3.40	3.55	3.54	3.70	3.66	3.85	3.82	4.03	3.90	4.14	4.46
27131.4	3.07	3.26	3.41	3.56	3.55	3.72	3.68	3.86	3.84	4.04	3.92	4.16	4.47
27134.3	3.07	3.27	3.42	3.58	3.57	3.73	3.69	3.88	3.85	4.05	3.93	4.17	4.49
27137.1	3.08	3.27	3.43	3.59	3.58	3.75	3.70	3.89	3.87	4.07	3.95	4.19	4.50
27140.0	3.08	3.28	3.44	3.60	3.59	3.76	3.72	3.91	3.88	4.08	3.96	4.20	4.52
27142.9	3.08	3.28	3.44	3.60	3.59	3.76	3.72	3.91	3.88	4.09	3.96	4.21	4.52
27145.8	3.08	3.28	3.44	3.60	3.59	3.76	3.72	3.91	3.88	4.09	3.96	4.21	4.52
27148.8	3.07	3.27	3.44	3.60	3.59	3.76	3.72	3.91	3.89	4.09	3.97	4.21	4.53

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
27151.7	3.07	3.27	3.43	3.60	3.59	3.76	3.72	3.91	3.89	4.09	3.97	4.21	4.53
27154.6	3.07	3.27	3.43	3.60	3.59	3.77	3.72	3.92	3.89	4.10	3.97	4.22	4.54
27157.5	3.07	3.26	3.43	3.60	3.59	3.77	3.72	3.92	3.90	4.10	3.98	4.22	4.54
27160.4	3.06	3.26	3.43	3.60	3.58	3.77	3.72	3.93	3.90	4.11	3.98	4.23	4.55
27163.4	3.06	3.26	3.42	3.59	3.58	3.77	3.72	3.93	3.91	4.12	3.99	4.24	4.55
27166.3	3.06	3.26	3.42	3.59	3.58	3.77	3.72	3.93	3.91	4.12	3.99	4.24	4.56
27169.2	3.06	3.25	3.42	3.59	3.58	3.78	3.73	3.94	3.91	4.12	3.99	4.25	4.56
27172.1	3.05	3.25	3.42	3.59	3.58	3.78	3.73	3.94	3.91	4.13	4.00	4.25	4.57
27175.1	3.05	3.25	3.41	3.59	3.58	3.78	3.73	3.95	3.92	4.14	4.00	4.26	4.58
27178.0	3.05	3.25	3.41	3.59	3.58	3.78	3.73	3.95	3.92	4.15	4.01	4.27	4.59
27180.9	3.05	3.24	3.41	3.59	3.58	3.78	3.73	3.95	3.93	4.16	4.02	4.28	4.60
27183.8	3.04	3.24	3.41	3.59	3.58	3.78	3.73	3.96	3.93	4.16	4.02	4.29	4.61
27186.7	3.04	3.24	3.41	3.59	3.58	3.79	3.73	3.96	3.93	4.17	4.02	4.30	4.62
27189.7	3.04	3.24	3.41	3.59	3.58	3.79	3.74	3.96	3.93	4.17	4.03	4.30	4.63
27192.6	3.03	3.24	3.41	3.59	3.58	3.79	3.74	3.97	3.94	4.18	4.03	4.31	4.63
27195.5	3.03	3.23	3.41	3.60	3.58	3.79	3.74	3.97	3.94	4.18	4.04	4.31	4.64
27198.4	3.03	3.23	3.40	3.60	3.58	3.80	3.74	3.98	3.95	4.19	4.04	4.32	4.65
27201.3	3.03	3.23	3.40	3.60	3.59	3.80	3.75	3.98	3.95	4.19	4.05	4.32	4.65
27204.3	3.02	3.23	3.40	3.60	3.59	3.80	3.75	3.98	3.95	4.20	4.05	4.33	4.65
27207.2	3.02	3.23	3.40	3.60	3.59	3.81	3.75	3.99	3.96	4.20	4.06	4.33	4.66
27210.1	3.02	3.22	3.40	3.60	3.59	3.81	3.75	3.99	3.96	4.21	4.06	4.34	4.66
27213.0	3.02	3.22	3.40	3.61	3.59	3.81	3.76	4.00	3.97	4.21	4.07	4.34	4.67
27215.9	3.02	3.22	3.40	3.61	3.60	3.82	3.76	4.00	3.97	4.22	4.07	4.35	4.68
27218.9	3.01	3.22	3.40	3.61	3.60	3.82	3.77	4.01	3.98	4.22	4.08	4.36	4.68
27221.8	3.01	3.22	3.40	3.61	3.60	3.83	3.77	4.01	3.98	4.23	4.08	4.36	4.69
27224.7	3.01	3.22	3.40	3.62	3.60	3.83	3.77	4.02	3.99	4.24	4.09	4.37	4.70
27227.6	3.01	3.21	3.41	3.62	3.61	3.83	3.78	4.03	3.99	4.24	4.09	4.38	4.71
27230.6	3.01	3.21	3.41	3.63	3.61	3.84	3.78	4.03	4.00	4.25	4.10	4.39	4.72
27233.5	3.00	3.21	3.41	3.63	3.62	3.84	3.79	4.04	4.01	4.26	4.11	4.39	4.73
27236.4	3.00	3.21	3.41	3.63	3.62	3.85	3.79	4.05	4.01	4.26	4.12	4.40	4.74
27239.3	3.00	3.21	3.41	3.64	3.62	3.86	3.80	4.05	4.02	4.27	4.12	4.41	4.74
27242.2	3.00	3.21	3.42	3.64	3.63	3.86	3.80	4.06	4.03	4.28	4.13	4.41	4.75
27245.2	3.00	3.21	3.42	3.65	3.63	3.87	3.81	4.07	4.03	4.29	4.14	4.42	4.76
27248.1	3.00	3.21	3.42	3.65	3.64	3.88	3.82	4.07	4.04	4.29	4.15	4.43	4.77
27251.0	3.00	3.21	3.42	3.66	3.64	3.88	3.82	4.08	4.05	4.30	4.15	4.44	4.78
27253.9	2.99	3.21	3.42	3.66	3.64	3.88	3.82	4.08	4.05	4.30	4.15	4.44	4.78
27256.9	2.99	3.21	3.42	3.65	3.64	3.88	3.82	4.08	4.05	4.30	4.15	4.44	4.78
27259.8	2.99	3.21	3.42	3.65	3.64	3.88	3.82	4.08	4.05	4.30	4.15	4.44	4.78
27262.8	2.99	3.21	3.43	3.65	3.64	3.88	3.82	4.08	4.05	4.30	4.15	4.44	4.78
27265.7	2.99	3.21	3.43	3.65	3.64	3.88	3.82	4.08	4.05	4.31	4.15	4.44	4.78
27268.7	2.99	3.22	3.43	3.65	3.64	3.88	3.82	4.08	4.05	4.31	4.16	4.44	4.78
27271.6	2.99	3.22	3.43	3.65	3.64	3.88	3.81	4.08	4.05	4.31	4.16	4.44	4.78
27274.6	2.99	3.22	3.43	3.65	3.63	3.88	3.81	4.08	4.05	4.31	4.16	4.44	4.77
27277.5	2.99	3.22	3.43	3.65	3.63	3.88	3.81	4.08	4.05	4.31	4.16	4.44	4.77
27280.5	2.99	3.22	3.43	3.65	3.63	3.87	3.81	4.08	4.05	4.31	4.16	4.44	4.77
27283.4	2.99	3.22	3.42	3.65	3.63	3.87	3.81	4.08	4.05	4.31	4.16	4.44	4.77

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
27286.4	2.99	3.22	3.42	3.64	3.63	3.87	3.81	4.09	4.05	4.31	4.16	4.44	4.77
27289.3	2.99	3.22	3.42	3.64	3.63	3.87	3.81	4.09	4.05	4.31	4.16	4.44	4.77
27292.3	2.99	3.22	3.42	3.64	3.63	3.87	3.81	4.09	4.05	4.31	4.16	4.44	4.77
27295.2	2.99	3.22	3.42	3.64	3.63	3.87	3.81	4.09	4.05	4.31	4.16	4.44	4.77
27298.2	3.00	3.22	3.42	3.64	3.63	3.87	3.81	4.09	4.05	4.31	4.16	4.44	4.76
27301.1	3.00	3.22	3.42	3.64	3.63	3.87	3.81	4.09	4.05	4.31	4.16	4.44	4.76
27304.1	3.00	3.22	3.42	3.64	3.63	3.87	3.81	4.09	4.05	4.30	4.16	4.44	4.75
27307.0	3.00	3.22	3.42	3.64	3.63	3.88	3.81	4.09	4.05	4.30	4.16	4.44	4.74
27309.9	3.00	3.22	3.42	3.64	3.63	3.88	3.81	4.09	4.05	4.30	4.16	4.43	4.74
27312.9	3.00	3.22	3.42	3.64	3.63	3.88	3.81	4.09	4.05	4.30	4.16	4.43	4.73
27315.8	3.00	3.22	3.42	3.64	3.63	3.88	3.81	4.09	4.05	4.30	4.16	4.43	4.72
27318.8	3.00	3.22	3.42	3.64	3.63	3.88	3.81	4.09	4.05	4.30	4.16	4.43	4.72
27321.7	3.01	3.22	3.42	3.64	3.63	3.88	3.81	4.09	4.05	4.30	4.16	4.43	4.71
27324.7	3.01	3.22	3.42	3.64	3.63	3.88	3.81	4.09	4.05	4.30	4.15	4.42	4.70
27327.6	3.01	3.22	3.42	3.64	3.63	3.88	3.81	4.09	4.05	4.30	4.15	4.42	4.69
27330.6	3.01	3.22	3.41	3.64	3.63	3.88	3.81	4.08	4.05	4.29	4.15	4.42	4.68
27333.5	3.01	3.22	3.41	3.64	3.63	3.88	3.81	4.08	4.05	4.29	4.15	4.41	4.68
27336.5	3.01	3.22	3.41	3.64	3.63	3.88	3.81	4.08	4.05	4.29	4.15	4.41	4.67
27339.4	3.01	3.22	3.41	3.64	3.63	3.88	3.81	4.08	4.05	4.29	4.15	4.41	4.66
27342.4	3.01	3.22	3.41	3.64	3.63	3.88	3.81	4.08	4.05	4.29	4.15	4.40	4.66
27345.3	3.01	3.22	3.41	3.64	3.63	3.88	3.81	4.08	4.04	4.29	4.15	4.40	4.65
27348.3	3.01	3.22	3.41	3.64	3.63	3.88	3.81	4.07	4.04	4.29	4.14	4.39	4.64
27351.2	3.01	3.22	3.41	3.64	3.63	3.88	3.81	4.07	4.04	4.28	4.14	4.39	4.63
27354.2	3.01	3.22	3.42	3.64	3.63	3.88	3.81	4.07	4.04	4.28	4.14	4.38	4.62
27357.1	3.01	3.22	3.42	3.64	3.63	3.87	3.82	4.07	4.04	4.28	4.14	4.37	4.62
27360.1	3.01	3.22	3.42	3.64	3.63	3.87	3.81	4.06	4.03	4.27	4.13	4.37	4.61
27363.0	3.01	3.22	3.42	3.64	3.63	3.87	3.81	4.06	4.03	4.26	4.13	4.36	4.60
27365.9	3.01	3.21	3.41	3.64	3.62	3.86	3.80	4.05	4.02	4.25	4.11	4.34	4.59
27368.9	3.01	3.21	3.41	3.63	3.62	3.85	3.79	4.03	4.00	4.23	4.10	4.33	4.58
27371.8	3.00	3.21	3.40	3.62	3.61	3.84	3.78	4.02	3.99	4.22	4.09	4.32	4.57
27374.8	3.00	3.20	3.40	3.61	3.60	3.83	3.78	4.01	3.98	4.21	4.07	4.31	4.56
27377.7	3.00	3.20	3.39	3.61	3.59	3.82	3.77	4.00	3.97	4.19	4.06	4.29	4.55
27380.7	3.00	3.20	3.39	3.60	3.59	3.81	3.76	3.98	3.95	4.18	4.04	4.28	4.54
27383.6	3.00	3.19	3.38	3.59	3.58	3.80	3.75	3.97	3.94	4.16	4.03	4.27	4.53
27386.6	2.99	3.19	3.38	3.59	3.57	3.79	3.74	3.96	3.93	4.15	4.02	4.25	4.52
27389.5	2.99	3.19	3.37	3.58	3.57	3.78	3.73	3.95	3.92	4.13	4.00	4.24	4.51
27392.5	2.99	3.18	3.36	3.57	3.56	3.77	3.72	3.93	3.91	4.12	3.99	4.23	4.49
27395.4	2.99	3.18	3.36	3.57	3.55	3.76	3.71	3.92	3.89	4.11	3.98	4.21	4.48
27398.4	2.98	3.18	3.35	3.56	3.55	3.75	3.70	3.91	3.88	4.09	3.97	4.20	4.47
27401.3	2.98	3.17	3.35	3.55	3.54	3.74	3.70	3.90	3.87	4.08	3.95	4.19	4.46
27404.3	2.98	3.17	3.34	3.54	3.53	3.73	3.69	3.89	3.86	4.07	3.94	4.17	4.44
27407.2	2.98	3.17	3.34	3.54	3.53	3.73	3.68	3.88	3.85	4.05	3.93	4.16	4.43
27410.2	2.97	3.16	3.33	3.53	3.52	3.72	3.67	3.86	3.84	4.04	3.92	4.15	4.42
27413.1	2.97	3.16	3.33	3.52	3.51	3.71	3.66	3.85	3.83	4.03	3.91	4.14	4.40
27416.1	2.97	3.16	3.32	3.52	3.51	3.70	3.65	3.84	3.82	4.02	3.89	4.12	4.39
27419.0	2.97	3.15	3.32	3.51	3.50	3.69	3.65	3.83	3.81	4.00	3.88	4.11	4.38

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
27421.9	2.96	3.15	3.31	3.50	3.49	3.68	3.64	3.82	3.80	3.99	3.87	4.10	4.37
27424.9	2.96	3.14	3.31	3.50	3.49	3.68	3.63	3.81	3.79	3.98	3.86	4.09	4.36
27427.8	2.96	3.14	3.30	3.49	3.48	3.67	3.62	3.80	3.78	3.97	3.85	4.08	4.35
27430.8	2.96	3.14	3.30	3.49	3.47	3.66	3.62	3.79	3.77	3.96	3.84	4.07	4.33
27433.7	2.95	3.13	3.30	3.48	3.47	3.65	3.61	3.78	3.76	3.95	3.83	4.06	4.32
27436.7	2.95	3.13	3.29	3.47	3.46	3.64	3.60	3.77	3.75	3.94	3.83	4.05	4.32
27439.6	2.95	3.13	3.29	3.47	3.46	3.64	3.59	3.77	3.75	3.94	3.82	4.04	4.31
27442.6	2.95	3.12	3.28	3.46	3.45	3.63	3.59	3.76	3.74	3.93	3.81	4.04	4.30
27445.5	2.94	3.12	3.28	3.45	3.44	3.62	3.58	3.75	3.73	3.92	3.80	4.03	4.29
27448.5	2.94	3.12	3.27	3.45	3.44	3.62	3.57	3.74	3.72	3.91	3.79	4.02	4.29
27451.4	2.94	3.11	3.27	3.44	3.43	3.61	3.56	3.73	3.71	3.90	3.78	4.01	4.28
27454.4	2.94	3.11	3.26	3.44	3.42	3.60	3.56	3.73	3.70	3.89	3.78	4.00	4.27
27457.3	2.93	3.10	3.26	3.43	3.42	3.59	3.55	3.72	3.70	3.88	3.77	3.99	4.26
27460.3	2.93	3.10	3.25	3.42	3.41	3.59	3.54	3.71	3.69	3.87	3.76	3.98	4.25
27463.2	2.93	3.10	3.25	3.42	3.41	3.58	3.54	3.70	3.68	3.86	3.75	3.97	4.24
27466.2	2.92	3.09	3.24	3.41	3.40	3.57	3.53	3.69	3.67	3.86	3.74	3.96	4.24
27469.1	2.92	3.09	3.24	3.41	3.39	3.57	3.52	3.69	3.67	3.85	3.73	3.96	4.23
27472.1	2.92	3.08	3.23	3.40	3.39	3.56	3.52	3.68	3.66	3.84	3.73	3.95	4.23
27475.0	2.92	3.08	3.23	3.39	3.38	3.55	3.51	3.67	3.65	3.83	3.72	3.94	4.22
27477.9	2.91	3.08	3.22	3.39	3.38	3.54	3.50	3.66	3.64	3.82	3.71	3.93	4.21
27480.7	2.91	3.07	3.22	3.38	3.37	3.53	3.49	3.65	3.63	3.82	3.70	3.92	4.21
27483.6	2.90	3.07	3.21	3.37	3.36	3.52	3.49	3.64	3.62	3.81	3.69	3.92	4.20
27486.5	2.90	3.06	3.20	3.37	3.36	3.52	3.48	3.64	3.61	3.80	3.68	3.91	4.19
27489.3	2.89	3.05	3.20	3.36	3.35	3.51	3.47	3.63	3.61	3.79	3.68	3.90	4.19
27492.2	2.89	3.05	3.19	3.35	3.34	3.50	3.46	3.62	3.60	3.78	3.67	3.89	4.18
27495.1	2.88	3.04	3.19	3.35	3.34	3.49	3.45	3.61	3.59	3.77	3.66	3.88	4.17
27497.9	2.88	3.04	3.18	3.34	3.33	3.48	3.44	3.60	3.58	3.76	3.65	3.87	4.17
27500.8	2.87	3.03	3.17	3.33	3.32	3.47	3.43	3.59	3.57	3.75	3.64	3.86	4.16
27503.7	2.87	3.03	3.17	3.32	3.31	3.46	3.42	3.58	3.56	3.74	3.63	3.85	4.15
27506.6	2.86	3.02	3.16	3.31	3.30	3.45	3.41	3.57	3.55	3.73	3.62	3.84	4.14
27509.4	2.86	3.01	3.15	3.30	3.29	3.44	3.40	3.56	3.54	3.72	3.61	3.84	4.13
27512.3	2.85	3.01	3.15	3.29	3.29	3.42	3.39	3.55	3.53	3.71	3.60	3.83	4.12
27515.2	2.85	3.00	3.14	3.29	3.28	3.41	3.38	3.54	3.52	3.71	3.59	3.82	4.12
27518.0	2.84	3.00	3.13	3.28	3.27	3.40	3.37	3.53	3.51	3.70	3.58	3.81	4.11
27520.9	2.84	2.99	3.13	3.27	3.26	3.39	3.36	3.52	3.50	3.69	3.57	3.80	4.11
27523.8	2.83	2.98	3.12	3.26	3.25	3.38	3.35	3.51	3.49	3.67	3.56	3.79	4.10
27526.6	2.83	2.98	3.11	3.25	3.24	3.37	3.34	3.50	3.47	3.66	3.55	3.78	4.09
27529.5	2.82	2.97	3.10	3.24	3.23	3.36	3.33	3.49	3.46	3.65	3.54	3.77	4.08
27532.4	2.82	2.96	3.10	3.23	3.22	3.35	3.32	3.48	3.45	3.64	3.53	3.76	4.07
27535.2	2.81	2.96	3.09	3.22	3.21	3.34	3.30	3.46	3.44	3.63	3.52	3.75	4.06
27538.1	2.81	2.95	3.08	3.21	3.20	3.33	3.29	3.45	3.43	3.62	3.50	3.74	4.05
27541.0	2.80	2.94	3.07	3.20	3.19	3.31	3.28	3.44	3.42	3.61	3.49	3.72	4.04
27543.8	2.79	2.94	3.06	3.19	3.18	3.30	3.27	3.43	3.41	3.60	3.48	3.71	4.02
27546.7	2.79	2.93	3.05	3.18	3.17	3.29	3.26	3.42	3.39	3.59	3.47	3.70	4.01
27549.6	2.78	2.92	3.05	3.17	3.16	3.28	3.25	3.40	3.38	3.58	3.46	3.69	4.00
27552.4	2.77	2.92	3.04	3.15	3.15	3.27	3.23	3.39	3.37	3.56	3.44	3.68	3.99

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
27555.3	2.77	2.91	3.03	3.14	3.14	3.25	3.22	3.38	3.36	3.55	3.43	3.67	3.97
27558.2	2.76	2.90	3.02	3.13	3.12	3.24	3.21	3.37	3.34	3.54	3.42	3.65	3.96
27561.1	2.76	2.89	3.01	3.12	3.11	3.23	3.20	3.35	3.33	3.53	3.41	3.64	3.95
27563.9	2.75	2.88	3.00	3.11	3.10	3.21	3.18	3.34	3.32	3.51	3.39	3.63	3.93
27566.8	2.74	2.88	2.99	3.10	3.09	3.20	3.17	3.33	3.30	3.50	3.38	3.61	3.92
27569.7	2.74	2.87	2.98	3.08	3.08	3.19	3.16	3.31	3.29	3.49	3.36	3.60	3.90
27572.5	2.73	2.86	2.97	3.07	3.06	3.17	3.14	3.30	3.28	3.47	3.35	3.58	3.89
27575.4	2.72	2.85	2.96	3.06	3.05	3.16	3.13	3.28	3.26	3.46	3.34	3.57	3.87
27578.3	2.71	2.84	2.94	3.04	3.04	3.15	3.12	3.27	3.25	3.44	3.32	3.55	3.85
27581.1	2.71	2.83	2.93	3.03	3.03	3.13	3.10	3.26	3.23	3.43	3.31	3.54	3.84
27584.0	2.70	2.82	2.92	3.02	3.01	3.12	3.09	3.24	3.22	3.41	3.29	3.52	3.82
27586.9	2.70	2.82	2.92	3.02	3.01	3.12	3.09	3.24	3.22	3.41	3.30	3.52	3.82
27589.8	2.69	2.82	2.92	3.02	3.01	3.12	3.09	3.24	3.22	3.42	3.30	3.52	3.82
27592.7	2.69	2.82	2.92	3.02	3.01	3.12	3.09	3.25	3.22	3.42	3.30	3.52	3.82
27595.6	2.69	2.82	2.92	3.02	3.01	3.12	3.09	3.25	3.23	3.42	3.30	3.53	3.82
27598.5	2.69	2.82	2.92	3.02	3.01	3.13	3.09	3.25	3.23	3.42	3.30	3.53	3.82
27601.4	2.69	2.81	2.92	3.02	3.01	3.13	3.09	3.25	3.23	3.42	3.30	3.53	3.82
27604.3	2.68	2.81	2.92	3.02	3.01	3.13	3.10	3.25	3.23	3.43	3.31	3.53	3.83
27607.2	2.68	2.81	2.91	3.02	3.01	3.13	3.10	3.26	3.23	3.43	3.31	3.53	3.83
27610.1	2.68	2.81	2.91	3.02	3.01	3.13	3.10	3.26	3.24	3.43	3.31	3.53	3.82
27613.0	2.68	2.81	2.91	3.02	3.01	3.13	3.10	3.26	3.24	3.43	3.31	3.53	3.82
27615.9	2.68	2.80	2.91	3.02	3.01	3.13	3.10	3.26	3.24	3.43	3.31	3.53	3.81
27618.8	2.67	2.80	2.91	3.02	3.01	3.13	3.10	3.26	3.24	3.43	3.31	3.53	3.82
27621.7	2.67	2.80	2.91	3.02	3.01	3.14	3.10	3.27	3.24	3.43	3.32	3.54	3.82
27624.6	2.67	2.80	2.91	3.02	3.01	3.14	3.10	3.27	3.25	3.43	3.32	3.54	3.82
27627.5	2.67	2.80	2.91	3.02	3.01	3.14	3.10	3.27	3.25	3.44	3.32	3.54	3.82
27630.4	2.67	2.80	2.90	3.02	3.01	3.14	3.10	3.27	3.25	3.44	3.32	3.54	3.82
27633.3	2.67	2.79	2.90	3.02	3.01	3.14	3.10	3.27	3.25	3.44	3.33	3.55	3.82
27636.2	2.66	2.79	2.90	3.01	3.01	3.14	3.10	3.28	3.25	3.45	3.33	3.55	3.82
27639.1	2.66	2.79	2.90	3.01	3.01	3.14	3.10	3.28	3.25	3.45	3.33	3.56	3.82
27642.0	2.66	2.79	2.90	3.01	3.01	3.14	3.10	3.28	3.26	3.45	3.33	3.56	3.83
27644.9	2.66	2.79	2.90	3.01	3.01	3.14	3.10	3.28	3.26	3.45	3.34	3.56	3.83
27647.8	2.66	2.79	2.90	3.01	3.00	3.14	3.10	3.28	3.26	3.46	3.34	3.56	3.83
27650.7	2.66	2.78	2.89	3.01	3.00	3.14	3.10	3.29	3.26	3.46	3.34	3.57	3.83
27653.6	2.65	2.78	2.89	3.01	3.00	3.14	3.10	3.29	3.26	3.46	3.34	3.57	3.83
27656.5	2.65	2.78	2.89	3.01	3.00	3.14	3.10	3.29	3.26	3.46	3.34	3.57	3.84
27659.4	2.65	2.78	2.89	3.01	3.00	3.14	3.10	3.29	3.27	3.47	3.35	3.57	3.83
27662.3	2.65	2.78	2.89	3.01	3.00	3.14	3.10	3.29	3.27	3.47	3.35	3.57	3.83
27665.2	2.65	2.78	2.89	3.01	3.00	3.14	3.10	3.29	3.27	3.47	3.35	3.57	3.83
27668.1	2.65	2.78	2.89	3.00	3.00	3.14	3.10	3.29	3.27	3.47	3.35	3.57	3.83
27671.0	2.65	2.78	2.88	3.00	3.00	3.14	3.10	3.29	3.27	3.47	3.35	3.58	3.83
27673.9	2.65	2.77	2.88	3.00	3.00	3.14	3.10	3.29	3.27	3.47	3.35	3.58	3.83
27676.8	2.64	2.77	2.88	3.00	2.99	3.14	3.10	3.29	3.27	3.47	3.35	3.58	3.83
27679.7	2.64	2.77	2.88	3.00	2.99	3.14	3.10	3.29	3.27	3.47	3.35	3.58	3.83
27682.6	2.64	2.77	2.88	3.00	2.99	3.14	3.10	3.29	3.26	3.47	3.35	3.57	3.83
27685.5	2.64	2.77	2.88	3.00	2.99	3.14	3.10	3.29	3.26	3.47	3.34	3.57	3.82

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
27688.4	2.64	2.77	2.88	3.00	2.99	3.14	3.10	3.29	3.26	3.47	3.34	3.57	3.82
27691.3	2.64	2.77	2.88	3.00	2.99	3.14	3.09	3.29	3.26	3.47	3.34	3.57	3.82
27694.2	2.64	2.77	2.88	2.99	2.99	3.13	3.09	3.28	3.26	3.46	3.34	3.57	3.82
27697.1	2.64	2.77	2.88	2.99	2.99	3.13	3.09	3.28	3.26	3.46	3.34	3.56	3.81
27700.0	2.64	2.77	2.88	2.99	2.98	3.13	3.09	3.28	3.25	3.46	3.33	3.56	3.81
27702.9	2.64	2.77	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.46	3.33	3.56	3.81
27705.8	2.64	2.77	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.46	3.33	3.56	3.81
27708.8	2.64	2.77	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.46	3.33	3.56	3.81
27711.7	2.64	2.77	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.46	3.33	3.56	3.81
27714.6	2.64	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.46	3.33	3.56	3.81
27717.5	2.64	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.46	3.33	3.56	3.81
27720.4	2.64	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.45	3.33	3.56	3.81
27723.4	2.64	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.45	3.33	3.56	3.81
27726.3	2.63	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.45	3.33	3.55	3.81
27729.2	2.63	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.45	3.33	3.56	3.81
27732.1	2.63	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.45	3.33	3.56	3.81
27735.1	2.63	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.45	3.33	3.56	3.81
27738.0	2.63	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.25	3.45	3.33	3.56	3.81
27740.9	2.63	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.26	3.45	3.33	3.56	3.81
27743.8	2.63	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.26	3.45	3.33	3.56	3.81
27746.7	2.63	2.76	2.87	2.99	2.98	3.13	3.09	3.28	3.26	3.45	3.34	3.56	3.81
27749.7	2.63	2.76	2.86	2.99	2.98	3.13	3.09	3.28	3.26	3.45	3.34	3.56	3.81
27752.6	2.63	2.76	2.86	2.99	2.98	3.13	3.09	3.28	3.26	3.46	3.34	3.56	3.81
27755.5	2.63	2.75	2.86	2.99	2.98	3.13	3.09	3.28	3.26	3.46	3.34	3.56	3.82
27758.4	2.63	2.75	2.86	2.99	2.98	3.13	3.09	3.28	3.26	3.46	3.34	3.57	3.82
27761.3	2.63	2.75	2.86	2.98	2.98	3.13	3.09	3.29	3.26	3.46	3.34	3.57	3.82
27764.3	2.63	2.75	2.86	2.98	2.98	3.13	3.09	3.29	3.26	3.46	3.34	3.57	3.82
27767.2	2.63	2.75	2.86	2.98	2.97	3.13	3.09	3.29	3.26	3.46	3.34	3.57	3.82
27770.1	2.63	2.75	2.86	2.98	2.97	3.13	3.09	3.29	3.26	3.47	3.34	3.57	3.83
27773.0	2.62	2.75	2.86	2.98	2.97	3.13	3.09	3.29	3.26	3.47	3.34	3.57	3.83
27775.9	2.62	2.75	2.85	2.98	2.97	3.13	3.09	3.29	3.26	3.47	3.34	3.58	3.83
27778.9	2.62	2.75	2.85	2.98	2.97	3.13	3.09	3.29	3.26	3.47	3.35	3.58	3.83
27781.8	2.62	2.74	2.85	2.98	2.97	3.13	3.09	3.29	3.26	3.47	3.35	3.58	3.84
27784.7	2.62	2.74	2.85	2.98	2.97	3.13	3.08	3.29	3.26	3.47	3.35	3.58	3.84
27787.6	2.62	2.74	2.85	2.97	2.97	3.13	3.08	3.29	3.26	3.47	3.35	3.58	3.83
27790.6	2.62	2.74	2.85	2.97	2.96	3.13	3.08	3.29	3.26	3.47	3.34	3.58	3.83
27793.5	2.62	2.74	2.84	2.97	2.96	3.13	3.08	3.29	3.26	3.47	3.34	3.58	3.83
27796.4	2.62	2.74	2.84	2.97	2.96	3.12	3.08	3.29	3.26	3.47	3.34	3.58	3.83
27799.3	2.62	2.74	2.84	2.97	2.96	3.12	3.08	3.28	3.26	3.47	3.34	3.58	3.83
27802.2	2.61	2.73	2.84	2.97	2.96	3.12	3.08	3.28	3.26	3.47	3.34	3.57	3.83
27805.2	2.61	2.73	2.84	2.97	2.96	3.12	3.08	3.28	3.26	3.46	3.34	3.57	3.83
27808.1	2.61	2.73	2.84	2.96	2.95	3.12	3.07	3.28	3.26	3.46	3.34	3.57	3.83
27811.0	2.61	2.73	2.83	2.96	2.95	3.12	3.07	3.28	3.25	3.46	3.34	3.57	3.83
27813.9	2.61	2.73	2.84	2.97	2.96	3.12	3.08	3.29	3.26	3.47	3.35	3.58	3.83
27816.8	2.62	2.74	2.84	2.97	2.96	3.13	3.08	3.29	3.27	3.47	3.35	3.58	3.84
27819.8	2.62	2.74	2.85	2.98	2.97	3.13	3.09	3.30	3.27	3.48	3.36	3.59	3.85

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
27822.7	2.62	2.74	2.85	2.98	2.98	3.14	3.09	3.31	3.28	3.49	3.37	3.59	3.85
27825.6	2.63	2.75	2.86	2.99	2.98	3.14	3.10	3.31	3.29	3.49	3.37	3.60	3.85
27828.6	2.63	2.75	2.86	3.00	2.99	3.15	3.10	3.32	3.29	3.50	3.38	3.61	3.86
27831.5	2.63	2.76	2.87	3.00	2.99	3.16	3.11	3.33	3.30	3.51	3.39	3.61	3.86
27834.4	2.64	2.76	2.87	3.01	3.00	3.16	3.12	3.34	3.31	3.52	3.40	3.62	3.87
27837.3	2.64	2.77	2.88	3.01	3.01	3.17	3.12	3.34	3.32	3.53	3.40	3.63	3.88
27840.3	2.64	2.77	2.89	3.02	3.01	3.18	3.13	3.35	3.32	3.53	3.41	3.64	3.89
27843.2	2.65	2.77	2.89	3.03	3.02	3.19	3.14	3.36	3.33	3.54	3.42	3.65	3.90
27846.1	2.65	2.78	2.90	3.03	3.03	3.19	3.14	3.37	3.34	3.55	3.43	3.66	3.91
27849.0	2.66	2.78	2.90	3.04	3.03	3.20	3.15	3.38	3.35	3.56	3.44	3.67	3.91
27851.9	2.66	2.79	2.91	3.05	3.04	3.21	3.16	3.38	3.36	3.57	3.45	3.67	3.92
27854.9	2.66	2.79	2.91	3.06	3.05	3.22	3.17	3.39	3.36	3.58	3.45	3.68	3.93
27857.8	2.67	2.80	2.92	3.06	3.05	3.22	3.17	3.40	3.37	3.59	3.46	3.69	3.94
27860.7	2.67	2.80	2.93	3.07	3.06	3.23	3.18	3.41	3.38	3.60	3.47	3.70	3.95
27863.7	2.67	2.81	2.93	3.08	3.07	3.24	3.19	3.42	3.39	3.60	3.48	3.71	3.96
27866.6	2.68	2.81	2.94	3.08	3.07	3.25	3.20	3.43	3.40	3.61	3.49	3.72	3.97
27869.5	2.68	2.82	2.94	3.09	3.08	3.25	3.20	3.43	3.40	3.62	3.50	3.73	3.97
27872.4	2.69	2.82	2.95	3.10	3.09	3.26	3.21	3.44	3.41	3.63	3.50	3.73	3.98
27875.3	2.69	2.83	2.96	3.11	3.10	3.27	3.22	3.45	3.42	3.64	3.51	3.74	3.99
27878.3	2.69	2.83	2.96	3.11	3.10	3.28	3.23	3.46	3.43	3.65	3.52	3.75	4.00
27881.2	2.70	2.84	2.97	3.12	3.11	3.29	3.24	3.47	3.44	3.66	3.53	3.76	4.01
27884.1	2.70	2.84	2.97	3.13	3.12	3.30	3.25	3.48	3.45	3.66	3.54	3.77	4.01
27887.1	2.71	2.85	2.98	3.14	3.13	3.30	3.25	3.49	3.46	3.67	3.55	3.78	4.02
27890.0	2.71	2.85	2.99	3.15	3.14	3.31	3.26	3.49	3.46	3.68	3.56	3.79	4.03
27892.9	2.72	2.86	2.99	3.15	3.14	3.32	3.27	3.50	3.47	3.69	3.56	3.79	4.03
27895.8	2.72	2.86	3.00	3.16	3.15	3.33	3.28	3.51	3.48	3.69	3.57	3.80	4.04
27898.8	2.72	2.87	3.01	3.17	3.16	3.34	3.29	3.52	3.49	3.70	3.58	3.81	4.05
27901.7	2.73	2.88	3.02	3.18	3.17	3.35	3.30	3.53	3.50	3.71	3.59	3.82	4.05
27904.6	2.73	2.88	3.02	3.19	3.18	3.35	3.31	3.53	3.50	3.72	3.60	3.83	4.06
27907.5	2.74	2.89	3.03	3.20	3.19	3.36	3.32	3.54	3.51	3.73	3.61	3.83	4.07
27910.4	2.74	2.89	3.04	3.21	3.20	3.37	3.33	3.55	3.52	3.74	3.61	3.84	4.07
27913.4	2.75	2.90	3.04	3.22	3.21	3.38	3.34	3.56	3.53	3.74	3.62	3.84	4.07
27916.3	2.75	2.91	3.05	3.23	3.21	3.39	3.35	3.57	3.54	3.75	3.63	3.85	4.08
27919.2	2.76	2.91	3.06	3.23	3.22	3.40	3.36	3.58	3.55	3.76	3.64	3.87	4.09
27922.2	2.76	2.92	3.07	3.24	3.23	3.41	3.37	3.59	3.56	3.77	3.65	3.87	4.10
27925.1	2.77	2.92	3.07	3.25	3.24	3.43	3.38	3.60	3.57	3.78	3.66	3.88	4.11
27928.0	2.77	2.93	3.08	3.26	3.25	3.44	3.39	3.61	3.58	3.79	3.67	3.89	4.11
27930.9	2.77	2.93	3.08	3.27	3.25	3.44	3.39	3.61	3.58	3.79	3.67	3.89	4.11
27933.9	2.77	2.93	3.09	3.27	3.26	3.44	3.39	3.61	3.58	3.79	3.67	3.89	4.10
27936.8	2.78	2.94	3.09	3.27	3.26	3.44	3.40	3.61	3.58	3.78	3.67	3.88	4.10
27939.7	2.78	2.94	3.09	3.27	3.26	3.45	3.40	3.61	3.58	3.79	3.67	3.88	4.10
27942.7	2.78	2.94	3.09	3.27	3.26	3.45	3.40	3.61	3.59	3.79	3.67	3.88	4.10
27945.6	2.78	2.94	3.09	3.27	3.26	3.45	3.40	3.62	3.59	3.79	3.67	3.88	4.09
27948.5	2.78	2.94	3.09	3.27	3.26	3.45	3.40	3.62	3.59	3.78	3.67	3.88	4.09
27951.5	2.78	2.94	3.10	3.27	3.26	3.45	3.41	3.62	3.59	3.78	3.67	3.88	4.08
27954.4	2.78	2.95	3.10	3.27	3.26	3.46	3.41	3.62	3.59	3.78	3.67	3.87	4.08

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
27957.3	2.78	2.95	3.10	3.28	3.26	3.46	3.41	3.62	3.59	3.78	3.67	3.87	4.07
27960.3	2.79	2.95	3.10	3.28	3.27	3.46	3.41	3.62	3.59	3.78	3.67	3.87	4.07
27963.2	2.79	2.95	3.10	3.28	3.27	3.46	3.42	3.62	3.59	3.78	3.67	3.87	4.06
27966.1	2.79	2.95	3.11	3.28	3.27	3.47	3.42	3.62	3.60	3.78	3.67	3.87	4.06
27969.0	2.79	2.95	3.11	3.28	3.27	3.47	3.42	3.62	3.60	3.78	3.68	3.87	4.06
27972.0	2.79	2.95	3.11	3.28	3.27	3.47	3.42	3.62	3.60	3.78	3.68	3.87	4.06
27974.9	2.79	2.96	3.11	3.28	3.27	3.47	3.42	3.62	3.60	3.77	3.67	3.86	4.05
27977.8	2.79	2.96	3.11	3.28	3.27	3.47	3.42	3.62	3.60	3.77	3.67	3.86	4.05
27980.8	2.79	2.96	3.12	3.29	3.28	3.47	3.42	3.62	3.59	3.77	3.67	3.85	4.04
27983.7	2.79	2.96	3.12	3.29	3.28	3.47	3.42	3.62	3.59	3.76	3.67	3.85	4.03
27986.6	2.79	2.96	3.12	3.29	3.28	3.47	3.43	3.61	3.59	3.76	3.66	3.84	4.03
27989.6	2.80	2.96	3.12	3.29	3.28	3.47	3.43	3.61	3.59	3.76	3.66	3.84	4.02
27992.5	2.80	2.96	3.12	3.29	3.28	3.47	3.43	3.61	3.59	3.75	3.66	3.83	4.02
27995.4	2.80	2.97	3.13	3.30	3.28	3.47	3.43	3.61	3.59	3.75	3.65	3.83	4.00
27998.4	2.80	2.97	3.13	3.30	3.29	3.47	3.43	3.61	3.58	3.74	3.65	3.82	4.00
28001.3	2.80	2.97	3.13	3.30	3.29	3.47	3.43	3.61	3.58	3.74	3.65	3.82	4.00
28004.2	2.80	2.97	3.13	3.30	3.29	3.47	3.43	3.61	3.59	3.74	3.65	3.82	3.99
28007.2	2.80	2.97	3.14	3.30	3.29	3.47	3.43	3.61	3.59	3.74	3.65	3.82	3.99
28010.1	2.80	2.97	3.14	3.31	3.30	3.47	3.43	3.61	3.58	3.74	3.65	3.82	3.99
28013.0	2.80	2.97	3.14	3.31	3.30	3.47	3.43	3.61	3.58	3.74	3.65	3.81	3.98
28016.0	2.80	2.98	3.14	3.31	3.30	3.48	3.43	3.61	3.58	3.74	3.65	3.81	3.98
28018.9	2.81	2.98	3.14	3.31	3.30	3.48	3.44	3.61	3.59	3.74	3.65	3.81	3.97
28021.8	2.81	2.98	3.14	3.32	3.31	3.48	3.44	3.61	3.59	3.74	3.65	3.81	3.97
28024.8	2.81	2.98	3.15	3.32	3.31	3.48	3.44	3.61	3.59	3.74	3.65	3.81	3.97
28027.7	2.81	2.98	3.15	3.32	3.31	3.48	3.44	3.61	3.59	3.74	3.66	3.81	3.97
28030.6	2.81	2.98	3.15	3.33	3.32	3.48	3.44	3.61	3.59	3.74	3.66	3.81	3.96
28033.5	2.81	2.98	3.15	3.33	3.32	3.49	3.44	3.62	3.59	3.74	3.66	3.81	3.96
28036.5	2.81	2.99	3.15	3.33	3.32	3.49	3.45	3.62	3.60	3.74	3.66	3.81	3.95
28039.4	2.81	2.99	3.16	3.34	3.33	3.49	3.45	3.62	3.60	3.74	3.66	3.81	3.95
28042.3	2.81	2.99	3.16	3.34	3.33	3.49	3.45	3.62	3.60	3.74	3.66	3.81	3.95
28045.3	2.81	2.99	3.16	3.34	3.33	3.49	3.45	3.62	3.60	3.74	3.66	3.81	3.95
28048.2	2.81	2.99	3.16	3.35	3.34	3.50	3.46	3.62	3.60	3.74	3.67	3.81	3.95
28051.1	2.81	2.99	3.16	3.35	3.34	3.50	3.46	3.63	3.61	3.74	3.67	3.81	3.94
28054.1	2.82	2.99	3.16	3.35	3.34	3.50	3.46	3.63	3.61	3.74	3.67	3.81	3.94
28057.0	2.82	2.99	3.17	3.36	3.35	3.50	3.46	3.63	3.61	3.74	3.67	3.80	3.94
28059.9	2.81	2.99	3.16	3.35	3.34	3.50	3.46	3.63	3.60	3.74	3.67	3.80	3.93
28062.9	2.81	2.99	3.16	3.35	3.34	3.49	3.45	3.62	3.60	3.74	3.66	3.80	3.93
28065.8	2.81	2.99	3.16	3.34	3.33	3.49	3.45	3.62	3.60	3.73	3.66	3.79	3.92
28068.8	2.81	2.98	3.16	3.34	3.33	3.48	3.44	3.61	3.59	3.73	3.66	3.79	3.92
28071.8	2.80	2.98	3.15	3.33	3.32	3.48	3.44	3.61	3.59	3.72	3.65	3.78	3.91
28074.7	2.80	2.98	3.15	3.32	3.32	3.47	3.43	3.60	3.58	3.72	3.64	3.77	3.90
28077.7	2.80	2.98	3.15	3.32	3.31	3.47	3.43	3.60	3.58	3.71	3.64	3.77	3.89
28080.6	2.80	2.97	3.14	3.31	3.30	3.46	3.42	3.59	3.57	3.70	3.63	3.76	3.89
28083.6	2.80	2.97	3.14	3.31	3.30	3.46	3.42	3.59	3.57	3.70	3.63	3.76	3.88
28086.5	2.79	2.97	3.14	3.30	3.29	3.45	3.41	3.58	3.56	3.69	3.62	3.75	3.88
28089.4	2.79	2.97	3.13	3.30	3.29	3.45	3.41	3.58	3.56	3.69	3.62	3.75	3.87

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
28092.4	2.79	2.96	3.13	3.29	3.28	3.44	3.40	3.57	3.55	3.68	3.61	3.74	3.86
28095.3	2.79	2.96	3.13	3.28	3.28	3.44	3.40	3.57	3.55	3.68	3.61	3.73	3.85
28098.3	2.78	2.96	3.12	3.28	3.27	3.43	3.39	3.56	3.54	3.67	3.60	3.73	3.85
28101.3	2.78	2.96	3.12	3.27	3.26	3.43	3.39	3.55	3.53	3.66	3.59	3.72	3.84
28104.2	2.78	2.95	3.11	3.27	3.26	3.42	3.38	3.55	3.53	3.65	3.59	3.71	3.83
28107.2	2.77	2.95	3.11	3.26	3.25	3.42	3.38	3.54	3.52	3.65	3.58	3.71	3.83
28110.1	2.77	2.95	3.11	3.26	3.25	3.41	3.37	3.54	3.52	3.64	3.57	3.70	3.82
28113.1	2.77	2.94	3.10	3.25	3.24	3.41	3.37	3.53	3.51	3.64	3.57	3.70	3.82
28116.0	2.77	2.94	3.10	3.24	3.24	3.40	3.36	3.52	3.50	3.63	3.56	3.69	3.81
28118.9	2.76	2.94	3.09	3.24	3.23	3.40	3.36	3.51	3.50	3.62	3.55	3.68	3.80
28121.9	2.76	2.93	3.08	3.23	3.22	3.39	3.35	3.51	3.49	3.61	3.54	3.67	3.79
28124.8	2.76	2.93	3.08	3.23	3.22	3.38	3.35	3.50	3.48	3.60	3.54	3.67	3.79
28127.8	2.76	2.93	3.07	3.22	3.21	3.38	3.34	3.49	3.47	3.60	3.53	3.66	3.78
28130.8	2.75	2.92	3.07	3.22	3.21	3.37	3.33	3.48	3.47	3.59	3.52	3.65	3.77
28133.7	2.75	2.92	3.06	3.21	3.20	3.36	3.33	3.48	3.46	3.58	3.52	3.64	3.77
28136.7	2.75	2.91	3.05	3.21	3.20	3.36	3.32	3.47	3.45	3.58	3.51	3.64	3.76
28139.6	2.75	2.91	3.05	3.20	3.19	3.35	3.31	3.46	3.44	3.57	3.50	3.63	3.75
28142.6	2.74	2.91	3.04	3.19	3.18	3.34	3.31	3.45	3.43	3.56	3.49	3.62	3.74
28145.5	2.74	2.90	3.04	3.19	3.18	3.34	3.30	3.45	3.43	3.55	3.48	3.61	3.74
28148.4	2.74	2.90	3.03	3.18	3.17	3.33	3.30	3.44	3.42	3.55	3.48	3.61	3.73
28151.4	2.73	2.89	3.02	3.18	3.17	3.33	3.29	3.43	3.42	3.54	3.47	3.60	3.73
28154.3	2.73	2.89	3.02	3.17	3.16	3.32	3.29	3.43	3.41	3.53	3.46	3.60	3.72
28157.3	2.72	2.88	3.01	3.17	3.16	3.31	3.28	3.42	3.40	3.52	3.46	3.59	3.72
28160.3	2.72	2.87	3.00	3.16	3.15	3.31	3.28	3.41	3.40	3.52	3.45	3.58	3.71
28163.2	2.72	2.87	3.00	3.16	3.15	3.30	3.27	3.41	3.39	3.51	3.45	3.58	3.71
28166.2	2.71	2.86	2.99	3.15	3.14	3.30	3.27	3.41	3.39	3.51	3.44	3.58	3.70
28169.1	2.71	2.86	2.99	3.15	3.14	3.30	3.26	3.40	3.38	3.51	3.44	3.57	3.70
28172.1	2.70	2.85	2.98	3.14	3.13	3.29	3.26	3.40	3.38	3.50	3.43	3.57	3.70
28175.0	2.70	2.84	2.97	3.14	3.12	3.29	3.25	3.39	3.37	3.50	3.43	3.56	3.69
28178.0	2.70	2.84	2.97	3.13	3.12	3.28	3.25	3.39	3.37	3.49	3.42	3.56	3.69
28180.9	2.69	2.84	2.97	3.13	3.12	3.28	3.24	3.38	3.37	3.49	3.42	3.55	3.68
28183.9	2.69	2.83	2.96	3.12	3.11	3.27	3.24	3.38	3.36	3.48	3.41	3.55	3.68
28186.9	2.69	2.83	2.96	3.12	3.11	3.27	3.24	3.37	3.36	3.48	3.41	3.54	3.67
28189.9	2.68	2.83	2.95	3.12	3.11	3.27	3.23	3.37	3.35	3.47	3.40	3.54	3.66
28192.8	2.68	2.82	2.95	3.11	3.10	3.26	3.23	3.36	3.35	3.47	3.40	3.53	3.66
28195.8	2.68	2.82	2.95	3.11	3.10	3.26	3.22	3.36	3.34	3.46	3.39	3.53	3.65
28198.8	2.67	2.82	2.94	3.11	3.10	3.25	3.22	3.36	3.34	3.46	3.39	3.52	3.65
28201.8	2.67	2.81	2.94	3.10	3.09	3.25	3.21	3.35	3.34	3.45	3.38	3.52	3.64
28204.7	2.66	2.81	2.94	3.10	3.09	3.24	3.21	3.35	3.33	3.45	3.38	3.51	3.64
28207.7	2.66	2.80	2.93	3.09	3.08	3.24	3.20	3.34	3.33	3.44	3.38	3.51	3.63
28210.7	2.66	2.80	2.93	3.09	3.08	3.24	3.20	3.34	3.32	3.44	3.37	3.50	3.62
28213.7	2.65	2.80	2.93	3.08	3.07	3.23	3.20	3.33	3.32	3.43	3.37	3.50	3.62
28216.6	2.65	2.79	2.92	3.08	3.07	3.23	3.19	3.33	3.31	3.43	3.36	3.49	3.61
28219.6	2.64	2.79	2.92	3.08	3.07	3.22	3.19	3.32	3.31	3.42	3.36	3.49	3.61
28222.6	2.64	2.78	2.91	3.07	3.06	3.22	3.18	3.32	3.30	3.42	3.35	3.48	3.60
28225.6	2.64	2.78	2.91	3.07	3.06	3.21	3.18	3.31	3.30	3.41	3.35	3.48	3.60

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
28228.5	2.63	2.78	2.91	3.06	3.05	3.21	3.17	3.31	3.29	3.41	3.34	3.47	3.59
28231.5	2.63	2.77	2.90	3.06	3.05	3.20	3.17	3.31	3.29	3.40	3.34	3.47	3.59
28234.5	2.62	2.77	2.90	3.06	3.05	3.20	3.17	3.30	3.28	3.40	3.33	3.46	3.59
28237.4	2.62	2.77	2.89	3.05	3.04	3.20	3.16	3.30	3.28	3.39	3.33	3.46	3.58
28240.4	2.62	2.76	2.89	3.05	3.04	3.19	3.16	3.29	3.28	3.39	3.32	3.45	3.58
28243.4	2.61	2.76	2.89	3.04	3.03	3.19	3.15	3.29	3.27	3.38	3.32	3.45	3.57
28246.4	2.61	2.75	2.88	3.04	3.03	3.18	3.15	3.28	3.27	3.38	3.31	3.44	3.56
28249.3	2.60	2.75	2.88	3.03	3.02	3.18	3.14	3.28	3.26	3.37	3.31	3.43	3.56
28252.3	2.60	2.75	2.87	3.03	3.02	3.17	3.14	3.27	3.26	3.37	3.30	3.43	3.55
28255.3	2.60	2.74	2.87	3.02	3.01	3.17	3.13	3.27	3.25	3.36	3.30	3.42	3.55
28258.3	2.59	2.74	2.86	3.02	3.01	3.16	3.13	3.26	3.25	3.36	3.29	3.42	3.55
28261.2	2.59	2.73	2.86	3.02	3.01	3.16	3.12	3.26	3.24	3.35	3.29	3.42	3.54
28264.2	2.58	2.73	2.86	3.01	3.00	3.15	3.12	3.25	3.24	3.35	3.28	3.41	3.54
28267.2	2.58	2.72	2.85	3.01	3.00	3.15	3.12	3.25	3.23	3.35	3.28	3.41	3.53
28270.2	2.58	2.72	2.85	3.00	2.99	3.15	3.11	3.25	3.23	3.34	3.28	3.40	3.53
28273.1	2.57	2.72	2.84	3.00	2.99	3.14	3.11	3.24	3.23	3.34	3.27	3.40	3.53
28276.1	2.57	2.71	2.84	2.99	2.98	3.14	3.10	3.24	3.22	3.33	3.27	3.39	3.53
28279.1	2.56	2.71	2.83	2.99	2.98	3.13	3.10	3.23	3.22	3.33	3.26	3.39	3.52
28282.1	2.56	2.70	2.83	2.98	2.97	3.13	3.09	3.23	3.21	3.32	3.26	3.38	3.52
28285.0	2.55	2.70	2.82	2.98	2.97	3.12	3.09	3.22	3.21	3.32	3.25	3.38	3.51
28288.0	2.55	2.69	2.82	2.97	2.96	3.12	3.08	3.22	3.20	3.31	3.25	3.37	3.51
28290.9	2.55	2.70	2.82	2.98	2.97	3.12	3.09	3.22	3.21	3.32	3.25	3.37	3.51
28293.8	2.55	2.70	2.83	2.98	2.97	3.13	3.09	3.22	3.21	3.32	3.26	3.38	3.51
28296.6	2.55	2.70	2.83	2.99	2.98	3.13	3.10	3.23	3.21	3.32	3.26	3.38	3.52
28299.5	2.56	2.70	2.83	2.99	2.98	3.14	3.10	3.24	3.22	3.33	3.26	3.39	3.52
28302.4	2.56	2.71	2.84	3.00	2.99	3.14	3.11	3.24	3.23	3.33	3.27	3.39	3.53
28305.3	2.56	2.71	2.84	3.00	2.99	3.15	3.12	3.25	3.23	3.34	3.27	3.40	3.53
28308.1	2.56	2.71	2.84	3.01	3.00	3.16	3.12	3.25	3.24	3.34	3.28	3.40	3.54
28311.0	2.56	2.72	2.85	3.01	3.00	3.16	3.13	3.26	3.25	3.34	3.28	3.40	3.54
28313.9	2.57	2.72	2.85	3.02	3.01	3.17	3.14	3.27	3.25	3.35	3.29	3.41	3.55
28316.8	2.57	2.72	2.86	3.02	3.01	3.18	3.14	3.28	3.26	3.36	3.30	3.42	3.56
28319.6	2.57	2.72	2.86	3.03	3.02	3.19	3.15	3.29	3.27	3.37	3.31	3.43	3.57
28322.5	2.57	2.73	2.86	3.03	3.02	3.19	3.16	3.29	3.28	3.38	3.32	3.44	3.58
28325.4	2.58	2.73	2.87	3.04	3.03	3.20	3.16	3.30	3.28	3.38	3.32	3.45	3.59
28328.3	2.58	2.73	2.87	3.04	3.03	3.20	3.17	3.30	3.29	3.39	3.33	3.45	3.60
28331.1	2.58	2.74	2.88	3.05	3.04	3.21	3.17	3.31	3.29	3.39	3.33	3.45	3.60
28334.0	2.58	2.74	2.88	3.05	3.04	3.21	3.18	3.31	3.30	3.40	3.34	3.46	3.61
28336.9	2.59	2.75	2.89	3.06	3.05	3.22	3.18	3.32	3.30	3.40	3.34	3.47	3.62
28339.8	2.59	2.75	2.89	3.06	3.05	3.22	3.19	3.32	3.31	3.41	3.35	3.47	3.63
28342.6	2.59	2.75	2.90	3.07	3.06	3.23	3.19	3.33	3.31	3.42	3.35	3.48	3.64
28345.5	2.59	2.76	2.90	3.07	3.06	3.23	3.20	3.33	3.32	3.42	3.36	3.49	3.64
28348.4	2.60	2.76	2.91	3.08	3.07	3.24	3.20	3.34	3.32	3.42	3.36	3.49	3.64
28351.3	2.60	2.77	2.91	3.09	3.07	3.25	3.21	3.34	3.33	3.43	3.37	3.49	3.65
28354.1	2.60	2.77	2.92	3.09	3.08	3.25	3.22	3.35	3.33	3.43	3.37	3.50	3.65
28357.0	2.61	2.77	2.92	3.10	3.09	3.26	3.22	3.35	3.34	3.44	3.38	3.50	3.66
28359.9	2.61	2.78	2.93	3.10	3.09	3.26	3.23	3.36	3.34	3.44	3.38	3.51	3.66

Notes

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Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
28362.8	2.62	2.78	2.94	3.11	3.10	3.27	3.23	3.36	3.35	3.45	3.39	3.51	3.67
28365.6	2.62	2.79	2.94	3.12	3.11	3.28	3.24	3.37	3.36	3.45	3.39	3.51	3.68
28368.5	2.62	2.79	2.95	3.12	3.11	3.28	3.25	3.37	3.36	3.45	3.40	3.52	3.68
28371.4	2.63	2.80	2.95	3.13	3.12	3.29	3.25	3.38	3.37	3.46	3.40	3.52	3.68
28374.3	2.63	2.80	2.96	3.14	3.13	3.29	3.26	3.39	3.37	3.46	3.41	3.53	3.69
28377.1	2.64	2.81	2.97	3.14	3.13	3.30	3.27	3.39	3.38	3.47	3.41	3.53	3.69
28380.0	2.64	2.82	2.97	3.15	3.14	3.31	3.27	3.40	3.38	3.47	3.42	3.54	3.70
28382.9	2.64	2.82	2.98	3.16	3.15	3.31	3.28	3.40	3.39	3.48	3.43	3.54	3.70
28385.8	2.65	2.83	2.99	3.17	3.16	3.32	3.29	3.41	3.40	3.48	3.43	3.54	3.71
28388.6	2.65	2.83	3.00	3.17	3.16	3.33	3.30	3.42	3.40	3.49	3.44	3.55	3.71
28391.5	2.66	2.84	3.00	3.18	3.17	3.34	3.30	3.42	3.41	3.49	3.44	3.55	3.72
28394.4	2.66	2.85	3.01	3.19	3.18	3.34	3.31	3.43	3.42	3.50	3.45	3.56	3.73
28397.3	2.67	2.85	3.02	3.20	3.19	3.35	3.32	3.43	3.42	3.50	3.46	3.57	3.73
28400.1	2.67	2.86	3.03	3.21	3.19	3.36	3.33	3.44	3.43	3.51	3.46	3.57	3.74
28403.0	2.68	2.87	3.03	3.21	3.20	3.37	3.33	3.45	3.44	3.51	3.47	3.58	3.75
28405.9	2.68	2.87	3.04	3.22	3.21	3.37	3.34	3.45	3.44	3.52	3.47	3.58	3.75
28408.8	2.69	2.88	3.04	3.22	3.21	3.38	3.35	3.46	3.45	3.52	3.48	3.59	3.76
28411.8	2.69	2.88	3.05	3.23	3.22	3.38	3.35	3.46	3.45	3.53	3.48	3.59	3.77
28414.7	2.70	2.88	3.05	3.23	3.22	3.39	3.36	3.47	3.46	3.53	3.49	3.60	3.77
28417.6	2.70	2.89	3.06	3.24	3.23	3.40	3.36	3.48	3.47	3.54	3.49	3.60	3.78
28420.5	2.71	2.90	3.06	3.25	3.24	3.40	3.37	3.48	3.47	3.55	3.50	3.61	3.78
28423.4	2.71	2.90	3.07	3.25	3.24	3.41	3.38	3.49	3.48	3.55	3.51	3.61	3.79
28426.3	2.72	2.91	3.07	3.26	3.25	3.42	3.38	3.49	3.48	3.56	3.51	3.62	3.80
28429.3	2.72	2.91	3.08	3.26	3.25	3.42	3.39	3.50	3.49	3.56	3.52	3.62	3.80
28432.2	2.73	2.92	3.09	3.27	3.26	3.43	3.40	3.51	3.50	3.57	3.52	3.63	3.81
28435.1	2.73	2.92	3.09	3.28	3.27	3.44	3.40	3.51	3.50	3.57	3.53	3.63	3.81
28438.0	2.74	2.93	3.10	3.28	3.27	3.44	3.41	3.52	3.51	3.58	3.54	3.64	3.82
28440.9	2.74	2.94	3.10	3.29	3.28	3.45	3.42	3.53	3.52	3.59	3.54	3.65	3.83
28443.8	2.75	2.94	3.11	3.30	3.29	3.46	3.42	3.53	3.53	3.59	3.55	3.66	3.84
28446.8	2.76	2.95	3.12	3.31	3.29	3.47	3.43	3.54	3.53	3.60	3.56	3.66	3.85
28449.7	2.76	2.96	3.13	3.31	3.30	3.47	3.44	3.55	3.54	3.61	3.57	3.67	3.86
28452.6	2.77	2.96	3.13	3.32	3.31	3.48	3.45	3.56	3.55	3.61	3.57	3.68	3.87
28455.5	2.78	2.97	3.14	3.33	3.32	3.49	3.46	3.56	3.56	3.62	3.58	3.69	3.87
28458.4	2.78	2.98	3.15	3.34	3.33	3.50	3.47	3.57	3.57	3.63	3.59	3.69	3.88
28461.3	2.79	2.98	3.16	3.35	3.33	3.51	3.48	3.58	3.57	3.64	3.60	3.70	3.89
28464.3	2.80	2.99	3.16	3.35	3.34	3.52	3.48	3.59	3.58	3.65	3.61	3.71	3.90
28467.2	2.81	3.00	3.17	3.36	3.35	3.53	3.49	3.60	3.59	3.65	3.61	3.72	3.91
28470.1	2.81	3.01	3.18	3.37	3.36	3.54	3.50	3.61	3.60	3.66	3.62	3.73	3.92
28473.0	2.82	3.02	3.19	3.38	3.37	3.55	3.51	3.62	3.61	3.68	3.64	3.74	3.94
28475.9	2.83	3.03	3.20	3.39	3.38	3.56	3.52	3.63	3.62	3.69	3.65	3.76	3.95
28478.8	2.84	3.04	3.21	3.40	3.39	3.57	3.54	3.64	3.63	3.70	3.66	3.77	3.97
28481.8	2.85	3.05	3.22	3.41	3.40	3.58	3.55	3.65	3.64	3.72	3.67	3.79	3.98
28484.7	2.86	3.06	3.23	3.42	3.41	3.59	3.56	3.67	3.66	3.73	3.69	3.80	4.00
28487.6	2.86	3.07	3.24	3.44	3.42	3.60	3.57	3.68	3.67	3.75	3.70	3.82	4.02
28490.5	2.87	3.08	3.25	3.45	3.43	3.61	3.58	3.70	3.68	3.77	3.72	3.84	4.03
28493.4	2.88	3.09	3.26	3.46	3.45	3.62	3.59	3.71	3.70	3.79	3.73	3.86	4.05

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
28496.3	2.89	3.10	3.27	3.47	3.46	3.64	3.61	3.72	3.71	3.80	3.74	3.88	4.07
28499.3	2.90	3.11	3.29	3.48	3.47	3.65	3.62	3.73	3.72	3.81	3.76	3.89	4.08
28502.2	2.92	3.12	3.30	3.50	3.48	3.66	3.63	3.75	3.74	3.83	3.77	3.90	4.10
28505.1	2.93	3.14	3.31	3.51	3.50	3.68	3.65	3.77	3.75	3.85	3.79	3.92	4.12
28508.0	2.94	3.15	3.32	3.52	3.51	3.69	3.66	3.78	3.77	3.86	3.80	3.94	4.14
28510.9	2.95	3.16	3.34	3.54	3.53	3.71	3.68	3.79	3.78	3.88	3.82	3.96	4.17
28513.8	2.96	3.18	3.35	3.55	3.54	3.72	3.69	3.81	3.80	3.90	3.83	3.98	4.18
28516.8	2.97	3.19	3.37	3.57	3.56	3.74	3.71	3.83	3.81	3.92	3.85	4.00	4.20
28519.7	2.99	3.21	3.38	3.58	3.57	3.75	3.72	3.84	3.83	3.93	3.87	4.02	4.23
28522.6	3.00	3.22	3.40	3.60	3.59	3.77	3.74	3.86	3.84	3.95	3.88	4.04	4.25
28525.5	3.01	3.24	3.41	3.62	3.60	3.78	3.76	3.87	3.86	3.97	3.90	4.05	4.27
28528.4	3.03	3.26	3.43	3.63	3.62	3.80	3.78	3.89	3.88	3.99	3.92	4.07	4.29
28531.3	3.04	3.27	3.45	3.65	3.64	3.82	3.79	3.91	3.90	4.01	3.94	4.10	4.31
28534.3	3.06	3.29	3.47	3.67	3.66	3.84	3.81	3.93	3.92	4.03	3.96	4.12	4.34
28537.2	3.07	3.31	3.49	3.69	3.68	3.86	3.83	3.95	3.94	4.06	3.98	4.15	4.37
28540.1	3.09	3.33	3.51	3.71	3.70	3.88	3.85	3.98	3.96	4.09	4.01	4.18	4.40
28543.0	3.11	3.35	3.53	3.73	3.72	3.90	3.87	4.00	3.99	4.11	4.03	4.20	4.43
28545.9	3.10	3.34	3.52	3.72	3.71	3.89	3.86	3.99	3.97	4.09	4.02	4.18	4.40
28548.9	3.10	3.33	3.51	3.71	3.69	3.87	3.85	3.97	3.96	4.07	4.00	4.16	4.38
28551.8	3.09	3.32	3.49	3.69	3.68	3.86	3.83	3.96	3.94	4.05	3.99	4.15	4.36
28554.8	3.09	3.31	3.48	3.68	3.67	3.84	3.82	3.94	3.93	4.04	3.97	4.13	4.34
28557.7	3.08	3.30	3.47	3.67	3.65	3.83	3.81	3.93	3.92	4.03	3.96	4.12	4.33
28560.7	3.07	3.29	3.46	3.65	3.64	3.82	3.79	3.92	3.91	4.02	3.95	4.11	4.31
28563.6	3.07	3.28	3.44	3.64	3.63	3.81	3.78	3.91	3.90	4.01	3.94	4.10	4.29
28566.6	3.06	3.27	3.43	3.63	3.61	3.80	3.76	3.91	3.89	4.00	3.94	4.09	4.29
28569.5	3.05	3.25	3.42	3.61	3.60	3.79	3.75	3.90	3.88	3.99	3.93	4.08	4.28
28572.5	3.04	3.24	3.40	3.60	3.58	3.78	3.74	3.89	3.87	3.98	3.92	4.07	4.27
28575.4	3.03	3.23	3.39	3.58	3.57	3.77	3.72	3.88	3.86	3.97	3.91	4.06	4.27
28578.4	3.03	3.22	3.38	3.57	3.56	3.75	3.71	3.86	3.84	3.96	3.89	4.05	4.26
28581.3	3.02	3.20	3.36	3.55	3.54	3.73	3.69	3.84	3.83	3.94	3.87	4.04	4.26
28584.3	3.01	3.19	3.35	3.54	3.53	3.71	3.67	3.83	3.81	3.93	3.86	4.03	4.24
28587.2	3.00	3.18	3.33	3.52	3.51	3.70	3.66	3.81	3.79	3.91	3.84	4.01	4.23
28590.2	2.99	3.16	3.32	3.51	3.50	3.68	3.64	3.79	3.77	3.89	3.82	4.00	4.22
28593.1	2.98	3.15	3.30	3.49	3.48	3.66	3.62	3.77	3.76	3.88	3.81	3.98	4.21
28596.1	2.97	3.14	3.29	3.48	3.46	3.64	3.61	3.75	3.74	3.86	3.79	3.97	4.20
28599.0	2.96	3.12	3.28	3.46	3.45	3.62	3.59	3.73	3.72	3.85	3.77	3.95	4.19
28601.9	2.94	3.11	3.26	3.44	3.43	3.60	3.57	3.71	3.70	3.83	3.75	3.94	4.17
28604.9	2.93	3.09	3.24	3.43	3.42	3.58	3.55	3.69	3.67	3.80	3.72	3.91	4.15
28607.8	2.92	3.08	3.23	3.41	3.40	3.56	3.53	3.67	3.65	3.78	3.70	3.90	4.14
28610.8	2.91	3.06	3.21	3.39	3.38	3.54	3.51	3.64	3.63	3.76	3.68	3.87	4.12
28613.7	2.89	3.05	3.20	3.38	3.37	3.52	3.49	3.62	3.61	3.74	3.66	3.85	4.09
28616.7	2.88	3.03	3.18	3.36	3.35	3.50	3.47	3.60	3.58	3.71	3.63	3.83	4.07
28619.6	2.87	3.02	3.17	3.34	3.33	3.48	3.45	3.58	3.56	3.69	3.61	3.81	4.05
28622.6	2.85	3.00	3.15	3.32	3.31	3.46	3.43	3.56	3.54	3.67	3.59	3.79	4.02
28625.5	2.84	2.99	3.13	3.31	3.30	3.44	3.41	3.54	3.52	3.65	3.57	3.76	4.00
28628.5	2.82	2.97	3.12	3.29	3.28	3.42	3.39	3.51	3.50	3.63	3.55	3.74	3.97

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
28631.4	2.81	2.96	3.10	3.27	3.26	3.39	3.36	3.49	3.48	3.61	3.53	3.72	3.94
28634.4	2.79	2.94	3.08	3.25	3.24	3.37	3.34	3.47	3.45	3.58	3.50	3.69	3.91
28637.3	2.78	2.92	3.06	3.23	3.22	3.35	3.32	3.45	3.43	3.56	3.48	3.66	3.88
28640.3	2.76	2.91	3.05	3.21	3.20	3.33	3.30	3.42	3.41	3.53	3.45	3.64	3.85
28643.2	2.75	2.89	3.03	3.19	3.18	3.30	3.28	3.40	3.39	3.51	3.43	3.62	3.83
28646.2	2.73	2.87	3.01	3.17	3.16	3.28	3.25	3.38	3.36	3.49	3.41	3.60	3.80
28649.1	2.72	2.85	2.99	3.14	3.14	3.26	3.23	3.36	3.34	3.47	3.39	3.57	3.77
28652.1	2.70	2.84	2.97	3.12	3.12	3.23	3.21	3.33	3.31	3.44	3.36	3.54	3.74
28655.0	2.69	2.82	2.95	3.10	3.09	3.21	3.18	3.31	3.29	3.42	3.34	3.52	3.72
28657.9	2.70	2.84	2.97	3.12	3.11	3.23	3.20	3.33	3.31	3.43	3.36	3.53	3.73
28660.8	2.72	2.85	2.99	3.14	3.13	3.25	3.22	3.34	3.33	3.45	3.37	3.54	3.73
28663.6	2.74	2.87	3.00	3.15	3.15	3.26	3.24	3.36	3.34	3.47	3.39	3.56	3.74
28666.5	2.75	2.88	3.02	3.17	3.16	3.28	3.26	3.38	3.36	3.49	3.41	3.57	3.75
28669.4	2.77	2.90	3.03	3.19	3.18	3.30	3.27	3.40	3.38	3.51	3.43	3.59	3.76
28672.3	2.78	2.92	3.05	3.21	3.20	3.32	3.29	3.42	3.40	3.53	3.45	3.61	3.78
28675.2	2.80	2.93	3.07	3.22	3.21	3.34	3.31	3.44	3.43	3.56	3.48	3.64	3.80
28678.0	2.82	2.95	3.08	3.24	3.23	3.37	3.34	3.47	3.46	3.59	3.51	3.67	3.83
28680.9	2.83	2.96	3.10	3.25	3.24	3.39	3.36	3.50	3.48	3.62	3.54	3.70	3.85
28683.8	2.84	2.98	3.11	3.27	3.26	3.41	3.38	3.52	3.50	3.65	3.56	3.72	3.87
28686.7	2.86	2.99	3.13	3.29	3.28	3.43	3.40	3.54	3.52	3.66	3.58	3.74	3.88
28689.6	2.87	3.01	3.14	3.30	3.29	3.45	3.42	3.56	3.54	3.69	3.60	3.76	3.90
28692.5	2.89	3.02	3.16	3.32	3.31	3.47	3.44	3.58	3.56	3.71	3.62	3.78	3.91
28695.3	2.90	3.04	3.17	3.34	3.33	3.49	3.45	3.60	3.58	3.73	3.64	3.80	3.93
28698.2	2.91	3.05	3.19	3.35	3.34	3.51	3.47	3.62	3.60	3.75	3.66	3.82	3.94
28701.1	2.92	3.07	3.20	3.37	3.36	3.53	3.49	3.64	3.62	3.77	3.68	3.84	3.96
28704.0	2.94	3.08	3.22	3.38	3.37	3.54	3.50	3.66	3.64	3.79	3.70	3.86	3.98
28706.9	2.95	3.09	3.23	3.40	3.39	3.56	3.52	3.68	3.66	3.81	3.72	3.88	3.99
28709.7	2.96	3.10	3.24	3.41	3.40	3.58	3.54	3.70	3.68	3.83	3.74	3.90	4.01
28712.6	2.97	3.12	3.26	3.43	3.42	3.60	3.56	3.72	3.70	3.85	3.76	3.92	4.02
28715.5	2.98	3.13	3.27	3.44	3.43	3.62	3.57	3.74	3.72	3.87	3.78	3.94	4.04
28718.4	2.99	3.14	3.28	3.46	3.45	3.63	3.59	3.76	3.74	3.89	3.80	3.96	4.06
28721.3	2.99	3.15	3.30	3.47	3.46	3.65	3.60	3.78	3.76	3.91	3.82	3.98	4.08
28724.1	3.00	3.16	3.31	3.49	3.47	3.67	3.62	3.80	3.78	3.93	3.84	4.00	4.10
28727.0	3.01	3.17	3.32	3.50	3.49	3.68	3.64	3.82	3.80	3.95	3.86	4.02	4.13
28729.9	3.02	3.18	3.33	3.51	3.50	3.70	3.65	3.84	3.82	3.97	3.88	4.04	4.15
28732.8	3.02	3.19	3.34	3.52	3.51	3.71	3.67	3.86	3.84	3.99	3.90	4.06	4.18
28735.7	3.03	3.20	3.35	3.54	3.53	3.73	3.68	3.88	3.86	4.01	3.92	4.08	4.20
28738.5	3.03	3.21	3.36	3.55	3.54	3.74	3.69	3.90	3.87	4.03	3.94	4.10	4.23
28741.4	3.03	3.21	3.37	3.56	3.55	3.76	3.71	3.91	3.89	4.05	3.96	4.12	4.25
28744.3	3.04	3.22	3.38	3.57	3.56	3.77	3.72	3.93	3.91	4.07	3.98	4.14	4.27
28747.2	3.04	3.23	3.39	3.58	3.57	3.79	3.73	3.95	3.93	4.09	4.00	4.16	4.29
28750.1	3.04	3.23	3.40	3.59	3.58	3.80	3.74	3.97	3.94	4.11	4.02	4.19	4.32
28753.0	3.05	3.24	3.41	3.60	3.59	3.81	3.76	3.99	3.96	4.13	4.04	4.21	4.34
28755.8	3.05	3.24	3.41	3.61	3.60	3.83	3.77	4.00	3.97	4.15	4.06	4.23	4.36
28758.7	3.05	3.25	3.42	3.62	3.61	3.84	3.78	4.02	3.99	4.18	4.08	4.25	4.39
28761.6	3.05	3.25	3.43	3.63	3.62	3.85	3.79	4.03	4.00	4.20	4.09	4.27	4.41

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
28764.5	3.05	3.25	3.43	3.64	3.63	3.86	3.80	4.05	4.02	4.22	4.11	4.29	4.43
28767.4	3.05	3.26	3.44	3.65	3.64	3.87	3.81	4.06	4.03	4.24	4.13	4.31	4.45
28770.2	3.06	3.26	3.44	3.66	3.64	3.88	3.82	4.08	4.05	4.26	4.14	4.33	4.48
28773.1	3.06	3.26	3.45	3.66	3.65	3.89	3.83	4.09	4.06	4.28	4.16	4.35	4.50
28776.0	3.06	3.26	3.45	3.67	3.66	3.90	3.84	4.10	4.07	4.30	4.17	4.37	4.52
28778.9	3.05	3.26	3.44	3.66	3.65	3.89	3.83	4.09	4.06	4.30	4.16	4.37	4.53
28781.8	3.04	3.25	3.43	3.65	3.64	3.88	3.82	4.08	4.05	4.29	4.15	4.37	4.54
28784.7	3.04	3.24	3.42	3.64	3.63	3.87	3.81	4.07	4.04	4.28	4.14	4.37	4.55
28787.6	3.03	3.23	3.41	3.63	3.62	3.86	3.79	4.06	4.03	4.28	4.13	4.36	4.55
28790.5	3.02	3.22	3.40	3.62	3.60	3.84	3.78	4.05	4.01	4.27	4.12	4.36	4.55
28793.3	3.02	3.21	3.40	3.61	3.59	3.83	3.77	4.04	4.00	4.26	4.11	4.36	4.56
28796.2	3.01	3.20	3.39	3.60	3.58	3.82	3.76	4.02	3.99	4.25	4.10	4.35	4.56
28799.1	3.00	3.19	3.38	3.59	3.57	3.81	3.75	4.01	3.98	4.24	4.09	4.35	4.56
28802.0	2.99	3.18	3.37	3.58	3.56	3.80	3.74	4.00	3.97	4.23	4.08	4.34	4.55
28804.9	2.99	3.17	3.36	3.57	3.55	3.79	3.73	3.99	3.96	4.22	4.06	4.33	4.55
28807.8	2.98	3.17	3.35	3.55	3.54	3.78	3.72	3.98	3.94	4.21	4.05	4.32	4.55
28810.7	2.97	3.16	3.34	3.54	3.53	3.77	3.71	3.97	3.93	4.20	4.04	4.31	4.55
28813.6	2.96	3.15	3.33	3.53	3.52	3.75	3.69	3.95	3.92	4.19	4.03	4.30	4.54
28816.5	2.95	3.14	3.32	3.52	3.51	3.74	3.68	3.94	3.91	4.18	4.02	4.29	4.54
28819.4	2.95	3.13	3.31	3.51	3.50	3.73	3.67	3.93	3.90	4.17	4.01	4.28	4.53
28822.3	2.94	3.12	3.29	3.50	3.49	3.72	3.66	3.92	3.89	4.15	3.99	4.27	4.53
28825.2	2.93	3.11	3.28	3.49	3.48	3.71	3.65	3.91	3.88	4.14	3.98	4.26	4.52
28828.0	2.92	3.10	3.27	3.48	3.47	3.70	3.64	3.90	3.86	4.13	3.97	4.25	4.52
28830.9	2.91	3.09	3.26	3.47	3.46	3.69	3.63	3.88	3.85	4.12	3.96	4.24	4.51
28833.8	2.90	3.08	3.25	3.46	3.44	3.67	3.62	3.87	3.84	4.11	3.95	4.23	4.51
28836.7	2.89	3.07	3.24	3.45	3.43	3.66	3.60	3.86	3.83	4.10	3.94	4.22	4.50
28839.6	2.88	3.06	3.23	3.43	3.42	3.65	3.59	3.85	3.82	4.09	3.92	4.21	4.49
28842.5	2.87	3.05	3.22	3.42	3.41	3.64	3.58	3.84	3.81	4.07	3.91	4.20	4.48
28845.4	2.87	3.04	3.21	3.41	3.40	3.63	3.57	3.83	3.79	4.06	3.90	4.19	4.48
28848.3	2.86	3.03	3.20	3.40	3.39	3.62	3.56	3.81	3.78	4.05	3.89	4.18	4.47
28851.2	2.85	3.02	3.19	3.39	3.38	3.61	3.55	3.80	3.77	4.04	3.88	4.17	4.46
28854.1	2.84	3.01	3.18	3.38	3.37	3.59	3.53	3.79	3.76	4.03	3.86	4.15	4.45
28857.0	2.83	3.00	3.17	3.37	3.35	3.58	3.52	3.78	3.75	4.02	3.85	4.14	4.44
28859.8	2.81	2.99	3.16	3.36	3.34	3.57	3.51	3.77	3.73	4.00	3.84	4.13	4.43
28862.7	2.80	2.98	3.15	3.34	3.33	3.56	3.50	3.75	3.72	3.99	3.83	4.12	4.42
28865.6	2.79	2.97	3.13	3.33	3.32	3.55	3.49	3.74	3.71	3.98	3.82	4.11	4.41
28868.5	2.78	2.96	3.12	3.32	3.31	3.53	3.48	3.73	3.70	3.97	3.80	4.10	4.40
28871.4	2.77	2.94	3.11	3.31	3.30	3.52	3.46	3.72	3.69	3.96	3.79	4.08	4.39
28874.3	2.76	2.93	3.10	3.30	3.28	3.51	3.45	3.71	3.67	3.94	3.78	4.07	4.38
28877.2	2.75	2.92	3.09	3.28	3.27	3.50	3.44	3.69	3.66	3.93	3.77	4.06	4.37
28880.1	2.74	2.91	3.08	3.27	3.26	3.49	3.43	3.68	3.65	3.92	3.76	4.05	4.36
28883.0	2.72	2.90	3.06	3.26	3.25	3.47	3.42	3.67	3.64	3.91	3.74	4.04	4.35
28885.9	2.71	2.89	3.05	3.25	3.24	3.46	3.40	3.66	3.63	3.89	3.73	4.03	4.34
28888.8	2.70	2.87	3.04	3.24	3.22	3.45	3.39	3.65	3.61	3.88	3.72	4.01	4.33
28891.7	2.69	2.86	3.03	3.22	3.21	3.44	3.38	3.63	3.60	3.87	3.71	4.00	4.31
28894.5	2.67	2.85	3.02	3.21	3.20	3.43	3.37	3.62	3.59	3.86	3.70	3.99	4.30

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
28897.4	2.66	2.84	3.00	3.20	3.19	3.41	3.35	3.61	3.58	3.85	3.68	3.98	4.29
28900.3	2.65	2.82	2.99	3.19	3.18	3.40	3.34	3.60	3.56	3.83	3.67	3.96	4.28
28903.2	2.64	2.81	2.98	3.18	3.16	3.39	3.33	3.58	3.55	3.82	3.66	3.95	4.27
28906.1	2.62	2.80	2.97	3.16	3.15	3.38	3.32	3.57	3.54	3.81	3.65	3.94	4.26
28909.0	2.61	2.79	2.95	3.15	3.14	3.36	3.31	3.56	3.53	3.80	3.63	3.93	4.25
28912.0	2.62	2.79	2.96	3.16	3.14	3.37	3.31	3.57	3.54	3.81	3.64	3.94	4.26
28914.9	2.62	2.80	2.97	3.16	3.15	3.38	3.32	3.58	3.54	3.82	3.65	3.95	4.26
28917.9	2.63	2.80	2.97	3.17	3.16	3.39	3.33	3.59	3.55	3.83	3.66	3.96	4.27
28920.8	2.63	2.81	2.98	3.18	3.16	3.39	3.33	3.59	3.56	3.84	3.67	3.97	4.28
28923.8	2.64	2.81	2.98	3.18	3.17	3.40	3.34	3.60	3.57	3.85	3.68	3.98	4.29
28926.7	2.64	2.82	2.99	3.19	3.18	3.41	3.35	3.61	3.58	3.86	3.69	3.99	4.30
28929.7	2.65	2.82	2.99	3.20	3.18	3.42	3.36	3.62	3.59	3.87	3.70	4.00	4.31
28932.6	2.66	2.83	3.00	3.20	3.19	3.43	3.37	3.63	3.60	3.88	3.71	4.01	4.32
28935.6	2.66	2.84	3.01	3.21	3.20	3.44	3.37	3.64	3.61	3.89	3.72	4.02	4.33
28938.5	2.67	2.84	3.01	3.22	3.21	3.45	3.38	3.65	3.62	3.90	3.73	4.03	4.34
28941.5	2.67	2.85	3.02	3.23	3.22	3.46	3.39	3.66	3.63	3.91	3.74	4.04	4.35
28944.4	2.68	2.86	3.03	3.24	3.22	3.47	3.40	3.67	3.64	3.92	3.75	4.05	4.36
28947.4	2.69	2.86	3.04	3.25	3.23	3.48	3.41	3.69	3.65	3.93	3.76	4.06	4.37
28950.3	2.70	2.87	3.04	3.26	3.24	3.49	3.42	3.70	3.66	3.95	3.78	4.07	4.37
28953.3	2.70	2.88	3.05	3.27	3.25	3.50	3.43	3.71	3.68	3.96	3.79	4.09	4.38
28956.2	2.71	2.89	3.06	3.27	3.26	3.51	3.45	3.72	3.69	3.97	3.80	4.10	4.39
28959.2	2.72	2.90	3.07	3.29	3.27	3.52	3.46	3.73	3.70	3.98	3.81	4.11	4.40
28962.1	2.73	2.90	3.08	3.30	3.28	3.53	3.47	3.75	3.71	3.99	3.82	4.12	4.41
28965.1	2.74	2.91	3.09	3.31	3.29	3.54	3.48	3.76	3.72	4.00	3.83	4.12	4.41
28968.0	2.74	2.92	3.10	3.32	3.30	3.55	3.49	3.76	3.73	4.01	3.84	4.13	4.41
28971.0	2.75	2.93	3.11	3.33	3.31	3.56	3.50	3.77	3.74	4.01	3.85	4.13	4.41
28974.0	2.76	2.94	3.12	3.34	3.32	3.57	3.51	3.78	3.75	4.02	3.86	4.14	4.42
28976.9	2.77	2.95	3.13	3.35	3.33	3.58	3.52	3.79	3.76	4.03	3.87	4.15	4.42
28979.9	2.78	2.96	3.14	3.36	3.34	3.59	3.53	3.80	3.77	4.04	3.88	4.16	4.43
28982.8	2.79	2.97	3.15	3.37	3.36	3.60	3.54	3.81	3.78	4.05	3.89	4.16	4.44
28985.8	2.80	2.98	3.16	3.38	3.37	3.62	3.55	3.83	3.79	4.06	3.90	4.17	4.44
28988.7	2.82	3.00	3.17	3.39	3.38	3.63	3.57	3.84	3.80	4.07	3.91	4.18	4.45
28991.7	2.83	3.01	3.18	3.41	3.39	3.64	3.58	3.85	3.81	4.08	3.92	4.19	4.45
28994.6	2.84	3.02	3.20	3.42	3.40	3.65	3.59	3.86	3.83	4.09	3.93	4.20	4.46
28997.6	2.85	3.03	3.21	3.43	3.42	3.67	3.60	3.87	3.84	4.09	3.94	4.21	4.46
29000.5	2.87	3.05	3.22	3.44	3.43	3.68	3.62	3.88	3.85	4.10	3.95	4.22	4.47
29003.5	2.88	3.06	3.24	3.46	3.44	3.69	3.63	3.89	3.86	4.11	3.96	4.22	4.48
29006.4	2.89	3.07	3.25	3.47	3.45	3.70	3.64	3.90	3.87	4.12	3.97	4.23	4.48
29009.4	2.91	3.09	3.26	3.48	3.47	3.71	3.65	3.91	3.88	4.12	3.98	4.23	4.48
29012.3	2.92	3.10	3.28	3.49	3.48	3.73	3.66	3.92	3.89	4.13	3.99	4.24	4.48
29015.3	2.94	3.12	3.29	3.51	3.50	3.74	3.68	3.94	3.91	4.14	4.01	4.24	4.49
29018.2	2.96	3.13	3.31	3.53	3.51	3.76	3.70	3.95	3.92	4.15	4.02	4.25	4.49
29021.2	2.97	3.15	3.32	3.54	3.53	3.77	3.71	3.97	3.94	4.16	4.03	4.26	4.50
29024.1	2.99	3.17	3.34	3.56	3.55	3.79	3.73	3.98	3.95	4.17	4.04	4.26	4.51
29027.1	3.01	3.19	3.36	3.58	3.56	3.81	3.75	4.00	3.97	4.18	4.06	4.27	4.51
29030.0	3.03	3.21	3.38	3.60	3.58	3.82	3.76	4.01	3.98	4.19	4.07	4.28	4.52

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29033.0	3.05	3.23	3.40	3.62	3.60	3.84	3.78	4.03	4.00	4.20	4.08	4.29	4.52
29036.0	3.04	3.22	3.39	3.60	3.59	3.83	3.77	4.01	3.98	4.19	4.07	4.28	4.51
29039.0	3.03	3.21	3.38	3.59	3.57	3.81	3.75	4.00	3.97	4.18	4.06	4.27	4.50
29042.0	3.02	3.20	3.36	3.57	3.56	3.79	3.74	3.98	3.95	4.17	4.05	4.26	4.49
29045.0	3.02	3.19	3.35	3.56	3.54	3.78	3.72	3.97	3.94	4.16	4.03	4.25	4.49
29048.0	3.01	3.18	3.34	3.54	3.53	3.77	3.71	3.96	3.93	4.15	4.02	4.24	4.48
29051.0	3.00	3.17	3.33	3.53	3.52	3.75	3.69	3.95	3.91	4.15	4.01	4.23	4.47
29054.0	2.99	3.16	3.32	3.52	3.50	3.74	3.68	3.93	3.90	4.14	4.00	4.22	4.46
29057.0	2.98	3.15	3.31	3.50	3.49	3.72	3.66	3.91	3.88	4.12	3.98	4.21	4.45
29060.0	2.98	3.14	3.30	3.49	3.48	3.71	3.65	3.90	3.87	4.10	3.96	4.19	4.43
29063.0	2.97	3.13	3.29	3.48	3.47	3.69	3.63	3.88	3.85	4.09	3.95	4.19	4.42
29066.0	2.96	3.12	3.28	3.47	3.46	3.68	3.62	3.87	3.84	4.08	3.94	4.18	4.41
29069.0	2.95	3.11	3.27	3.46	3.44	3.67	3.61	3.86	3.83	4.07	3.93	4.17	4.40
29072.0	2.95	3.11	3.26	3.45	3.43	3.66	3.60	3.85	3.81	4.06	3.91	4.15	4.39
29075.0	2.94	3.10	3.25	3.44	3.42	3.64	3.59	3.83	3.80	4.05	3.90	4.14	4.38
29078.0	2.93	3.09	3.24	3.43	3.42	3.63	3.58	3.82	3.79	4.03	3.89	4.13	4.38
29081.0	2.93	3.09	3.24	3.42	3.41	3.62	3.57	3.81	3.78	4.02	3.88	4.12	4.37
29084.0	2.92	3.08	3.23	3.41	3.40	3.61	3.56	3.80	3.77	4.01	3.87	4.12	4.36
29087.0	2.92	3.07	3.22	3.40	3.39	3.60	3.54	3.79	3.76	4.00	3.85	4.10	4.34
29090.0	2.91	3.07	3.21	3.39	3.38	3.59	3.53	3.77	3.74	3.99	3.84	4.09	4.33
29093.0	2.91	3.06	3.21	3.38	3.37	3.57	3.52	3.76	3.73	3.97	3.82	4.07	4.32
29096.0	2.90	3.05	3.20	3.37	3.36	3.56	3.51	3.74	3.71	3.95	3.81	4.06	4.30
29099.0	2.89	3.05	3.19	3.36	3.35	3.55	3.50	3.73	3.70	3.94	3.79	4.04	4.29
29102.0	2.89	3.04	3.19	3.35	3.34	3.54	3.49	3.72	3.69	3.93	3.78	4.03	4.28
29105.0	2.88	3.04	3.18	3.34	3.33	3.53	3.48	3.70	3.67	3.91	3.76	4.01	4.27
29108.0	2.88	3.03	3.17	3.33	3.32	3.52	3.47	3.69	3.66	3.89	3.75	4.00	4.25
29111.0	2.87	3.02	3.16	3.32	3.31	3.50	3.45	3.67	3.64	3.88	3.73	3.99	4.23
29114.0	2.87	3.02	3.16	3.31	3.30	3.49	3.44	3.66	3.63	3.87	3.72	3.97	4.22
29117.0	2.86	3.01	3.15	3.31	3.30	3.48	3.43	3.65	3.62	3.85	3.71	3.96	4.21
29120.0	2.85	3.01	3.14	3.30	3.29	3.47	3.42	3.63	3.61	3.84	3.69	3.94	4.20
29123.0	2.85	3.00	3.14	3.29	3.28	3.46	3.41	3.62	3.59	3.82	3.68	3.93	4.18
29126.0	2.84	3.00	3.13	3.28	3.27	3.45	3.40	3.61	3.58	3.81	3.66	3.91	4.17
29129.0	2.84	2.99	3.12	3.27	3.27	3.44	3.40	3.60	3.57	3.80	3.65	3.90	4.15
29132.0	2.83	2.99	3.12	3.27	3.26	3.43	3.39	3.59	3.56	3.78	3.64	3.88	4.13
29135.0	2.83	2.98	3.11	3.26	3.25	3.43	3.38	3.58	3.56	3.77	3.63	3.86	4.11
29138.0	2.82	2.98	3.11	3.26	3.25	3.42	3.38	3.57	3.55	3.76	3.62	3.85	4.10
29141.0	2.82	2.97	3.10	3.25	3.24	3.41	3.37	3.57	3.54	3.74	3.62	3.83	4.08
29144.0	2.82	2.97	3.10	3.25	3.24	3.41	3.36	3.56	3.53	3.73	3.61	3.82	4.07
29147.0	2.81	2.96	3.09	3.24	3.23	3.40	3.36	3.55	3.53	3.72	3.60	3.81	4.06
29150.0	2.81	2.96	3.09	3.24	3.23	3.40	3.35	3.54	3.52	3.71	3.59	3.80	4.05
29153.0	2.81	2.95	3.08	3.23	3.22	3.39	3.35	3.54	3.52	3.70	3.59	3.79	4.04
29156.0	2.81	2.95	3.08	3.23	3.22	3.39	3.34	3.53	3.51	3.70	3.58	3.78	4.04
29159.0	2.81	2.95	3.08	3.22	3.21	3.38	3.34	3.53	3.50	3.69	3.57	3.77	4.03
29162.0	2.79	2.93	3.06	3.20	3.19	3.35	3.31	3.49	3.47	3.65	3.54	3.73	3.98
29165.0	2.78	2.92	3.04	3.18	3.17	3.33	3.29	3.46	3.44	3.62	3.51	3.69	3.94
29167.9	2.78	2.91	3.02	3.16	3.15	3.30	3.26	3.43	3.41	3.58	3.48	3.66	3.90

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29170.9	2.77	2.90	3.01	3.14	3.13	3.28	3.24	3.41	3.39	3.55	3.45	3.62	3.86
29173.9	2.76	2.89	3.00	3.12	3.11	3.26	3.22	3.38	3.36	3.52	3.42	3.59	3.82
29176.9	2.76	2.88	2.98	3.10	3.10	3.24	3.20	3.36	3.34	3.50	3.40	3.56	3.79
29179.8	2.75	2.88	2.98	3.09	3.08	3.22	3.19	3.34	3.32	3.47	3.38	3.54	3.75
29182.8	2.75	2.87	2.97	3.08	3.07	3.20	3.17	3.32	3.30	3.45	3.35	3.51	3.72
29185.8	2.75	2.87	2.96	3.07	3.06	3.19	3.16	3.30	3.28	3.43	3.34	3.49	3.70
29188.8	2.75	2.87	2.96	3.06	3.05	3.18	3.14	3.28	3.27	3.40	3.32	3.46	3.66
29191.7	2.75	2.87	2.95	3.05	3.05	3.16	3.13	3.27	3.25	3.39	3.30	3.44	3.64
29194.7	2.74	2.87	2.95	3.04	3.04	3.15	3.12	3.26	3.24	3.37	3.29	3.42	3.61
29197.7	2.74	2.87	2.95	3.04	3.03	3.14	3.12	3.24	3.23	3.35	3.27	3.40	3.58
29200.7	2.74	2.87	2.95	3.04	3.03	3.14	3.11	3.23	3.22	3.34	3.26	3.38	3.56
29203.6	2.74	2.87	2.95	3.03	3.03	3.13	3.10	3.22	3.21	3.32	3.25	3.37	3.54
29206.6	2.74	2.87	2.95	3.03	3.03	3.12	3.10	3.21	3.20	3.31	3.24	3.35	3.52
29209.6	2.74	2.87	2.95	3.03	3.03	3.12	3.10	3.21	3.19	3.30	3.23	3.34	3.50
29212.6	2.74	2.88	2.96	3.03	3.03	3.12	3.09	3.20	3.19	3.29	3.22	3.33	3.48
29215.5	2.74	2.88	2.96	3.04	3.03	3.12	3.09	3.19	3.18	3.28	3.22	3.32	3.47
29218.5	2.75	2.88	2.97	3.04	3.04	3.12	3.10	3.19	3.18	3.27	3.21	3.31	3.45
29221.5	2.75	2.88	2.98	3.05	3.04	3.12	3.10	3.19	3.18	3.26	3.21	3.30	3.43
29224.5	2.75	2.89	2.98	3.05	3.05	3.12	3.10	3.18	3.17	3.26	3.20	3.29	3.41
29227.5	2.76	2.89	2.99	3.06	3.05	3.12	3.10	3.18	3.17	3.25	3.20	3.28	3.40
29230.4	2.76	2.89	3.00	3.07	3.06	3.13	3.11	3.18	3.18	3.25	3.20	3.27	3.38
29233.4	2.77	2.90	3.01	3.08	3.08	3.14	3.13	3.19	3.18	3.24	3.20	3.27	3.37
29236.4	2.77	2.90	3.01	3.09	3.09	3.15	3.13	3.19	3.19	3.24	3.20	3.26	3.36
29239.4	2.78	2.91	3.02	3.10	3.10	3.15	3.14	3.19	3.19	3.24	3.20	3.26	3.35
29242.3	2.79	2.91	3.02	3.11	3.11	3.16	3.15	3.20	3.19	3.24	3.20	3.25	3.35
29245.3	2.79	2.92	3.03	3.12	3.12	3.17	3.16	3.20	3.20	3.24	3.20	3.25	3.34
29248.3	2.80	2.92	3.03	3.13	3.12	3.18	3.16	3.21	3.20	3.24	3.20	3.25	3.33
29251.3	2.81	2.93	3.04	3.13	3.13	3.18	3.17	3.21	3.21	3.24	3.21	3.25	3.33
29254.2	2.83	2.94	3.04	3.14	3.14	3.19	3.18	3.22	3.21	3.24	3.21	3.25	3.32
29257.2	2.84	2.95	3.05	3.15	3.15	3.20	3.19	3.22	3.22	3.24	3.22	3.25	3.31
29260.2	2.85	2.96	3.06	3.16	3.16	3.21	3.20	3.23	3.22	3.24	3.22	3.24	3.31
29263.2	2.87	2.97	3.06	3.17	3.16	3.22	3.21	3.23	3.23	3.25	3.22	3.24	3.30
29266.1	2.88	2.98	3.07	3.17	3.17	3.23	3.22	3.24	3.24	3.25	3.23	3.25	3.30
29269.1	2.90	2.99	3.08	3.18	3.17	3.23	3.22	3.25	3.25	3.26	3.24	3.25	3.30
29272.1	2.92	3.00	3.09	3.18	3.18	3.24	3.23	3.26	3.26	3.26	3.25	3.25	3.29
29275.1	2.94	3.02	3.10	3.19	3.18	3.25	3.24	3.26	3.26	3.27	3.25	3.26	3.29
29278.0	2.96	3.03	3.11	3.19	3.19	3.25	3.25	3.27	3.27	3.28	3.26	3.27	3.28
29281.0	2.98	3.05	3.12	3.20	3.19	3.26	3.25	3.27	3.27	3.28	3.26	3.27	3.27
29284.0	3.00	3.07	3.13	3.20	3.20	3.27	3.26	3.28	3.28	3.29	3.27	3.28	3.28
29286.9	3.00	3.06	3.13	3.20	3.20	3.26	3.25	3.27	3.27	3.28	3.26	3.27	3.27
29289.9	3.00	3.06	3.12	3.20	3.19	3.25	3.25	3.27	3.26	3.27	3.25	3.26	3.26
29292.8	3.00	3.06	3.12	3.19	3.19	3.24	3.24	3.26	3.25	3.26	3.24	3.25	3.25
29295.7	3.00	3.05	3.12	3.19	3.18	3.23	3.23	3.25	3.25	3.25	3.23	3.24	3.24
29298.7	3.00	3.05	3.11	3.18	3.18	3.23	3.22	3.24	3.24	3.24	3.22	3.23	3.23
29301.6	3.00	3.05	3.11	3.18	3.18	3.22	3.21	3.23	3.23	3.23	3.21	3.21	3.22
29304.5	2.99	3.04	3.10	3.17	3.17	3.21	3.20	3.22	3.22	3.22	3.20	3.20	3.20

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29307.5	2.99	3.04	3.10	3.17	3.17	3.20	3.19	3.20	3.20	3.21	3.19	3.19	3.19
29310.4	2.99	3.04	3.09	3.17	3.16	3.19	3.19	3.19	3.19	3.20	3.18	3.18	3.19
29313.3	2.98	3.03	3.09	3.16	3.16	3.18	3.18	3.19	3.19	3.19	3.17	3.17	3.18
29316.3	2.98	3.03	3.09	3.16	3.15	3.17	3.17	3.18	3.18	3.18	3.17	3.17	3.17
29319.2	2.98	3.03	3.08	3.15	3.15	3.17	3.16	3.17	3.17	3.17	3.16	3.16	3.17
29322.1	2.98	3.03	3.08	3.14	3.14	3.16	3.16	3.16	3.16	3.17	3.15	3.15	3.16
29325.0	2.98	3.02	3.08	3.14	3.14	3.15	3.15	3.15	3.16	3.16	3.14	3.15	3.15
29328.0	2.97	3.02	3.08	3.13	3.13	3.15	3.14	3.15	3.15	3.15	3.13	3.14	3.14
29330.9	2.97	3.02	3.08	3.13	3.13	3.14	3.14	3.14	3.14	3.14	3.13	3.13	3.14
29333.8	2.97	3.02	3.08	3.12	3.12	3.13	3.13	3.14	3.14	3.14	3.12	3.12	3.13
29336.8	2.97	3.02	3.07	3.12	3.12	3.13	3.12	3.13	3.13	3.13	3.11	3.12	3.12
29339.7	2.97	3.02	3.07	3.11	3.11	3.12	3.12	3.12	3.12	3.12	3.11	3.11	3.12
29342.6	2.97	3.02	3.08	3.11	3.11	3.12	3.11	3.12	3.12	3.12	3.10	3.11	3.11
29345.6	2.97	3.02	3.08	3.11	3.11	3.11	3.11	3.11	3.11	3.12	3.10	3.10	3.11
29348.5	2.97	3.02	3.08	3.10	3.10	3.11	3.11	3.11	3.11	3.11	3.10	3.10	3.11
29351.4	2.97	3.02	3.08	3.10	3.10	3.11	3.11	3.11	3.11	3.11	3.10	3.10	3.10
29354.4	2.97	3.02	3.08	3.10	3.10	3.11	3.11	3.11	3.11	3.11	3.09	3.10	3.10
29357.3	2.97	3.02	3.08	3.10	3.10	3.11	3.11	3.11	3.11	3.11	3.09	3.10	3.10
29360.2	2.97	3.03	3.08	3.10	3.10	3.10	3.10	3.11	3.11	3.11	3.09	3.10	3.10
29363.2	2.98	3.03	3.08	3.10	3.10	3.10	3.10	3.11	3.11	3.11	3.09	3.10	3.10
29366.1	2.98	3.03	3.08	3.10	3.10	3.11	3.11	3.11	3.11	3.11	3.09	3.10	3.10
29369.0	2.98	3.04	3.08	3.10	3.10	3.11	3.11	3.11	3.11	3.11	3.09	3.10	3.10
29372.0	2.99	3.04	3.09	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.10	3.10	3.10
29374.9	2.99	3.05	3.09	3.11	3.11	3.11	3.11	3.12	3.11	3.12	3.10	3.10	3.11
29377.8	3.00	3.05	3.10	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.10	3.11	3.11
29380.8	3.00	3.06	3.10	3.12	3.12	3.12	3.12	3.12	3.12	3.13	3.11	3.11	3.12
29383.7	3.01	3.07	3.11	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.11	3.12	3.12
29386.6	3.02	3.07	3.12	3.13	3.13	3.13	3.13	3.14	3.14	3.14	3.12	3.12	3.13
29389.5	3.03	3.08	3.12	3.14	3.14	3.14	3.14	3.14	3.14	3.15	3.13	3.13	3.13
29392.5	3.04	3.09	3.13	3.15	3.15	3.15	3.15	3.15	3.15	3.16	3.14	3.14	3.14
29395.4	3.04	3.10	3.15	3.16	3.16	3.16	3.16	3.16	3.16	3.17	3.14	3.15	3.15
29398.3	3.06	3.11	3.16	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.15	3.16	3.16
29401.3	3.07	3.12	3.17	3.18	3.18	3.18	3.18	3.18	3.18	3.19	3.17	3.17	3.17
29404.2	3.08	3.14	3.18	3.19	3.19	3.19	3.19	3.19	3.19	3.20	3.18	3.18	3.18
29407.1	3.10	3.15	3.20	3.20	3.20	3.21	3.21	3.21	3.21	3.21	3.19	3.19	3.19
29410.1	3.11	3.17	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.20	3.20	3.20
29413.0	3.13	3.19	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.22	3.22	3.22
29416.0	3.12	3.18	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.20	3.20	3.20
29419.0	3.11	3.17	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.19	3.19	3.18
29422.0	3.11	3.16	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.17	3.17	3.17
29425.0	3.10	3.15	3.18	3.17	3.17	3.18	3.18	3.18	3.18	3.18	3.16	3.16	3.16
29428.0	3.09	3.14	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.14	3.14	3.14
29431.0	3.08	3.13	3.15	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.13	3.13	3.13
29434.0	3.07	3.11	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.11	3.11	3.11
29437.0	3.06	3.10	3.12	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.10	3.10	3.10
29440.0	3.05	3.09	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.08	3.08	3.08

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29443.0	3.04	3.07	3.09	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.07	3.07	3.07
29446.0	3.03	3.06	3.07	3.07	3.07	3.07	3.07	3.06	3.06	3.06	3.05	3.05	3.05
29449.0	3.02	3.05	3.06	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.04	3.04	3.04
29452.0	3.01	3.03	3.04	3.04	3.04	3.04	3.04	3.03	3.03	3.03	3.02	3.02	3.02
29455.0	3.00	3.02	3.03	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.01	3.01	3.01
29458.0	2.99	3.00	3.01	3.01	3.01	3.01	3.01	3.00	3.00	3.00	2.99	2.99	2.99
29461.0	2.98	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.98	2.98	2.98
29464.0	2.97	2.97	2.98	2.98	2.98	2.98	2.98	2.97	2.97	2.97	2.96	2.96	2.96
29467.0	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.95	2.95	2.95
29470.0	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.94	2.94	2.94
29473.0	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.94	2.94	2.94	2.94
29476.0	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.93	2.93	2.93
29479.0	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.92	2.92	2.93
29482.0	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.92	2.92	2.92
29485.0	2.93	2.92	2.93	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92
29488.0	2.93	2.93	2.93	2.92	2.92	2.92	2.93	2.92	2.92	2.92	2.92	2.92	2.92
29491.0	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93
29494.0	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93
29497.0	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94
29500.0	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.94	2.94	2.94	2.94
29503.0	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.95	2.95	2.95
29506.0	2.97	2.97	2.97	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96
29509.0	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.97	2.97	2.97
29512.0	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.98	2.98	2.99
29515.0	3.01	3.01	3.01	3.01	3.01	3.01	3.00	3.01	3.00	3.00	3.00	3.00	3.00
29518.0	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02
29521.0	3.05	3.05	3.05	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04
29524.0	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.07	3.07	3.07	3.07
29527.0	3.12	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.11
29530.0	3.16	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.14
29533.0	3.20	3.20	3.20	3.20	3.20	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19
29536.0	3.25	3.25	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.23
29539.0	3.30	3.30	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.28
29542.0	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.34	3.34	3.34	3.34
29545.0	3.41	3.41	3.41	3.41	3.41	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
29548.0	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.46	3.47	3.46	3.46
29551.0	3.55	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.53	3.54	3.53	3.53
29553.9	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.45	3.45	3.45	3.45
29556.9	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.42	3.42	3.42
29559.8	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.35	3.35	3.35	3.35	3.35	3.35
29562.7	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.36	3.36	3.36	3.36	3.35	3.36
29565.7	3.34	3.35	3.34	3.34	3.35	3.34	3.34	3.34	3.34	3.34	3.33	3.33	3.33
29568.6	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.35	3.35	3.35
29571.5	3.41	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.44	3.40	3.43	3.45
29574.5	3.48	3.50	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.55	3.49	3.53	3.54
29577.4	3.51	3.56	3.57	3.57	3.57	3.57	3.57	3.59	3.59	3.64	3.58	3.62	3.64

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29580.3	3.55	3.62	3.65	3.65	3.65	3.65	3.65	3.69	3.69	3.74	3.68	3.72	3.73
29583.3	3.57	3.66	3.70	3.71	3.71	3.73	3.71	3.77	3.77	3.83	3.77	3.81	3.81
29586.2	3.59	3.71	3.76	3.78	3.78	3.82	3.80	3.87	3.86	3.94	3.87	3.92	3.92
29589.1	3.59	3.73	3.80	3.84	3.84	3.90	3.88	3.95	3.94	4.04	3.95	4.03	4.04
29592.1	3.59	3.75	3.84	3.91	3.90	3.98	3.95	4.04	4.03	4.13	4.04	4.12	4.13
29595.0	3.58	3.75	3.86	3.95	3.94	4.03	4.01	4.11	4.10	4.19	4.11	4.19	4.21
29597.9	3.57	3.76	3.88	3.99	3.98	4.09	4.06	4.17	4.16	4.26	4.17	4.26	4.29
29600.9	3.55	3.75	3.89	4.01	4.00	4.12	4.09	4.21	4.19	4.30	4.20	4.29	4.33
29603.8	3.53	3.75	3.89	4.03	4.02	4.16	4.12	4.25	4.23	4.34	4.24	4.33	4.38
29606.7	3.50	3.73	3.89	4.04	4.03	4.18	4.14	4.26	4.26	4.37	4.27	4.38	4.40
29609.7	3.47	3.72	3.89	4.04	4.03	4.20	4.16	4.29	4.28	4.39	4.29	4.40	4.42
29612.6	3.45	3.70	3.88	4.04	4.03	4.21	4.16	4.32	4.29	4.41	4.31	4.42	4.44
29615.5	3.42	3.68	3.87	4.04	4.03	4.22	4.17	4.33	4.31	4.46	4.34	4.46	4.49
29618.5	3.39	3.66	3.86	4.04	4.03	4.22	4.17	4.34	4.32	4.48	4.36	4.49	4.52
29621.4	3.37	3.63	3.85	4.04	4.02	4.22	4.17	4.36	4.33	4.50	4.37	4.51	4.56
29624.3	3.35	3.61	3.83	4.03	4.01	4.22	4.17	4.36	4.33	4.52	4.38	4.52	4.59
29627.3	3.33	3.59	3.81	4.02	4.00	4.22	4.17	4.37	4.34	4.53	4.39	4.54	4.64
29630.2	3.31	3.57	3.79	4.01	4.00	4.22	4.16	4.37	4.34	4.54	4.39	4.55	4.72
29633.1	3.29	3.55	3.77	4.00	3.99	4.22	4.15	4.37	4.34	4.55	4.40	4.56	4.73
29636.1	3.28	3.53	3.75	3.98	3.97	4.21	4.15	4.37	4.34	4.55	4.39	4.57	4.76
29639.0	3.26	3.52	3.74	3.97	3.95	4.20	4.14	4.36	4.34	4.55	4.39	4.57	4.74
29639.0	3.54	3.82	4.06	4.32	4.31	4.58	4.51	4.77	4.74	4.98	4.86	5.10	5.30
29641.9	3.53	3.81	4.05	4.31	4.29	4.57	4.50	4.76	4.73	4.97	4.86	5.10	5.30
29644.8	3.52	3.80	4.03	4.30	4.28	4.56	4.49	4.76	4.73	4.97	4.86	5.10	5.32
29647.7	3.51	3.79	4.02	4.28	4.27	4.55	4.48	4.75	4.73	4.97	4.85	5.10	5.31
29650.6	3.51	3.78	4.01	4.27	4.26	4.55	4.47	4.75	4.72	4.97	4.85	5.11	5.31
29653.5	3.50	3.77	4.00	4.26	4.25	4.54	4.46	4.74	4.72	4.98	4.85	5.11	5.28
29656.4	3.50	3.76	3.99	4.25	4.24	4.53	4.45	4.74	4.71	4.97	4.84	5.11	5.30
29659.3	3.50	3.76	3.98	4.24	4.23	4.52	4.44	4.72	4.71	4.98	4.83	5.11	5.29
29662.2	3.50	3.75	3.98	4.24	4.22	4.51	4.44	4.72	4.70	4.97	4.83	5.11	5.35
29665.1	3.50	3.75	3.98	4.23	4.21	4.51	4.43	4.72	4.70	4.98	4.83	5.11	5.43
29668.0	3.50	3.75	3.97	4.23	4.21	4.50	4.42	4.73	4.69	4.98	4.84	5.13	5.44
29671.0	3.47	3.73	3.95	4.21	4.19	4.49	4.41	4.74	4.69	4.98	4.85	5.16	5.48
29673.9	3.44	3.70	3.93	4.19	4.18	4.48	4.40	4.72	4.68	4.99	4.84	5.14	5.50
29676.9	3.42	3.68	3.92	4.18	4.17	4.47	4.39	4.72	4.68	4.99	4.84	5.15	5.51
29679.8	3.39	3.66	3.90	4.18	4.16	4.47	4.39	4.73	4.69	5.01	4.85	5.17	5.53
29682.8	3.37	3.65	3.89	4.17	4.16	4.48	4.40	4.75	4.71	5.03	4.87	5.20	5.57
29685.8	3.35	3.63	3.88	4.18	4.16	4.50	4.41	4.77	4.73	5.07	4.90	5.24	5.62
29688.7	3.33	3.62	3.88	4.19	4.17	4.51	4.42	4.80	4.76	5.12	4.94	5.28	5.67
29691.7	3.32	3.60	3.87	4.18	4.16	4.52	4.43	4.81	4.77	5.13	4.95	5.30	5.70
29694.6	3.30	3.59	3.86	4.18	4.16	4.52	4.43	4.82	4.77	5.14	4.95	5.32	5.72
29697.6	3.29	3.58	3.86	4.18	4.16	4.52	4.43	4.82	4.78	5.15	4.96	5.33	5.72
29700.5	3.28	3.58	3.86	4.18	4.16	4.53	4.43	4.83	4.78	5.16	4.97	5.34	5.73
29703.5	3.27	3.57	3.85	4.18	4.16	4.53	4.44	4.84	4.79	5.17	4.98	5.34	5.73
29706.5	3.26	3.57	3.86	4.19	4.16	4.54	4.44	4.85	4.80	5.18	4.99	5.35	5.73
29709.4	3.26	3.57	3.86	4.19	4.17	4.55	4.45	4.86	4.81	5.19	5.00	5.36	5.74

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29712.4	3.26	3.57	3.86	4.20	4.18	4.56	4.46	4.88	4.83	5.20	5.01	5.36	5.74
29715.3	3.26	3.57	3.87	4.21	4.19	4.58	4.48	4.89	4.84	5.20	5.03	5.36	5.74
29718.3	3.26	3.58	3.88	4.22	4.20	4.59	4.49	4.90	4.85	5.20	5.03	5.36	5.74
29721.3	3.26	3.59	3.89	4.24	4.22	4.61	4.51	4.91	4.87	5.21	5.04	5.37	5.74
29724.2	3.27	3.60	3.90	4.26	4.23	4.62	4.53	4.92	4.87	5.21	5.04	5.37	5.73
29727.2	3.28	3.61	3.92	4.27	4.25	4.64	4.55	4.92	4.88	5.21	5.05	5.37	5.74
29730.1	3.29	3.63	3.94	4.30	4.27	4.65	4.56	4.93	4.89	5.22	5.05	5.37	5.74
29733.1	3.30	3.65	3.96	4.32	4.30	4.66	4.57	4.93	4.89	5.22	5.05	5.38	5.74
29736.0	3.32	3.67	3.98	4.33	4.31	4.66	4.57	4.93	4.89	5.23	5.06	5.39	5.76
29739.0	3.34	3.69	4.01	4.35	4.33	4.67	4.58	4.94	4.90	5.24	5.06	5.40	5.76
29742.0	3.36	3.72	4.04	4.36	4.34	4.67	4.59	4.94	4.90	5.25	5.07	5.42	5.78
29744.9	3.39	3.75	4.07	4.37	4.35	4.68	4.59	4.95	4.91	5.26	5.07	5.42	5.78
29747.9	3.42	3.78	4.08	4.37	4.35	4.68	4.60	4.96	4.91	5.27	5.08	5.43	5.78
29750.8	3.45	3.81	4.09	4.38	4.36	4.70	4.61	4.97	4.93	5.28	5.10	5.44	5.79
29753.8	3.49	3.83	4.10	4.39	4.38	4.71	4.63	4.99	4.95	5.29	5.12	5.46	5.80
29756.8	3.52	3.86	4.11	4.41	4.39	4.73	4.65	5.00	4.96	5.31	5.13	5.48	5.81
29759.7	3.55	3.87	4.12	4.42	4.40	4.74	4.66	5.01	4.98	5.32	5.14	5.49	5.82
29762.7	3.58	3.88	4.13	4.43	4.41	4.76	4.67	5.03	4.99	5.33	5.15	5.50	5.82
29765.6	3.59	3.88	4.13	4.44	4.42	4.76	4.68	5.03	4.99	5.33	5.15	5.50	5.83
29768.6	3.60	3.88	4.13	4.44	4.42	4.76	4.68	5.02	4.99	5.32	5.14	5.50	5.82
29771.5	3.60	3.87	4.13	4.43	4.41	4.75	4.66	5.01	4.97	5.31	5.13	5.49	5.81
29774.5	3.60	3.87	4.12	4.42	4.40	4.73	4.65	4.99	4.95	5.29	5.11	5.47	5.80
29777.5	3.59	3.86	4.11	4.40	4.38	4.70	4.62	4.97	4.93	5.27	5.09	5.45	5.78
29780.4	3.59	3.85	4.10	4.38	4.36	4.68	4.60	4.94	4.90	5.24	5.06	5.41	5.74
29783.4	3.58	3.84	4.08	4.35	4.33	4.64	4.56	4.90	4.86	5.20	5.02	5.37	5.69
29786.3	3.57	3.83	4.05	4.32	4.30	4.61	4.53	4.86	4.83	5.15	4.98	5.32	5.64
29789.3	3.56	3.80	4.02	4.28	4.27	4.57	4.49	4.82	4.79	5.11	4.94	5.27	5.58
29792.3	3.54	3.78	3.99	4.25	4.23	4.54	4.46	4.78	4.75	5.07	4.90	5.23	5.54
29795.2	3.52	3.74	3.95	4.21	4.19	4.50	4.42	4.74	4.71	5.02	4.86	5.19	5.49
29798.2	3.49	3.70	3.92	4.17	4.15	4.46	4.38	4.70	4.67	4.98	4.81	5.14	5.45
29801.1	3.45	3.66	3.87	4.13	4.11	4.41	4.33	4.65	4.62	4.93	4.77	5.09	5.39
29804.1	3.41	3.62	3.83	4.08	4.07	4.36	4.29	4.61	4.57	4.88	4.72	5.04	5.34
29807.0	3.37	3.57	3.78	4.03	4.02	4.31	4.24	4.55	4.52	4.83	4.66	4.98	5.27
29810.0	3.32	3.53	3.74	3.99	3.97	4.26	4.19	4.50	4.46	4.77	4.61	4.92	5.20
29813.0	3.31	3.52	3.73	3.98	3.96	4.25	4.18	4.49	4.45	4.76	4.60	4.91	5.19
29815.9	3.30	3.51	3.72	3.97	3.96	4.24	4.17	4.48	4.45	4.75	4.58	4.90	5.18
29818.9	3.30	3.51	3.71	3.97	3.95	4.24	4.16	4.47	4.44	4.74	4.57	4.88	5.16
29821.8	3.29	3.50	3.71	3.96	3.94	4.23	4.16	4.46	4.43	4.72	4.57	4.87	5.15
29824.8	3.28	3.49	3.70	3.95	3.94	4.22	4.15	4.45	4.42	4.71	4.56	4.86	5.14
29827.7	3.27	3.48	3.69	3.95	3.93	4.21	4.14	4.44	4.41	4.70	4.55	4.85	5.13
29830.7	3.26	3.48	3.69	3.94	3.92	4.21	4.14	4.43	4.40	4.69	4.54	4.83	5.12
29833.6	3.25	3.47	3.68	3.93	3.92	4.20	4.13	4.43	4.40	4.68	4.53	4.82	5.11
29836.6	3.25	3.46	3.67	3.93	3.91	4.19	4.12	4.42	4.39	4.67	4.52	4.81	5.10
29839.5	3.24	3.45	3.67	3.92	3.90	4.18	4.11	4.41	4.38	4.66	4.51	4.80	5.09
29842.5	3.23	3.45	3.66	3.91	3.90	4.18	4.11	4.40	4.37	4.64	4.50	4.78	5.08
29845.5	3.22	3.44	3.65	3.90	3.89	4.17	4.10	4.39	4.36	4.63	4.48	4.77	5.06

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29848.4	3.22	3.43	3.65	3.89	3.88	4.16	4.09	4.37	4.34	4.61	4.47	4.75	5.04
29851.4	3.21	3.43	3.64	3.89	3.87	4.14	4.08	4.36	4.33	4.60	4.46	4.74	5.03
29854.3	3.20	3.42	3.63	3.88	3.86	4.13	4.07	4.35	4.32	4.58	4.44	4.72	5.01
29857.3	3.20	3.41	3.62	3.87	3.85	4.12	4.06	4.33	4.31	4.57	4.43	4.71	4.99
29860.2	3.19	3.41	3.61	3.86	3.84	4.11	4.04	4.32	4.29	4.55	4.42	4.69	4.98
29863.2	3.18	3.40	3.61	3.85	3.83	4.10	4.03	4.31	4.28	4.54	4.40	4.67	4.96
29866.1	3.17	3.39	3.60	3.84	3.82	4.09	4.02	4.29	4.27	4.52	4.39	4.66	4.94
29869.1	3.17	3.38	3.59	3.82	3.81	4.07	4.01	4.28	4.25	4.51	4.37	4.64	4.93
29872.0	3.16	3.37	3.58	3.81	3.80	4.06	3.99	4.26	4.24	4.49	4.36	4.63	4.91
29875.0	3.15	3.37	3.57	3.80	3.79	4.05	3.98	4.25	4.22	4.48	4.34	4.61	4.88
29878.0	3.15	3.36	3.56	3.79	3.77	4.03	3.97	4.24	4.21	4.46	4.33	4.60	4.87
29880.9	3.14	3.35	3.55	3.78	3.76	4.03	3.96	4.23	4.21	4.46	4.32	4.60	4.88
29883.9	3.13	3.34	3.53	3.77	3.75	4.02	3.95	4.22	4.20	4.45	4.32	4.60	4.87
29886.8	3.12	3.33	3.52	3.76	3.74	4.01	3.94	4.21	4.19	4.44	4.31	4.59	4.86
29889.8	3.11	3.31	3.51	3.74	3.73	3.99	3.92	4.20	4.17	4.43	4.29	4.56	4.84
29892.7	3.10	3.30	3.49	3.72	3.71	3.97	3.91	4.18	4.15	4.41	4.27	4.54	4.81
29895.7	3.09	3.29	3.48	3.71	3.69	3.96	3.89	4.16	4.13	4.39	4.25	4.51	4.78
29898.6	3.07	3.27	3.46	3.69	3.68	3.94	3.87	4.14	4.12	4.37	4.24	4.49	4.75
29901.6	3.06	3.25	3.45	3.67	3.66	3.92	3.85	4.12	4.10	4.34	4.21	4.46	4.73
29904.5	3.04	3.24	3.43	3.66	3.64	3.90	3.84	4.10	4.08	4.31	4.18	4.43	4.70
29907.5	3.02	3.22	3.41	3.64	3.62	3.88	3.81	4.07	4.04	4.28	4.15	4.40	4.67
29910.5	3.01	3.20	3.39	3.62	3.60	3.85	3.79	4.04	4.01	4.25	4.12	4.37	4.63
29913.4	2.99	3.18	3.37	3.59	3.58	3.82	3.76	4.00	3.98	4.21	4.08	4.33	4.59
29916.4	2.97	3.16	3.35	3.57	3.56	3.79	3.73	3.97	3.94	4.18	4.05	4.30	4.56
29919.3	2.94	3.13	3.32	3.54	3.52	3.75	3.70	3.93	3.91	4.14	4.01	4.27	4.54
29922.3	2.92	3.11	3.30	3.50	3.49	3.72	3.66	3.89	3.87	4.11	3.98	4.23	4.50
29925.2	2.90	3.09	3.27	3.47	3.46	3.68	3.62	3.85	3.83	4.07	3.94	4.19	4.46
29928.2	2.87	3.06	3.24	3.43	3.42	3.64	3.59	3.82	3.79	4.03	3.90	4.16	4.42
29931.1	2.85	3.03	3.20	3.39	3.38	3.60	3.55	3.78	3.76	3.99	3.86	4.12	4.38
29934.1	2.82	2.99	3.16	3.36	3.34	3.56	3.51	3.74	3.72	3.96	3.82	4.08	4.33
29937.0	2.78	2.95	3.12	3.32	3.31	3.52	3.47	3.70	3.68	3.91	3.78	4.04	4.30
29940.0	2.75	2.91	3.08	3.28	3.27	3.49	3.43	3.66	3.64	3.87	3.74	4.00	4.25
29942.9	2.76	2.92	3.09	3.28	3.27	3.49	3.44	3.66	3.64	3.87	3.75	4.00	4.26
29945.9	2.77	2.93	3.09	3.29	3.28	3.50	3.44	3.67	3.65	3.87	3.75	4.00	4.26
29948.8	2.77	2.93	3.10	3.30	3.28	3.50	3.45	3.67	3.65	3.87	3.75	4.00	4.26
29951.8	2.78	2.94	3.11	3.30	3.29	3.51	3.45	3.68	3.66	3.87	3.76	4.00	4.26
29954.7	2.79	2.95	3.12	3.31	3.30	3.51	3.46	3.68	3.66	3.88	3.76	4.00	4.26
29957.6	2.80	2.96	3.12	3.31	3.30	3.52	3.46	3.69	3.66	3.88	3.76	4.00	4.26
29960.6	2.81	2.96	3.13	3.32	3.31	3.52	3.47	3.69	3.67	3.88	3.77	4.01	4.27
29963.5	2.82	2.97	3.14	3.33	3.32	3.53	3.47	3.70	3.67	3.89	3.77	4.01	4.27
29966.5	2.82	2.98	3.14	3.33	3.32	3.53	3.48	3.70	3.68	3.89	3.78	4.01	4.27
29969.4	2.83	2.99	3.15	3.34	3.33	3.54	3.49	3.71	3.68	3.89	3.78	4.02	4.27
29972.4	2.84	2.99	3.16	3.35	3.33	3.54	3.49	3.71	3.69	3.90	3.78	4.01	4.27
29975.3	2.85	3.00	3.17	3.35	3.34	3.55	3.50	3.72	3.69	3.90	3.79	4.02	4.27
29978.2	2.86	3.01	3.17	3.36	3.35	3.56	3.50	3.72	3.70	3.91	3.79	4.01	4.27
29981.2	2.87	3.02	3.18	3.37	3.35	3.56	3.51	3.72	3.70	3.91	3.80	4.02	4.27

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
29984.1	2.88	3.03	3.19	3.37	3.36	3.57	3.52	3.73	3.71	3.91	3.80	4.02	4.27
29987.1	2.89	3.03	3.19	3.38	3.37	3.57	3.52	3.73	3.71	3.92	3.80	4.02	4.27
29990.0	2.90	3.04	3.20	3.38	3.37	3.58	3.53	3.74	3.72	3.92	3.81	4.02	4.28
29992.9	2.90	3.05	3.21	3.39	3.38	3.58	3.53	3.74	3.72	3.92	3.81	4.03	4.28
29995.9	2.91	3.06	3.22	3.40	3.39	3.59	3.54	3.75	3.73	3.92	3.82	4.03	4.28
29998.8	2.92	3.07	3.23	3.40	3.39	3.59	3.54	3.75	3.73	3.93	3.82	4.03	4.28
30001.8	2.93	3.08	3.23	3.41	3.40	3.60	3.55	3.76	3.74	3.93	3.82	4.04	4.28
30004.7	2.94	3.08	3.24	3.42	3.41	3.61	3.56	3.76	3.74	3.93	3.83	4.04	4.29
30007.6	2.95	3.09	3.25	3.43	3.42	3.61	3.56	3.77	3.75	3.94	3.83	4.04	4.29
30010.6	2.96	3.10	3.26	3.43	3.42	3.62	3.57	3.77	3.75	3.94	3.84	4.04	4.29
30013.5	2.97	3.11	3.27	3.44	3.43	3.62	3.57	3.78	3.76	3.94	3.84	4.05	4.29
30016.5	2.98	3.12	3.28	3.45	3.44	3.63	3.58	3.78	3.76	3.95	3.85	4.05	4.30
30019.4	2.99	3.13	3.28	3.46	3.45	3.64	3.59	3.79	3.77	3.95	3.85	4.05	4.30
30022.4	3.00	3.14	3.29	3.46	3.45	3.64	3.60	3.79	3.77	3.95	3.85	4.05	4.30
30025.3	3.02	3.15	3.30	3.47	3.46	3.65	3.60	3.80	3.78	3.96	3.86	4.05	4.30
30028.2	3.03	3.16	3.31	3.48	3.47	3.66	3.61	3.80	3.78	3.96	3.86	4.05	4.31
30031.2	3.04	3.17	3.32	3.49	3.48	3.66	3.62	3.81	3.79	3.96	3.87	4.06	4.31
30034.1	3.05	3.18	3.33	3.50	3.49	3.67	3.62	3.81	3.79	3.97	3.87	4.06	4.31
30037.1	3.06	3.20	3.34	3.50	3.50	3.68	3.63	3.82	3.80	3.97	3.87	4.06	4.32
30040.0	3.07	3.21	3.35	3.51	3.50	3.68	3.64	3.82	3.81	3.97	3.88	4.06	4.32
30042.9	3.08	3.22	3.36	3.53	3.52	3.70	3.65	3.84	3.82	3.99	3.89	4.08	4.35
30045.8	3.10	3.24	3.38	3.54	3.53	3.71	3.67	3.85	3.84	4.00	3.91	4.09	4.34
30048.7	3.11	3.25	3.40	3.56	3.55	3.73	3.69	3.87	3.85	4.01	3.92	4.10	4.34
30051.6	3.13	3.27	3.41	3.58	3.57	3.75	3.70	3.88	3.87	4.03	3.94	4.11	4.35
30054.6	3.14	3.29	3.43	3.59	3.58	3.76	3.72	3.90	3.88	4.04	3.95	4.13	4.35
30057.5	3.16	3.30	3.45	3.61	3.60	3.78	3.74	3.92	3.90	4.06	3.97	4.14	4.37
30060.4	3.18	3.32	3.46	3.63	3.62	3.80	3.75	3.94	3.92	4.07	3.99	4.16	4.39
30063.3	3.19	3.34	3.48	3.65	3.64	3.82	3.77	3.96	3.94	4.09	4.01	4.17	4.40
30066.2	3.21	3.35	3.50	3.67	3.66	3.84	3.79	3.98	3.96	4.11	4.03	4.19	4.42
30069.1	3.22	3.37	3.52	3.69	3.68	3.86	3.82	4.00	3.98	4.13	4.05	4.21	4.44
30072.0	3.24	3.39	3.54	3.71	3.70	3.88	3.84	4.02	4.00	4.15	4.07	4.23	4.46
30074.9	3.26	3.41	3.56	3.73	3.72	3.90	3.86	4.04	4.02	4.17	4.09	4.24	4.47
30077.9	3.28	3.43	3.58	3.75	3.74	3.92	3.88	4.06	4.04	4.19	4.11	4.26	4.50
30080.8	3.29	3.45	3.59	3.77	3.76	3.95	3.90	4.08	4.06	4.21	4.13	4.28	4.50
30083.7	3.31	3.47	3.61	3.79	3.78	3.97	3.92	4.10	4.09	4.23	4.15	4.30	4.53
30086.6	3.33	3.48	3.63	3.81	3.80	3.99	3.94	4.12	4.11	4.25	4.17	4.32	4.54
30089.5	3.35	3.50	3.65	3.83	3.82	4.01	3.97	4.15	4.13	4.27	4.19	4.34	4.55
30092.4	3.37	3.52	3.67	3.85	3.85	4.03	3.99	4.17	4.15	4.29	4.21	4.36	4.56
30095.3	3.39	3.54	3.69	3.88	3.87	4.06	4.01	4.19	4.17	4.31	4.23	4.38	4.58
30098.2	3.41	3.57	3.71	3.90	3.89	4.08	4.04	4.22	4.20	4.33	4.26	4.40	4.60
30101.1	3.43	3.59	3.73	3.92	3.91	4.11	4.06	4.24	4.22	4.36	4.28	4.42	4.63
30104.1	3.45	3.61	3.75	3.95	3.94	4.13	4.09	4.26	4.25	4.38	4.30	4.44	4.64
30107.0	3.47	3.63	3.77	3.97	3.96	4.15	4.11	4.28	4.27	4.40	4.32	4.46	4.65
30109.9	3.49	3.65	3.80	3.99	3.98	4.17	4.13	4.30	4.29	4.42	4.34	4.48	4.66
30112.8	3.51	3.67	3.82	4.01	4.00	4.20	4.15	4.33	4.31	4.44	4.36	4.50	4.68
30115.7	3.54	3.69	3.84	4.03	4.02	4.22	4.17	4.35	4.33	4.46	4.39	4.52	4.70

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
30118.6	3.56	3.72	3.86	4.06	4.05	4.24	4.20	4.37	4.35	4.48	4.41	4.54	4.72
30121.5	3.58	3.74	3.89	4.08	4.07	4.26	4.22	4.39	4.38	4.50	4.43	4.56	4.74
30124.4	3.61	3.77	3.91	4.10	4.09	4.29	4.24	4.42	4.40	4.52	4.45	4.58	4.76
30127.4	3.64	3.79	3.94	4.13	4.12	4.31	4.27	4.44	4.42	4.54	4.48	4.61	4.78
30130.3	3.66	3.82	3.96	4.15	4.14	4.34	4.29	4.47	4.45	4.57	4.50	4.63	4.81
30133.2	3.69	3.84	3.99	4.18	4.17	4.36	4.32	4.49	4.47	4.59	4.52	4.65	4.84
30136.1	3.72	3.87	4.02	4.21	4.20	4.39	4.35	4.52	4.50	4.62	4.55	4.68	4.86
30139.0	3.75	3.90	4.04	4.23	4.22	4.41	4.37	4.54	4.52	4.64	4.57	4.70	4.89
30141.9	3.73	3.88	4.02	4.21	4.20	4.39	4.35	4.52	4.51	4.62	4.56	4.68	4.88
30144.8	3.71	3.86	4.01	4.19	4.18	4.38	4.33	4.50	4.49	4.60	4.54	4.67	4.86
30147.7	3.68	3.84	3.99	4.17	4.16	4.36	4.31	4.48	4.47	4.58	4.52	4.65	4.84
30150.6	3.66	3.82	3.97	4.15	4.14	4.34	4.29	4.47	4.45	4.57	4.50	4.63	4.82
30153.4	3.64	3.80	3.95	4.13	4.12	4.32	4.27	4.45	4.43	4.55	4.48	4.61	4.81
30156.3	3.62	3.78	3.93	4.11	4.10	4.30	4.25	4.43	4.41	4.53	4.46	4.59	4.79
30159.2	3.60	3.76	3.91	4.09	4.08	4.28	4.23	4.41	4.39	4.51	4.44	4.57	4.77
30162.1	3.58	3.74	3.89	4.07	4.06	4.26	4.21	4.39	4.37	4.49	4.42	4.56	4.76
30165.0	3.56	3.72	3.87	4.05	4.04	4.24	4.19	4.37	4.35	4.47	4.41	4.54	4.74
30167.9	3.53	3.70	3.85	4.03	4.02	4.22	4.17	4.35	4.33	4.45	4.39	4.52	4.71
30170.8	3.51	3.68	3.82	4.01	4.00	4.20	4.15	4.33	4.31	4.43	4.37	4.50	4.69
30173.7	3.49	3.66	3.80	3.99	3.98	4.18	4.13	4.31	4.29	4.42	4.35	4.48	4.67
30176.6	3.47	3.64	3.78	3.97	3.96	4.16	4.11	4.29	4.27	4.40	4.33	4.46	4.65
30179.4	3.45	3.62	3.76	3.95	3.94	4.14	4.09	4.27	4.26	4.38	4.31	4.44	4.63
30182.3	3.43	3.60	3.74	3.93	3.92	4.12	4.07	4.25	4.24	4.36	4.29	4.43	4.61
30185.2	3.41	3.57	3.72	3.91	3.90	4.10	4.05	4.24	4.22	4.34	4.27	4.41	4.60
30188.1	3.39	3.55	3.70	3.89	3.88	4.08	4.03	4.22	4.20	4.32	4.26	4.39	4.60
30191.0	3.36	3.53	3.68	3.87	3.86	4.06	4.02	4.20	4.18	4.31	4.24	4.38	4.58
30193.9	3.34	3.51	3.66	3.85	3.84	4.04	4.00	4.18	4.16	4.29	4.22	4.35	4.60
30196.8	3.32	3.49	3.64	3.83	3.82	4.02	3.98	4.16	4.14	4.30	4.20	4.37	4.57
30199.7	3.30	3.46	3.62	3.81	3.80	4.00	3.96	4.14	4.13	4.30	4.19	4.38	4.56
30202.6	3.28	3.44	3.59	3.79	3.78	3.98	3.94	4.12	4.11	4.28	4.17	4.36	4.56
30205.4	3.26	3.42	3.57	3.77	3.76	3.97	3.92	4.11	4.09	4.27	4.15	4.34	4.53
30208.3	3.24	3.40	3.55	3.75	3.74	3.95	3.90	4.09	4.07	4.25	4.13	4.32	4.54
30211.2	3.22	3.38	3.53	3.73	3.72	3.93	3.88	4.06	4.05	4.23	4.11	4.33	4.53
30214.1	3.19	3.36	3.51	3.71	3.70	3.91	3.86	4.05	4.03	4.22	4.10	4.30	4.52
30217.0	3.17	3.33	3.49	3.69	3.68	3.89	3.84	4.04	4.02	4.20	4.09	4.30	4.53
30219.9	3.15	3.31	3.47	3.67	3.66	3.87	3.82	4.02	4.01	4.19	4.07	4.28	4.51
30222.8	3.13	3.29	3.45	3.65	3.64	3.85	3.80	4.01	3.99	4.18	4.06	4.26	4.48
30225.7	3.11	3.27	3.43	3.63	3.62	3.83	3.78	3.99	3.97	4.15	4.04	4.25	4.47
30228.6	3.09	3.25	3.41	3.61	3.60	3.81	3.76	3.97	3.95	4.14	4.02	4.23	4.45
30231.4	3.07	3.23	3.39	3.59	3.58	3.79	3.74	3.95	3.93	4.12	4.00	4.21	4.44
30234.3	3.04	3.20	3.37	3.57	3.56	3.77	3.72	3.93	3.91	4.10	3.98	4.20	4.42
30237.2	3.02	3.18	3.35	3.55	3.54	3.75	3.70	3.91	3.89	4.08	3.97	4.18	4.40
30240.1	3.00	3.16	3.33	3.53	3.52	3.73	3.68	3.89	3.88	4.06	3.95	4.16	4.38
30243.0	2.98	3.14	3.31	3.51	3.50	3.72	3.66	3.88	3.86	4.05	3.93	4.15	4.37
30245.9	2.98	3.14	3.30	3.50	3.49	3.70	3.65	3.86	3.84	4.03	3.92	4.13	4.35
30248.7	2.97	3.13	3.29	3.49	3.48	3.69	3.64	3.85	3.83	4.01	3.90	4.11	4.33

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
30251.6	2.97	3.13	3.28	3.47	3.47	3.68	3.63	3.83	3.81	4.00	3.88	4.09	4.30
30254.4	2.97	3.12	3.27	3.46	3.45	3.66	3.61	3.82	3.80	3.98	3.87	4.08	4.28
30257.3	2.97	3.11	3.27	3.45	3.44	3.65	3.60	3.80	3.79	3.96	3.85	4.06	4.26
30260.2	2.96	3.11	3.26	3.44	3.43	3.64	3.59	3.79	3.77	3.95	3.84	4.04	4.25
30263.0	2.96	3.10	3.25	3.43	3.42	3.62	3.57	3.77	3.76	3.93	3.82	4.03	4.22
30265.9	2.96	3.10	3.24	3.42	3.41	3.61	3.56	3.76	3.74	3.92	3.81	4.01	4.22
30268.8	2.95	3.09	3.23	3.41	3.40	3.60	3.55	3.75	3.73	3.90	3.79	3.99	4.21
30271.6	2.95	3.08	3.22	3.39	3.39	3.58	3.53	3.73	3.71	3.88	3.78	3.97	4.19
30274.5	2.95	3.08	3.21	3.38	3.37	3.57	3.52	3.71	3.70	3.86	3.76	3.96	4.17
30277.3	2.95	3.07	3.21	3.37	3.36	3.55	3.51	3.70	3.68	3.85	3.74	3.94	4.16
30280.2	2.94	3.07	3.20	3.36	3.35	3.54	3.49	3.68	3.67	3.83	3.73	3.92	4.14
30283.1	2.94	3.06	3.19	3.35	3.34	3.53	3.48	3.67	3.65	3.81	3.71	3.90	4.12
30285.9	2.94	3.05	3.18	3.34	3.33	3.51	3.47	3.65	3.64	3.80	3.70	3.89	4.11
30288.8	2.93	3.05	3.17	3.32	3.32	3.50	3.46	3.64	3.62	3.78	3.68	3.87	4.09
30291.6	2.93	3.04	3.16	3.31	3.30	3.49	3.44	3.62	3.61	3.76	3.67	3.85	4.08
30294.5	2.93	3.04	3.15	3.30	3.29	3.47	3.43	3.61	3.59	3.75	3.65	3.83	4.05
30297.4	2.92	3.03	3.14	3.29	3.28	3.46	3.42	3.59	3.58	3.73	3.63	3.82	4.04
30300.2	2.92	3.02	3.13	3.28	3.27	3.44	3.40	3.58	3.56	3.71	3.62	3.80	4.02
30303.1	2.92	3.02	3.12	3.26	3.26	3.43	3.39	3.56	3.55	3.70	3.60	3.78	4.00
30305.9	2.91	3.01	3.11	3.25	3.24	3.42	3.37	3.55	3.53	3.68	3.59	3.76	3.98
30308.8	2.91	3.00	3.10	3.24	3.23	3.40	3.36	3.53	3.52	3.67	3.57	3.75	3.96
30311.7	2.91	2.99	3.10	3.23	3.22	3.39	3.35	3.52	3.51	3.65	3.56	3.73	3.94
30314.5	2.90	2.99	3.09	3.21	3.21	3.37	3.33	3.51	3.49	3.63	3.54	3.71	3.92
30317.4	2.90	2.98	3.08	3.20	3.20	3.36	3.32	3.49	3.48	3.62	3.53	3.69	3.90
30320.3	2.90	2.97	3.07	3.19	3.18	3.35	3.31	3.48	3.46	3.60	3.51	3.68	3.88
30323.1	2.90	2.97	3.06	3.18	3.17	3.33	3.29	3.46	3.45	3.59	3.50	3.66	3.86
30326.0	2.89	2.96	3.05	3.16	3.16	3.32	3.28	3.45	3.44	3.57	3.48	3.64	3.84
30328.8	2.89	2.95	3.04	3.15	3.15	3.30	3.27	3.43	3.42	3.56	3.47	3.63	3.82
30331.7	2.89	2.95	3.03	3.14	3.13	3.29	3.25	3.42	3.41	3.54	3.45	3.61	3.80
30334.6	2.88	2.94	3.02	3.13	3.12	3.28	3.24	3.41	3.39	3.52	3.44	3.59	3.77
30337.4	2.88	2.93	3.01	3.12	3.11	3.26	3.23	3.39	3.38	3.51	3.42	3.57	3.75
30340.3	2.91	2.93	3.00	3.10	3.10	3.25	3.21	3.38	3.37	3.49	3.41	3.56	3.73
30343.1	2.99	2.99	2.99	3.09	3.09	3.24	3.20	3.37	3.35	3.48	3.40	3.54	3.72
30346.0	3.10	3.10	3.09	3.08	3.08	3.22	3.19	3.35	3.34	3.46	3.38	3.53	3.69
30349.0	2.74	2.84	2.93	3.05	3.04	3.20	3.17	3.33	3.32	3.44	3.37	3.47	3.70
30352.0	2.63	2.76	2.88	3.01	3.00	3.16	3.12	3.29	3.28	3.40	3.32	3.45	3.64
30355.0	2.55	2.69	2.82	2.96	2.96	3.12	3.09	3.26	3.25	3.36	3.30	3.45	3.60
30358.0	2.48	2.62	2.76	2.92	2.91	3.10	3.06	3.25	3.23	3.35	3.28	3.41	3.59
30361.0	2.45	2.58	2.72	2.88	2.87	3.07	3.02	3.21	3.20	3.33	3.25	3.40	3.57
30364.0	2.41	2.55	2.68	2.84	2.83	3.03	2.98	3.19	3.17	3.30	3.22	3.38	3.56
30367.0	2.39	2.53	2.65	2.81	2.80	3.01	2.96	3.16	3.15	3.28	3.21	3.36	3.55
30370.0	2.37	2.51	2.63	2.79	2.78	2.98	2.93	3.14	3.12	3.27	3.18	3.35	3.55
30373.0	2.35	2.50	2.62	2.78	2.77	2.97	2.92	3.12	3.11	3.26	3.16	3.35	3.57
30376.0	2.33	2.48	2.61	2.76	2.75	2.96	2.91	3.11	3.09	3.26	3.16	3.34	3.55
30379.0	2.30	2.47	2.60	2.76	2.75	2.95	2.90	3.10	3.09	3.27	3.16	3.35	3.56
30382.0	2.28	2.45	2.59	2.75	2.74	2.94	2.89	3.10	3.08	3.27	3.17	3.36	3.57

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
30385.0	2.27	2.44	2.58	2.75	2.74	2.94	2.89	3.12	3.10	3.30	3.17	3.37	3.58
30388.0	2.26	2.42	2.56	2.74	2.73	2.94	2.89	3.11	3.09	3.28	3.18	3.37	3.58
30391.0	2.26	2.42	2.56	2.73	2.72	2.93	2.88	3.11	3.08	3.29	3.18	3.37	3.58
30394.0	2.25	2.41	2.55	2.72	2.71	2.93	2.87	3.11	3.08	3.28	3.17	3.37	3.58
30397.0	2.26	2.41	2.55	2.72	2.71	2.92	2.87	3.10	3.08	3.28	3.17	3.37	3.58
30400.0	2.26	2.41	2.54	2.71	2.70	2.92	2.86	3.10	3.07	3.28	3.17	3.37	3.59
30403.0	2.28	2.42	2.55	2.71	2.70	2.92	2.86	3.10	3.07	3.29	3.17	3.37	3.59
30406.0	2.29	2.43	2.55	2.71	2.70	2.91	2.86	3.10	3.07	3.28	3.17	3.37	3.60
30409.0	2.31	2.44	2.56	2.72	2.71	2.92	2.86	3.10	3.07	3.29	3.17	3.37	3.61
30412.0	2.32	2.46	2.57	2.73	2.72	2.92	2.87	3.10	3.07	3.29	3.17	3.38	3.61
30415.0	2.35	2.48	2.58	2.74	2.73	2.93	2.88	3.11	3.08	3.29	3.18	3.38	3.61
30418.0	2.37	2.50	2.60	2.75	2.74	2.94	2.88	3.11	3.08	3.29	3.18	3.38	3.62
30421.0	2.40	2.52	2.62	2.76	2.75	2.95	2.90	3.12	3.10	3.30	3.19	3.38	3.62
30424.0	2.43	2.55	2.64	2.77	2.76	2.96	2.91	3.13	3.10	3.31	3.20	3.39	3.63
30427.0	2.47	2.58	2.66	2.79	2.78	2.97	2.92	3.14	3.12	3.32	3.21	3.39	3.63
30430.0	2.51	2.61	2.68	2.81	2.80	2.99	2.94	3.15	3.13	3.32	3.22	3.41	3.64
30433.0	2.55	2.64	2.71	2.83	2.82	3.01	2.96	3.17	3.14	3.33	3.24	3.42	3.65
30436.0	2.60	2.68	2.74	2.85	2.84	3.02	2.97	3.19	3.16	3.34	3.25	3.43	3.66
30439.0	2.65	2.73	2.77	2.88	2.87	3.04	3.00	3.20	3.18	3.36	3.27	3.44	3.68
30442.0	2.71	2.77	2.81	2.90	2.90	3.07	3.02	3.22	3.20	3.37	3.29	3.46	3.68
30445.0	2.77	2.82	2.85	2.94	2.93	3.09	3.05	3.24	3.22	3.39	3.31	3.48	3.69
30448.0	2.84	2.88	2.90	2.97	2.96	3.12	3.08	3.27	3.25	3.42	3.33	3.50	3.71
30450.9	2.82	2.86	2.88	2.96	2.95	3.11	3.06	3.26	3.24	3.41	3.32	3.50	3.70
30453.8	2.79	2.84	2.87	2.95	2.94	3.10	3.05	3.25	3.23	3.41	3.32	3.49	3.70
30456.8	2.77	2.83	2.86	2.94	2.93	3.09	3.05	3.25	3.22	3.40	3.31	3.50	3.69
30459.7	2.75	2.81	2.84	2.93	2.92	3.08	3.04	3.24	3.22	3.40	3.30	3.49	3.69
30462.6	2.73	2.80	2.83	2.92	2.92	3.08	3.03	3.24	3.21	3.39	3.30	3.48	3.68
30465.6	2.72	2.79	2.83	2.92	2.91	3.07	3.03	3.23	3.21	3.39	3.30	3.47	3.69
30468.5	2.70	2.78	2.82	2.91	2.91	3.07	3.03	3.23	3.21	3.38	3.30	3.46	3.70
30471.4	2.69	2.77	2.81	2.91	2.90	3.07	3.02	3.23	3.21	3.38	3.30	3.47	3.69
30474.3	2.68	2.76	2.81	2.90	2.90	3.07	3.02	3.23	3.20	3.38	3.29	3.46	3.68
30477.3	2.66	2.75	2.80	2.90	2.90	3.07	3.02	3.23	3.20	3.38	3.29	3.47	3.68
30480.2	2.66	2.75	2.80	2.90	2.90	3.07	3.02	3.23	3.20	3.38	3.29	3.47	3.67
30483.1	2.65	2.74	2.80	2.90	2.90	3.07	3.02	3.23	3.21	3.38	3.29	3.46	3.68
30486.0	2.64	2.74	2.80	2.91	2.90	3.07	3.03	3.23	3.21	3.38	3.29	3.47	3.68
30488.9	2.63	2.73	2.80	2.91	2.90	3.08	3.03	3.24	3.22	3.38	3.30	3.46	3.68
30491.9	2.63	2.73	2.80	2.92	2.91	3.08	3.04	3.24	3.22	3.38	3.30	3.47	3.69
30494.8	2.63	2.73	2.80	2.92	2.92	3.09	3.04	3.24	3.22	3.39	3.30	3.46	3.68
30497.7	2.63	2.74	2.81	2.93	2.92	3.10	3.05	3.25	3.23	3.39	3.30	3.46	3.69
30500.7	2.63	2.74	2.82	2.94	2.93	3.10	3.06	3.25	3.23	3.39	3.31	3.47	3.68
30503.6	2.63	2.75	2.83	2.95	2.94	3.11	3.07	3.25	3.24	3.39	3.31	3.47	3.68
30506.5	2.64	2.75	2.84	2.96	2.95	3.12	3.07	3.26	3.24	3.39	3.31	3.47	3.68
30509.4	2.65	2.76	2.85	2.97	2.96	3.12	3.08	3.26	3.24	3.40	3.31	3.47	3.68
30512.3	2.65	2.77	2.86	2.97	2.97	3.12	3.09	3.26	3.24	3.40	3.32	3.47	3.69
30515.3	2.67	2.79	2.88	2.98	2.98	3.13	3.09	3.27	3.25	3.40	3.32	3.47	3.69
30518.2	2.68	2.81	2.89	2.99	2.99	3.13	3.09	3.27	3.25	3.40	3.32	3.48	3.69

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
30521.1	2.70	2.83	2.91	3.00	3.00	3.14	3.10	3.27	3.25	3.41	3.33	3.48	3.69
30524.1	2.71	2.85	2.92	3.00	3.00	3.14	3.10	3.28	3.26	3.41	3.33	3.49	3.70
30527.0	2.74	2.87	2.94	3.01	3.01	3.14	3.11	3.28	3.26	3.42	3.34	3.49	3.70
30529.9	2.76	2.89	2.95	3.01	3.01	3.15	3.11	3.29	3.27	3.42	3.34	3.50	3.71
30532.8	2.79	2.91	2.96	3.02	3.02	3.16	3.12	3.29	3.27	3.43	3.35	3.50	3.71
30535.8	2.82	2.94	2.98	3.03	3.02	3.16	3.12	3.30	3.28	3.43	3.35	3.51	3.72
30538.7	2.86	2.96	2.99	3.03	3.03	3.17	3.13	3.31	3.29	3.44	3.36	3.52	3.73
30541.6	2.89	2.99	3.01	3.04	3.04	3.18	3.14	3.32	3.30	3.45	3.37	3.53	3.73
30544.5	2.93	3.00	3.02	3.05	3.05	3.19	3.15	3.33	3.31	3.46	3.38	3.54	3.75
30547.4	2.97	3.02	3.03	3.06	3.06	3.19	3.16	3.34	3.31	3.47	3.39	3.55	3.75
30550.4	3.01	3.04	3.05	3.07	3.07	3.21	3.17	3.35	3.33	3.48	3.40	3.56	3.76
30553.3	3.05	3.07	3.08	3.08	3.08	3.21	3.18	3.36	3.34	3.50	3.41	3.57	3.76
30556.2	3.08	3.09	3.10	3.10	3.10	3.23	3.19	3.37	3.35	3.51	3.42	3.59	3.77
30559.2	3.12	3.13	3.13	3.14	3.14	3.24	3.20	3.38	3.36	3.52	3.44	3.60	3.78
30562.1	3.16	3.17	3.17	3.18	3.18	3.26	3.22	3.40	3.38	3.54	3.45	3.62	3.81
30565.0	3.23	3.24	3.24	3.25	3.25	3.27	3.25	3.42	3.40	3.56	3.47	3.63	3.82
30567.9	3.23	3.24	3.24	3.25	3.25	3.28	3.25	3.42	3.40	3.57	3.48	3.64	3.83
30570.9	3.23	3.23	3.24	3.24	3.24	3.28	3.25	3.43	3.40	3.57	3.48	3.64	3.83
30573.8	3.22	3.23	3.23	3.24	3.24	3.28	3.25	3.43	3.41	3.58	3.49	3.64	3.82
30576.8	3.22	3.23	3.23	3.24	3.24	3.29	3.25	3.44	3.41	3.57	3.50	3.64	3.82
30579.8	3.22	3.22	3.23	3.23	3.23	3.29	3.26	3.44	3.41	3.58	3.50	3.64	3.84
30582.7	3.21	3.22	3.23	3.23	3.23	3.29	3.26	3.44	3.42	3.58	3.50	3.63	3.84
30585.7	3.21	3.22	3.22	3.23	3.23	3.30	3.27	3.45	3.42	3.58	3.51	3.65	3.85
30588.6	3.21	3.21	3.22	3.23	3.22	3.31	3.27	3.45	3.42	3.58	3.50	3.64	3.84
30591.6	3.20	3.21	3.22	3.22	3.22	3.31	3.28	3.45	3.42	3.59	3.51	3.67	3.87
30594.5	3.20	3.20	3.21	3.22	3.22	3.32	3.28	3.45	3.43	3.58	3.51	3.65	3.86
30597.4	3.19	3.20	3.21	3.21	3.21	3.32	3.29	3.46	3.43	3.59	3.51	3.65	3.85
30600.4	3.18	3.19	3.20	3.21	3.21	3.33	3.30	3.46	3.43	3.60	3.51	3.66	3.85
30603.3	3.18	3.19	3.19	3.21	3.20	3.34	3.30	3.46	3.44	3.60	3.52	3.66	3.89
30606.3	3.17	3.18	3.19	3.21	3.21	3.34	3.31	3.47	3.45	3.60	3.52	3.68	3.89
30609.3	3.17	3.17	3.18	3.22	3.22	3.35	3.32	3.47	3.45	3.61	3.52	3.68	3.90
30612.2	3.16	3.17	3.19	3.23	3.22	3.36	3.32	3.48	3.46	3.61	3.53	3.68	3.91
30615.2	3.16	3.17	3.19	3.23	3.23	3.36	3.33	3.49	3.47	3.62	3.54	3.68	3.90
30618.1	3.16	3.18	3.20	3.24	3.24	3.37	3.34	3.49	3.48	3.62	3.55	3.68	3.90
30621.1	3.16	3.18	3.21	3.25	3.25	3.38	3.35	3.51	3.48	3.64	3.56	3.70	3.92
30624.0	3.16	3.19	3.23	3.27	3.27	3.39	3.36	3.51	3.49	3.64	3.57	3.71	3.91
30626.9	3.16	3.20	3.24	3.28	3.28	3.39	3.36	3.52	3.50	3.66	3.58	3.71	3.92
30629.9	3.15	3.20	3.25	3.29	3.29	3.40	3.37	3.53	3.51	3.66	3.59	3.72	3.92
30632.8	3.15	3.21	3.26	3.30	3.31	3.41	3.38	3.53	3.52	3.67	3.59	3.73	3.94
30635.8	3.15	3.21	3.27	3.31	3.32	3.41	3.39	3.54	3.52	3.68	3.60	3.74	3.94
30638.8	3.15	3.21	3.28	3.33	3.33	3.42	3.39	3.55	3.53	3.69	3.61	3.75	3.95
30641.7	3.14	3.22	3.29	3.33	3.34	3.43	3.40	3.56	3.54	3.69	3.61	3.75	3.96
30644.7	3.14	3.22	3.29	3.34	3.34	3.43	3.41	3.57	3.55	3.70	3.62	3.76	3.96
30647.6	3.14	3.22	3.30	3.34	3.35	3.44	3.41	3.57	3.55	3.71	3.62	3.76	3.97
30650.6	3.13	3.22	3.30	3.35	3.35	3.44	3.42	3.58	3.57	3.72	3.63	3.77	3.97
30653.5	3.13	3.22	3.30	3.35	3.36	3.45	3.43	3.60	3.58	3.72	3.65	3.76	3.98

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
30656.4	3.13	3.22	3.31	3.36	3.36	3.46	3.43	3.61	3.60	3.73	3.67	3.78	3.98
30659.4	3.12	3.22	3.31	3.37	3.37	3.46	3.44	3.62	3.60	3.72	3.67	3.77	3.99
30662.3	3.12	3.22	3.31	3.37	3.37	3.47	3.44	3.63	3.60	3.73	3.68	3.78	4.01
30665.3	3.12	3.22	3.31	3.38	3.38	3.48	3.45	3.63	3.61	3.74	3.68	3.79	4.00
30668.3	3.11	3.22	3.32	3.38	3.39	3.48	3.46	3.64	3.61	3.74	3.69	3.79	4.00
30671.2	3.11	3.22	3.32	3.39	3.39	3.49	3.46	3.64	3.62	3.75	3.69	3.81	4.00
30674.2	3.10	3.22	3.32	3.40	3.40	3.50	3.47	3.64	3.62	3.76	3.69	3.82	4.00
30677.1	3.10	3.22	3.33	3.40	3.41	3.50	3.48	3.65	3.63	3.76	3.70	3.83	4.01
30680.1	3.09	3.22	3.33	3.41	3.41	3.51	3.48	3.66	3.64	3.77	3.72	3.83	4.04
30683.0	3.09	3.22	3.33	3.41	3.42	3.52	3.49	3.65	3.64	3.78	3.71	3.83	4.04
30685.9	3.10	3.24	3.35	3.43	3.44	3.54	3.51	3.68	3.64	3.78	3.72	3.83	4.07
30688.8	3.11	3.26	3.37	3.45	3.46	3.56	3.53	3.68	3.66	3.81	3.73	3.86	4.07
30691.7	3.12	3.27	3.39	3.47	3.47	3.58	3.55	3.69	3.68	3.83	3.75	3.87	4.09
30694.6	3.14	3.29	3.41	3.49	3.49	3.60	3.57	3.71	3.70	3.85	3.76	3.89	4.10
30697.4	3.15	3.30	3.43	3.51	3.51	3.62	3.59	3.73	3.72	3.86	3.78	3.92	4.12
30700.3	3.16	3.32	3.45	3.53	3.53	3.63	3.60	3.74	3.73	3.87	3.79	3.92	4.13
30703.2	3.17	3.34	3.46	3.54	3.54	3.63	3.61	3.75	3.73	3.88	3.79	3.92	4.12
30706.1	3.18	3.35	3.46	3.54	3.54	3.63	3.60	3.74	3.72	3.85	3.78	3.90	4.10
30709.0	3.19	3.35	3.48	3.55	3.55	3.60	3.61	3.75	3.73	3.86	3.79	3.92	4.08
30711.9	3.19	3.36	3.47	3.54	3.54	3.62	3.60	3.73	3.71	3.85	3.77	3.89	4.10
30714.8	3.20	3.37	3.48	3.56	3.56	3.62	3.62	3.75	3.73	3.86	3.79	3.91	4.08
30717.7	3.20	3.38	3.49	3.57	3.57	3.65	3.63	3.75	3.74	3.86	3.79	3.91	4.11
30720.6	3.21	3.39	3.51	3.60	3.60	3.66	3.65	3.77	3.75	3.88	3.81	3.93	4.14
30723.4	3.22	3.40	3.53	3.62	3.62	3.69	3.66	3.79	3.77	3.90	3.84	3.95	4.12
30726.3	3.23	3.41	3.55	3.64	3.64	3.71	3.68	3.81	3.80	3.93	3.86	3.96	4.20
30729.2	3.24	3.43	3.57	3.66	3.66	3.73	3.70	3.83	3.82	3.94	3.88	3.99	4.17
30732.1	3.25	3.44	3.59	3.69	3.68	3.75	3.72	3.86	3.84	3.96	3.90	4.01	4.20
30735.0	3.26	3.45	3.61	3.71	3.71	3.77	3.74	3.87	3.86	3.98	3.91	4.03	4.23
30737.9	3.27	3.47	3.63	3.72	3.73	3.80	3.76	3.90	3.88	4.01	3.96	4.05	4.29
30740.8	3.29	3.49	3.65	3.74	3.76	3.82	3.78	3.91	3.89	4.01	3.95	4.07	4.28
30743.7	3.30	3.50	3.65	3.74	3.76	3.87	3.78	3.91	3.94	4.01	3.96	4.07	4.31
30746.6	3.31	3.52	3.69	3.76	3.81	3.87	3.83	3.95	3.93	4.04	3.99	4.11	4.31
30749.4	3.33	3.54	3.70	3.81	3.80	3.90	3.84	3.93	3.96	4.04	3.98	4.10	4.28
30752.3	3.34	3.55	3.73	3.82	3.86	3.92	3.87	4.00	3.97	4.06	4.05	4.12	4.36
30755.2	3.35	3.57	3.78	3.83	3.92	3.93	3.90	4.05	3.99	4.08	4.12	4.13	4.40
30758.1	3.37	3.59	3.79	3.88	3.93	3.99	3.92	4.06	4.02	4.09	4.13	4.14	4.43
30761.0	3.38	3.61	3.81	3.90	3.98	4.05	3.95	4.10	4.06	4.11	4.19	4.16	4.50
30763.9	3.40	3.63	3.85	3.95	4.00	4.06	3.99	4.13	4.09	4.16	4.20	4.20	4.51
30766.8	3.41	3.65	3.87	3.99	4.02	4.10	4.03	4.17	4.13	4.19	4.21	4.24	4.53
30769.7	3.43	3.67	3.90	4.03	4.06	4.14	4.08	4.20	4.17	4.24	4.25	4.29	4.58
30772.6	3.44	3.69	3.92	4.07	4.08	4.16	4.11	4.26	4.24	4.27	4.30	4.32	4.59
30775.4	3.46	3.71	3.95	4.13	4.12	4.22	4.18	4.29	4.27	4.35	4.31	4.39	4.64
30778.3	3.48	3.75	3.99	4.19	4.15	4.27	4.24	4.33	4.32	4.41	4.36	4.47	4.68
30781.2	3.54	3.80	4.05	4.25	4.23	4.32	4.30	4.38	4.38	4.46	4.41	4.51	4.73
30784.1	3.60	3.86	4.11	4.34	4.31	4.40	4.38	4.41	4.40	4.54	4.43	4.60	4.83
30787.0	3.61	3.89	4.16	4.35	4.35	4.42	4.40	4.47	4.47	4.55	4.49	4.61	4.85

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
30790.0	3.61	3.89	4.14	4.34	4.34	4.41	4.39	4.46	4.46	4.54	4.48	4.61	4.83
30793.0	3.60	3.88	4.13	4.33	4.32	4.40	4.38	4.45	4.45	4.52	4.47	4.59	4.82
30796.0	3.59	3.87	4.12	4.32	4.31	4.39	4.37	4.44	4.44	4.51	4.46	4.58	4.79
30799.0	3.59	3.86	4.11	4.31	4.30	4.38	4.36	4.43	4.42	4.49	4.44	4.56	4.75
30802.0	3.58	3.85	4.10	4.30	4.29	4.36	4.35	4.42	4.41	4.48	4.43	4.55	4.71
30805.0	3.57	3.84	4.09	4.28	4.28	4.35	4.34	4.40	4.40	4.46	4.42	4.53	4.70
30808.0	3.56	3.83	4.07	4.27	4.26	4.34	4.32	4.39	4.38	4.45	4.40	4.51	4.68
30811.0	3.55	3.82	4.06	4.26	4.25	4.33	4.31	4.37	4.37	4.43	4.39	4.49	4.66
30814.0	3.54	3.81	4.05	4.25	4.24	4.32	4.30	4.36	4.35	4.42	4.37	4.48	4.65
30817.0	3.53	3.80	4.04	4.24	4.23	4.30	4.29	4.35	4.34	4.40	4.36	4.46	4.63
30820.0	3.52	3.79	4.03	4.23	4.22	4.29	4.28	4.33	4.33	4.38	4.34	4.44	4.61
30823.0	3.52	3.78	4.02	4.22	4.21	4.28	4.27	4.32	4.31	4.37	4.33	4.43	4.58
30826.0	3.51	3.77	4.01	4.21	4.20	4.27	4.25	4.31	4.30	4.35	4.32	4.41	4.56
30829.0	3.50	3.76	3.99	4.19	4.19	4.26	4.24	4.30	4.29	4.34	4.31	4.39	4.54
30832.0	3.49	3.74	3.98	4.18	4.18	4.25	4.23	4.29	4.28	4.33	4.30	4.38	4.52
30835.0	3.48	3.73	3.97	4.17	4.16	4.24	4.22	4.28	4.27	4.32	4.29	4.37	4.51
30838.0	3.47	3.72	3.96	4.16	4.15	4.23	4.21	4.27	4.26	4.30	4.28	4.36	4.49
30841.0	3.46	3.71	3.95	4.15	4.14	4.21	4.20	4.25	4.25	4.29	4.26	4.34	4.49
30844.0	3.45	3.70	3.94	4.14	4.13	4.20	4.18	4.24	4.23	4.27	4.25	4.32	4.50
30847.0	3.44	3.69	3.93	4.13	4.12	4.18	4.17	4.22	4.21	4.25	4.23	4.30	4.47
30850.0	3.43	3.68	3.92	4.12	4.11	4.17	4.15	4.20	4.20	4.23	4.21	4.28	4.47
30853.0	3.42	3.67	3.91	4.10	4.09	4.15	4.14	4.19	4.18	4.22	4.20	4.26	4.44
30856.0	3.41	3.66	3.90	4.09	4.08	4.13	4.12	4.17	4.16	4.20	4.18	4.24	4.43
30859.0	3.40	3.64	3.89	4.07	4.07	4.12	4.11	4.15	4.15	4.18	4.16	4.22	4.39
30862.0	3.38	3.63	3.87	4.05	4.05	4.10	4.09	4.14	4.13	4.16	4.15	4.20	4.37
30865.0	3.37	3.62	3.86	4.04	4.03	4.09	4.07	4.12	4.11	4.14	4.13	4.18	4.35
30868.0	3.36	3.61	3.85	4.02	4.01	4.07	4.06	4.10	4.09	4.12	4.11	4.16	4.31
30871.0	3.35	3.60	3.84	4.00	4.00	4.05	4.04	4.08	4.07	4.10	4.09	4.13	4.32
30874.0	3.34	3.58	3.82	3.98	3.98	4.03	4.02	4.06	4.06	4.08	4.07	4.12	4.27
30877.0	3.32	3.57	3.81	3.96	3.96	4.01	4.00	4.05	4.04	4.07	4.06	4.10	4.29
30880.0	3.31	3.56	3.79	3.95	3.94	4.00	3.99	4.03	4.03	4.06	4.04	4.09	4.33
30883.0	3.30	3.55	3.77	3.93	3.92	3.98	3.97	4.01	4.01	4.04	4.02	4.07	4.27
30886.0	3.29	3.54	3.75	3.90	3.90	3.96	3.94	3.99	3.98	4.02	4.00	4.05	4.28
30889.0	3.28	3.52	3.73	3.88	3.88	3.93	3.92	3.97	3.96	3.99	3.98	4.03	4.23
30892.0	3.26	3.51	3.71	3.86	3.86	3.91	3.90	3.94	3.94	3.97	3.95	4.01	4.20
30895.0	3.25	3.50	3.69	3.84	3.83	3.89	3.87	3.92	3.91	3.94	3.93	3.98	4.19
30897.9	3.25	3.49	3.68	3.83	3.82	3.87	3.86	3.90	3.90	3.92	3.91	3.96	4.17
30900.9	3.24	3.48	3.67	3.82	3.81	3.86	3.85	3.89	3.88	3.91	3.89	3.94	4.14
30903.8	3.24	3.47	3.67	3.81	3.80	3.85	3.84	3.87	3.87	3.89	3.88	3.92	4.12
30906.8	3.24	3.47	3.66	3.79	3.79	3.83	3.82	3.86	3.85	3.87	3.87	3.91	4.10
30909.7	3.24	3.46	3.65	3.79	3.78	3.82	3.81	3.85	3.84	3.86	3.85	3.89	4.09
30912.6	3.23	3.46	3.65	3.78	3.77	3.81	3.80	3.84	3.84	3.86	3.85	3.90	4.09
30915.6	3.23	3.45	3.64	3.77	3.76	3.81	3.79	3.84	3.84	3.87	3.85	3.91	4.09
30918.5	3.23	3.45	3.63	3.76	3.76	3.80	3.79	3.83	3.83	3.86	3.84	3.90	4.07
30921.4	3.23	3.44	3.63	3.75	3.75	3.79	3.78	3.82	3.82	3.84	3.83	3.88	4.06
30924.4	3.23	3.44	3.62	3.74	3.74	3.78	3.77	3.81	3.81	3.83	3.82	3.87	4.04

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
30927.3	3.23	3.44	3.62	3.74	3.73	3.77	3.76	3.80	3.80	3.82	3.81	3.86	4.03
30930.3	3.23	3.44	3.62	3.73	3.73	3.76	3.75	3.79	3.78	3.81	3.80	3.84	4.02
30933.2	3.23	3.43	3.61	3.72	3.72	3.75	3.74	3.78	3.77	3.80	3.79	3.83	4.01
30936.1	3.23	3.43	3.61	3.72	3.72	3.74	3.73	3.77	3.76	3.78	3.78	3.82	4.00
30939.1	3.23	3.43	3.61	3.71	3.71	3.73	3.73	3.76	3.75	3.77	3.77	3.80	3.99
30942.0	3.23	3.43	3.60	3.71	3.71	3.73	3.72	3.75	3.74	3.76	3.76	3.79	3.98
30944.9	3.23	3.43	3.60	3.70	3.70	3.72	3.72	3.74	3.74	3.75	3.75	3.78	3.97
30947.9	3.23	3.44	3.60	3.70	3.70	3.71	3.71	3.73	3.73	3.74	3.74	3.77	3.95
30950.8	3.23	3.44	3.60	3.70	3.69	3.71	3.71	3.73	3.72	3.74	3.73	3.76	3.94
30953.8	3.23	3.44	3.60	3.69	3.69	3.71	3.70	3.72	3.72	3.73	3.72	3.75	3.92
30956.7	3.23	3.44	3.60	3.69	3.69	3.70	3.70	3.71	3.71	3.72	3.72	3.74	3.92
30959.6	3.23	3.44	3.60	3.69	3.69	3.70	3.70	3.71	3.71	3.72	3.72	3.73	3.90
30962.6	3.23	3.44	3.60	3.69	3.68	3.70	3.70	3.71	3.71	3.72	3.71	3.73	3.91
30965.5	3.23	3.45	3.60	3.68	3.68	3.70	3.70	3.71	3.71	3.72	3.72	3.76	3.92
30968.4	3.23	3.45	3.60	3.68	3.68	3.70	3.69	3.72	3.72	3.74	3.73	3.78	3.94
30971.4	3.23	3.45	3.60	3.68	3.68	3.70	3.69	3.72	3.72	3.74	3.73	3.78	3.96
30974.3	3.23	3.46	3.61	3.68	3.68	3.70	3.69	3.72	3.71	3.74	3.73	3.78	3.96
30977.3	3.23	3.46	3.61	3.68	3.68	3.69	3.69	3.72	3.71	3.74	3.72	3.78	3.96
30980.2	3.23	3.46	3.61	3.68	3.68	3.70	3.69	3.71	3.71	3.74	3.72	3.78	3.96
30983.1	3.23	3.46	3.62	3.68	3.68	3.70	3.69	3.71	3.71	3.74	3.72	3.78	3.96
30986.1	3.23	3.46	3.62	3.69	3.68	3.70	3.70	3.71	3.71	3.75	3.73	3.78	3.96
30989.0	3.23	3.47	3.63	3.69	3.69	3.70	3.70	3.72	3.72	3.76	3.74	3.80	3.97
30991.8	3.23	3.46	3.63	3.69	3.69	3.71	3.70	3.73	3.73	3.77	3.75	3.81	3.96
30994.7	3.22	3.46	3.63	3.70	3.69	3.71	3.71	3.75	3.74	3.77	3.76	3.81	3.96
30997.5	3.22	3.45	3.63	3.70	3.70	3.71	3.71	3.76	3.75	3.78	3.77	3.83	3.96
31000.4	3.22	3.45	3.63	3.71	3.70	3.72	3.72	3.77	3.76	3.79	3.77	3.83	3.96
31003.2	3.22	3.44	3.63	3.71	3.71	3.73	3.72	3.78	3.77	3.80	3.79	3.84	3.96
31006.1	3.21	3.44	3.63	3.71	3.71	3.74	3.73	3.79	3.78	3.82	3.80	3.86	3.96
31008.9	3.21	3.43	3.63	3.72	3.72	3.75	3.74	3.80	3.80	3.83	3.82	3.88	3.97
31011.8	3.21	3.43	3.63	3.72	3.72	3.76	3.75	3.82	3.81	3.85	3.83	3.90	3.99
31014.6	3.21	3.43	3.62	3.73	3.73	3.77	3.76	3.84	3.83	3.88	3.85	3.92	4.01
31017.4	3.20	3.43	3.62	3.73	3.73	3.78	3.77	3.85	3.84	3.89	3.87	3.94	4.02
31020.3	3.20	3.42	3.62	3.74	3.74	3.79	3.78	3.87	3.86	3.91	3.89	3.95	4.03
31023.1	3.20	3.42	3.62	3.74	3.74	3.81	3.79	3.89	3.87	3.93	3.91	3.97	4.04
31026.0	3.20	3.42	3.61	3.75	3.75	3.82	3.81	3.91	3.89	3.96	3.93	4.00	4.06
31028.8	3.19	3.42	3.61	3.76	3.75	3.84	3.82	3.93	3.92	3.98	3.95	4.03	4.07
31031.7	3.19	3.42	3.61	3.76	3.76	3.86	3.83	3.96	3.94	4.01	3.98	4.06	4.10
31034.5	3.19	3.42	3.61	3.77	3.76	3.88	3.85	3.98	3.96	4.04	4.01	4.09	4.12
31037.3	3.19	3.42	3.61	3.77	3.77	3.90	3.86	4.01	3.99	4.08	4.04	4.13	4.15
31040.2	3.19	3.42	3.61	3.78	3.77	3.92	3.88	4.04	4.02	4.13	4.08	4.18	4.20
31043.0	3.18	3.42	3.61	3.79	3.78	3.94	3.90	4.08	4.06	4.17	4.12	4.24	4.25
31045.9	3.18	3.42	3.61	3.79	3.78	3.95	3.91	4.11	4.08	4.21	4.15	4.28	4.30
31048.7	3.18	3.42	3.61	3.79	3.78	3.97	3.92	4.14	4.11	4.25	4.18	4.33	4.35
31051.6	3.18	3.42	3.61	3.80	3.78	3.98	3.93	4.17	4.14	4.30	4.22	4.39	4.41
31054.4	3.17	3.42	3.61	3.80	3.79	4.00	3.95	4.20	4.17	4.35	4.26	4.45	4.47
31057.3	3.17	3.42	3.61	3.81	3.80	4.02	3.96	4.24	4.20	4.40	4.30	4.51	4.53

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
31060.1	3.17	3.42	3.61	3.81	3.80	4.04	3.98	4.27	4.23	4.44	4.35	4.56	4.59
31062.9	3.17	3.41	3.61	3.82	3.81	4.06	3.99	4.30	4.26	4.49	4.39	4.61	4.64
31065.8	3.16	3.41	3.61	3.83	3.81	4.08	4.01	4.33	4.29	4.53	4.42	4.65	4.68
31068.6	3.16	3.41	3.62	3.83	3.81	4.09	4.01	4.34	4.30	4.54	4.43	4.66	4.74
31071.5	3.16	3.41	3.62	3.83	3.81	4.09	4.02	4.34	4.30	4.55	4.44	4.66	4.79
31074.3	3.16	3.41	3.62	3.83	3.82	4.09	4.02	4.35	4.31	4.56	4.45	4.67	4.80
31077.2	3.16	3.41	3.62	3.84	3.82	4.09	4.02	4.35	4.31	4.57	4.45	4.67	4.81
31080.0	3.15	3.40	3.63	3.84	3.82	4.09	4.02	4.35	4.31	4.57	4.46	4.68	4.82
31080.0	3.15	3.40	3.63	3.84	3.82	4.09	4.02	4.35	4.31	4.57	4.46	4.68	4.82
31088.3	3.14	3.39	3.61	3.82	3.81	4.08	4.01	4.34	4.30	4.56	4.44	4.67	4.81
31096.7	3.12	3.38	3.60	3.81	3.79	4.07	3.99	4.33	4.29	4.55	4.43	4.66	4.80
31105.0	3.11	3.36	3.58	3.79	3.78	4.05	3.98	4.32	4.27	4.54	4.42	4.65	4.79
31113.3	3.09	3.35	3.56	3.78	3.76	4.04	3.96	4.31	4.26	4.53	4.41	4.64	4.77
31121.7	3.08	3.33	3.55	3.76	3.74	4.03	3.95	4.29	4.25	4.51	4.40	4.63	4.76
31130.0	3.06	3.32	3.53	3.75	3.73	4.01	3.94	4.28	4.24	4.50	4.39	4.61	4.75
31140.0	4.13	4.46	4.78	5.17	5.14	5.54	5.44	5.91	5.91	6.25	5.98	6.41	6.83
31150.0	3.57	3.88	4.17	4.54	4.51	4.91	4.81	5.28	5.22	5.71	5.45	5.98	6.51
31158.5	3.54	3.85	4.13	4.46	4.44	4.82	4.72	5.19	5.13	5.62	5.36	5.89	6.39
31167.0	3.52	3.82	4.09	4.39	4.36	4.73	4.63	5.09	5.03	5.51	5.26	5.76	6.22
31175.5	3.48	3.76	4.01	4.30	4.27	4.64	4.54	4.98	4.92	5.36	5.13	5.61	6.04
31184.0	3.44	3.70	3.92	4.21	4.19	4.55	4.45	4.87	4.82	5.23	5.01	5.46	5.89
31192.5	3.37	3.61	3.84	4.11	4.09	4.45	4.35	4.77	4.71	5.12	4.90	5.34	5.78
31201.0	3.29	3.53	3.75	4.02	4.00	4.34	4.25	4.66	4.61	5.00	4.79	5.22	5.67
31209.5	3.22	3.45	3.68	3.96	3.94	4.30	4.20	4.62	4.57	4.98	4.76	5.21	5.67
31218.0	3.14	3.38	3.60	3.90	3.88	4.25	4.15	4.58	4.53	4.95	4.73	5.19	5.67
31218.0	3.14	3.38	3.60	3.90	3.88	4.25	4.15	4.58	4.53	4.95	4.73	5.19	5.67
31221.0	3.15	3.38	3.61	3.90	3.88	4.26	4.16	4.58	4.53	4.93	4.71	5.17	5.64
31224.0	3.15	3.39	3.61	3.91	3.88	4.26	4.16	4.57	4.52	4.92	4.70	5.15	5.61
31227.0	3.16	3.39	3.62	3.91	3.89	4.26	4.16	4.57	4.52	4.91	4.70	5.14	5.59
31230.0	3.17	3.40	3.63	3.92	3.90	4.26	4.17	4.57	4.52	4.91	4.71	5.13	5.58
31233.0	3.17	3.41	3.64	3.93	3.90	4.27	4.18	4.58	4.53	4.91	4.71	5.13	5.58
31236.0	3.18	3.42	3.64	3.94	3.91	4.28	4.18	4.58	4.54	4.92	4.71	5.14	5.57
31239.0	3.19	3.43	3.66	3.95	3.92	4.29	4.20	4.59	4.54	4.92	4.72	5.14	5.57
31242.0	3.19	3.44	3.67	3.96	3.93	4.30	4.21	4.60	4.55	4.93	4.73	5.15	5.58
31245.0	3.20	3.45	3.68	3.97	3.95	4.31	4.22	4.61	4.56	4.94	4.73	5.16	5.59
31248.0	3.20	3.46	3.69	3.98	3.96	4.32	4.23	4.62	4.57	4.94	4.74	5.16	5.60
31251.0	3.21	3.46	3.70	4.00	3.97	4.33	4.24	4.62	4.58	4.95	4.75	5.17	5.62
31254.0	3.21	3.47	3.71	4.01	3.99	4.34	4.25	4.63	4.59	4.96	4.76	5.18	5.63
31257.0	3.22	3.48	3.72	4.02	4.00	4.36	4.27	4.64	4.60	4.97	4.77	5.19	5.64
31260.0	3.23	3.49	3.73	4.04	4.01	4.37	4.28	4.66	4.61	4.98	4.78	5.20	5.65
31263.0	3.23	3.49	3.74	4.05	4.03	4.38	4.29	4.67	4.62	4.99	4.79	5.21	5.66
31266.0	3.24	3.50	3.75	4.06	4.04	4.39	4.30	4.68	4.63	5.00	4.80	5.22	5.66
31269.0	3.25	3.51	3.76	4.07	4.05	4.40	4.32	4.69	4.64	5.01	4.81	5.23	5.67
31272.0	3.25	3.52	3.77	4.08	4.06	4.41	4.32	4.70	4.65	5.01	4.82	5.23	5.68
31275.0	3.26	3.53	3.78	4.09	4.07	4.42	4.33	4.70	4.66	5.02	4.82	5.24	5.68
31278.0	3.27	3.53	3.79	4.10	4.08	4.43	4.34	4.71	4.67	5.03	4.84	5.25	5.69

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
31281.0	3.27	3.54	3.80	4.11	4.09	4.44	4.35	4.73	4.68	5.04	4.85	5.26	5.70
31284.0	3.28	3.55	3.81	4.12	4.10	4.45	4.36	4.74	4.69	5.06	4.86	5.27	5.72
31287.0	3.29	3.56	3.82	4.13	4.11	4.46	4.37	4.75	4.70	5.07	4.87	5.29	5.73
31290.0	3.30	3.57	3.83	4.14	4.12	4.47	4.38	4.76	4.71	5.08	4.89	5.30	5.74
31293.0	3.30	3.58	3.84	4.15	4.13	4.48	4.39	4.77	4.72	5.10	4.90	5.31	5.76
31296.0	3.31	3.58	3.85	4.16	4.14	4.49	4.40	4.78	4.73	5.11	4.91	5.33	5.77
31299.0	3.32	3.59	3.86	4.17	4.15	4.50	4.41	4.79	4.74	5.12	4.92	5.34	5.79
31302.0	3.33	3.60	3.87	4.19	4.16	4.51	4.42	4.80	4.75	5.13	4.93	5.36	5.80
31304.9	3.33	3.60	3.87	4.19	4.16	4.50	4.42	4.80	4.75	5.12	4.92	5.35	5.79
31307.8	3.33	3.60	3.87	4.19	4.16	4.50	4.42	4.79	4.74	5.12	4.92	5.34	5.77
31310.6	3.33	3.60	3.87	4.19	4.16	4.50	4.41	4.79	4.74	5.11	4.91	5.33	5.77
31313.5	3.33	3.60	3.87	4.18	4.16	4.50	4.41	4.78	4.74	5.10	4.91	5.32	5.76
31316.4	3.33	3.60	3.87	4.18	4.16	4.50	4.41	4.78	4.73	5.10	4.90	5.31	5.75
31319.3	3.33	3.60	3.86	4.18	4.16	4.50	4.41	4.78	4.73	5.09	4.90	5.30	5.74
31322.1	3.32	3.60	3.86	4.18	4.16	4.50	4.41	4.77	4.73	5.09	4.90	5.30	5.73
31325.0	3.32	3.60	3.86	4.18	4.16	4.49	4.41	4.77	4.72	5.08	4.89	5.29	5.73
31327.9	3.32	3.60	3.86	4.18	4.16	4.49	4.41	4.77	4.72	5.08	4.89	5.29	5.73
31330.8	3.32	3.60	3.86	4.18	4.16	4.49	4.41	4.76	4.72	5.07	4.88	5.28	5.72
31333.6	3.32	3.60	3.86	4.18	4.16	4.49	4.41	4.76	4.71	5.06	4.87	5.27	5.71
31336.5	3.32	3.60	3.86	4.18	4.16	4.49	4.41	4.75	4.71	5.06	4.87	5.26	5.70
31339.4	3.32	3.60	3.86	4.18	4.16	4.49	4.41	4.75	4.70	5.05	4.87	5.26	5.69
31342.3	3.32	3.60	3.86	4.18	4.16	4.48	4.40	4.74	4.70	5.05	4.86	5.25	5.67
31345.1	3.32	3.60	3.86	4.18	4.16	4.48	4.40	4.74	4.70	5.04	4.86	5.25	5.66
31348.0	3.32	3.60	3.86	4.18	4.16	4.48	4.40	4.74	4.69	5.04	4.85	5.24	5.65
31350.9	3.32	3.60	3.86	4.18	4.16	4.48	4.40	4.73	4.69	5.04	4.85	5.24	5.64
31353.8	3.32	3.60	3.86	4.18	4.16	4.47	4.40	4.73	4.69	5.03	4.85	5.23	5.63
31356.6	3.32	3.60	3.86	4.18	4.16	4.47	4.40	4.73	4.69	5.03	4.84	5.22	5.62
31359.5	3.32	3.59	3.86	4.18	4.16	4.47	4.39	4.73	4.68	5.02	4.84	5.22	5.61
31362.4	3.32	3.59	3.86	4.18	4.15	4.47	4.39	4.72	4.68	5.02	4.84	5.21	5.60
31365.3	3.32	3.59	3.86	4.18	4.15	4.47	4.39	4.72	4.68	5.01	4.83	5.20	5.59
31368.1	3.32	3.59	3.86	4.17	4.15	4.46	4.39	4.72	4.68	5.00	4.83	5.19	5.58
31371.0	3.32	3.59	3.86	4.17	4.15	4.46	4.39	4.72	4.67	4.99	4.83	5.18	5.56
31373.9	3.32	3.59	3.86	4.17	4.15	4.46	4.38	4.71	4.67	4.98	4.82	5.17	5.55
31376.8	3.32	3.59	3.86	4.17	4.15	4.46	4.38	4.71	4.67	4.97	4.81	5.16	5.54
31379.6	3.32	3.59	3.86	4.17	4.15	4.46	4.38	4.70	4.66	4.96	4.80	5.15	5.53
31382.5	3.32	3.59	3.86	4.17	4.14	4.46	4.38	4.69	4.66	4.95	4.79	5.14	5.51
31385.4	3.32	3.59	3.85	4.17	4.14	4.46	4.38	4.68	4.65	4.94	4.78	5.12	5.50
31388.3	3.32	3.59	3.85	4.16	4.14	4.45	4.38	4.67	4.64	4.93	4.77	5.11	5.48
31391.1	3.32	3.59	3.85	4.16	4.14	4.45	4.38	4.66	4.63	4.92	4.76	5.10	5.46
31394.0	3.32	3.59	3.85	4.16	4.14	4.44	4.38	4.65	4.62	4.91	4.75	5.08	5.44
31396.9	3.32	3.59	3.85	4.17	4.14	4.43	4.37	4.64	4.61	4.89	4.74	5.07	5.42
31399.8	3.32	3.59	3.85	4.17	4.14	4.42	4.36	4.63	4.59	4.88	4.73	5.06	5.41
31402.6	3.32	3.59	3.85	4.17	4.14	4.41	4.35	4.62	4.58	4.87	4.71	5.04	5.39
31405.5	3.32	3.59	3.85	4.17	4.14	4.40	4.34	4.61	4.57	4.86	4.70	5.03	5.37
31408.4	3.32	3.59	3.85	4.16	4.14	4.39	4.33	4.59	4.56	4.84	4.69	5.01	5.36
31411.3	3.32	3.59	3.85	4.16	4.14	4.38	4.32	4.58	4.55	4.83	4.68	4.99	5.34

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
31414.1	3.32	3.59	3.86	4.15	4.13	4.37	4.31	4.57	4.53	4.81	4.66	4.98	5.33
31417.0	3.32	3.59	3.86	4.14	4.12	4.36	4.30	4.55	4.52	4.80	4.65	4.96	5.32
31419.9	3.31	3.59	3.85	4.13	4.12	4.35	4.29	4.54	4.51	4.79	4.64	4.95	5.31
31422.8	3.31	3.59	3.85	4.13	4.11	4.34	4.29	4.54	4.50	4.78	4.63	4.94	5.29
31425.8	3.31	3.59	3.85	4.12	4.10	4.34	4.28	4.53	4.50	4.77	4.62	4.93	5.28
31428.7	3.31	3.58	3.84	4.12	4.10	4.33	4.27	4.52	4.49	4.76	4.61	4.92	5.26
31431.6	3.31	3.58	3.84	4.11	4.09	4.32	4.27	4.51	4.48	4.74	4.60	4.91	5.25
31434.5	3.30	3.58	3.84	4.10	4.09	4.31	4.26	4.50	4.47	4.73	4.59	4.90	5.23
31437.4	3.30	3.57	3.83	4.10	4.08	4.31	4.25	4.49	4.46	4.72	4.58	4.89	5.22
31440.3	3.30	3.57	3.83	4.09	4.08	4.30	4.25	4.48	4.45	4.71	4.57	4.87	5.21
31443.3	3.30	3.57	3.82	4.09	4.07	4.29	4.24	4.48	4.44	4.70	4.56	4.86	5.19
31446.2	3.30	3.57	3.82	4.08	4.06	4.29	4.23	4.47	4.44	4.70	4.55	4.85	5.18
31449.1	3.29	3.56	3.82	4.07	4.06	4.28	4.23	4.46	4.43	4.69	4.55	4.84	5.17
31452.0	3.29	3.56	3.81	4.07	4.05	4.27	4.22	4.45	4.42	4.68	4.54	4.83	5.15
31454.9	3.29	3.56	3.81	4.06	4.05	4.27	4.21	4.44	4.41	4.67	4.53	4.82	5.14
31457.8	3.29	3.55	3.80	4.06	4.04	4.26	4.21	4.43	4.41	4.66	4.52	4.81	5.13
31460.8	3.28	3.55	3.80	4.05	4.03	4.25	4.20	4.43	4.40	4.65	4.51	4.80	5.12
31463.7	3.28	3.55	3.79	4.04	4.03	4.25	4.19	4.42	4.39	4.64	4.50	4.79	5.11
31466.6	3.28	3.54	3.79	4.04	4.02	4.24	4.19	4.41	4.38	4.63	4.49	4.78	5.10
31469.5	3.27	3.54	3.78	4.03	4.01	4.23	4.18	4.40	4.37	4.62	4.48	4.77	5.09
31472.4	3.27	3.54	3.77	4.02	4.01	4.22	4.17	4.39	4.36	4.61	4.47	4.76	5.07
31475.3	3.27	3.53	3.77	4.02	4.00	4.22	4.17	4.38	4.35	4.60	4.47	4.75	5.06
31478.3	3.26	3.53	3.76	4.01	3.99	4.21	4.16	4.37	4.35	4.59	4.46	4.74	5.05
31481.2	3.26	3.52	3.76	4.00	3.99	4.20	4.15	4.37	4.34	4.58	4.45	4.73	5.04
31484.1	3.26	3.52	3.75	4.00	3.98	4.19	4.14	4.36	4.33	4.57	4.44	4.72	5.03
31487.0	3.25	3.51	3.74	3.99	3.97	4.19	4.14	4.35	4.32	4.56	4.43	4.71	5.02
31489.9	3.25	3.51	3.74	3.98	3.97	4.18	4.13	4.34	4.31	4.55	4.42	4.70	5.01
31492.8	3.25	3.50	3.73	3.98	3.96	4.17	4.12	4.33	4.30	4.54	4.41	4.69	4.99
31495.8	3.24	3.50	3.72	3.97	3.95	4.16	4.12	4.32	4.29	4.53	4.40	4.68	4.98
31498.7	3.24	3.49	3.72	3.96	3.95	4.16	4.11	4.31	4.29	4.52	4.39	4.67	4.97
31501.6	3.24	3.49	3.71	3.96	3.94	4.15	4.10	4.31	4.28	4.51	4.38	4.66	4.96
31504.5	3.23	3.48	3.70	3.95	3.93	4.15	4.10	4.30	4.27	4.50	4.38	4.65	4.95
31507.4	3.23	3.48	3.69	3.94	3.93	4.14	4.09	4.29	4.27	4.50	4.37	4.64	4.94
31510.3	3.23	3.47	3.69	3.93	3.92	4.13	4.09	4.29	4.26	4.49	4.36	4.63	4.93
31513.3	3.22	3.47	3.68	3.93	3.91	4.13	4.08	4.28	4.25	4.48	4.35	4.62	4.92
31516.2	3.22	3.46	3.67	3.92	3.90	4.12	4.08	4.27	4.25	4.47	4.35	4.62	4.91
31519.1	3.21	3.45	3.67	3.91	3.90	4.12	4.07	4.27	4.24	4.46	4.34	4.61	4.90
31522.0	3.21	3.45	3.66	3.91	3.89	4.12	4.07	4.26	4.24	4.46	4.34	4.60	4.89
31525.0	3.20	3.44	3.65	3.90	3.88	4.12	4.06	4.26	4.24	4.46	4.34	4.60	4.89
31528.0	3.20	3.43	3.64	3.89	3.88	4.11	4.06	4.26	4.24	4.45	4.33	4.59	4.88
31531.0	3.19	3.42	3.64	3.89	3.87	4.11	4.05	4.26	4.23	4.45	4.33	4.59	4.87
31534.0	3.18	3.42	3.63	3.88	3.86	4.10	4.05	4.25	4.23	4.44	4.33	4.59	4.87
31537.0	3.18	3.41	3.62	3.87	3.85	4.09	4.04	4.25	4.22	4.44	4.32	4.58	4.86
31540.0	3.17	3.40	3.61	3.86	3.84	4.09	4.03	4.24	4.22	4.43	4.31	4.57	4.85
31543.0	3.16	3.39	3.60	3.85	3.84	4.08	4.02	4.24	4.21	4.43	4.31	4.57	4.84
31546.0	3.16	3.39	3.60	3.85	3.83	4.07	4.02	4.23	4.21	4.43	4.31	4.56	4.84

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
31549.0	3.15	3.38	3.59	3.84	3.82	4.07	4.01	4.23	4.21	4.42	4.30	4.56	4.83
31552.0	3.14	3.37	3.58	3.83	3.81	4.06	4.00	4.23	4.20	4.42	4.30	4.55	4.82
31555.0	3.14	3.36	3.57	3.82	3.81	4.05	3.99	4.22	4.20	4.42	4.30	4.55	4.82
31558.0	3.13	3.36	3.57	3.82	3.80	4.05	3.99	4.22	4.20	4.42	4.30	4.55	4.81
31561.0	3.12	3.35	3.56	3.81	3.79	4.04	3.98	4.22	4.19	4.41	4.30	4.54	4.81
31564.0	3.12	3.34	3.55	3.80	3.78	4.03	3.97	4.22	4.19	4.41	4.29	4.54	4.80
31567.0	3.11	3.33	3.54	3.79	3.78	4.03	3.97	4.21	4.18	4.41	4.29	4.54	4.80
31570.0	3.10	3.33	3.54	3.79	3.77	4.02	3.96	4.21	4.18	4.41	4.29	4.54	4.79
31573.0	3.10	3.32	3.53	3.78	3.76	4.02	3.95	4.21	4.18	4.41	4.29	4.54	4.79
31576.0	3.09	3.31	3.52	3.77	3.75	4.01	3.95	4.20	4.17	4.40	4.28	4.53	4.79
31579.0	3.08	3.30	3.51	3.76	3.75	4.01	3.94	4.20	4.17	4.40	4.28	4.53	4.78
31582.0	3.08	3.30	3.51	3.76	3.74	4.00	3.93	4.19	4.16	4.39	4.27	4.52	4.77
31585.0	3.07	3.29	3.50	3.75	3.73	3.99	3.93	4.18	4.15	4.38	4.26	4.51	4.76
31588.0	3.06	3.28	3.49	3.74	3.72	3.98	3.92	4.17	4.14	4.37	4.25	4.50	4.75
31591.0	3.06	3.28	3.49	3.73	3.72	3.98	3.91	4.17	4.14	4.36	4.25	4.49	4.73
31594.0	3.05	3.27	3.48	3.73	3.71	3.97	3.91	4.16	4.13	4.36	4.24	4.49	4.73
31597.0	3.04	3.26	3.47	3.72	3.70	3.97	3.90	4.16	4.13	4.36	4.24	4.48	4.72
31600.0	3.04	3.25	3.46	3.71	3.69	3.96	3.89	4.15	4.12	4.35	4.23	4.48	4.71
31603.0	3.03	3.25	3.46	3.70	3.69	3.95	3.89	4.15	4.12	4.35	4.23	4.47	4.70
31606.0	3.02	3.24	3.45	3.70	3.68	3.95	3.89	4.14	4.11	4.34	4.22	4.46	4.69
31609.0	3.02	3.23	3.44	3.70	3.68	3.94	3.89	4.14	4.11	4.34	4.22	4.46	4.69
31612.0	3.01	3.23	3.43	3.69	3.67	3.94	3.89	4.14	4.11	4.33	4.22	4.45	4.68
31615.0	3.00	3.22	3.43	3.69	3.67	3.94	3.89	4.13	4.10	4.33	4.22	4.45	4.67
31618.0	3.00	3.21	3.42	3.68	3.66	3.93	3.88	4.13	4.10	4.32	4.21	4.44	4.66
31621.0	2.99	3.20	3.41	3.68	3.66	3.93	3.87	4.12	4.10	4.32	4.21	4.43	4.65
31624.0	2.98	3.20	3.40	3.67	3.65	3.92	3.87	4.12	4.09	4.31	4.20	4.42	4.64
31627.0	2.98	3.19	3.40	3.66	3.64	3.91	3.86	4.11	4.08	4.30	4.19	4.41	4.63
31630.0	2.97	3.18	3.39	3.65	3.63	3.90	3.85	4.10	4.07	4.29	4.18	4.41	4.61
31633.0	2.96	3.18	3.38	3.65	3.63	3.90	3.84	4.09	4.06	4.28	4.17	4.40	4.60
31636.0	2.96	3.17	3.38	3.64	3.62	3.89	3.83	4.09	4.06	4.27	4.17	4.39	4.59
31639.0	2.95	3.16	3.37	3.63	3.61	3.88	3.83	4.08	4.05	4.26	4.16	4.37	4.58
31642.0	2.94	3.15	3.36	3.62	3.60	3.87	3.82	4.07	4.04	4.26	4.15	4.36	4.57
31644.9	2.95	3.16	3.36	3.63	3.61	3.87	3.82	4.07	4.04	4.25	4.15	4.36	4.56
31647.8	2.95	3.16	3.37	3.63	3.61	3.87	3.82	4.06	4.04	4.25	4.14	4.35	4.55
31650.8	2.95	3.16	3.37	3.63	3.61	3.87	3.82	4.06	4.04	4.24	4.14	4.35	4.54
31653.7	2.95	3.16	3.37	3.63	3.61	3.87	3.82	4.06	4.04	4.24	4.14	4.34	4.53
31656.6	2.95	3.16	3.37	3.63	3.61	3.87	3.82	4.06	4.04	4.23	4.14	4.34	4.52
31659.5	2.95	3.17	3.37	3.63	3.61	3.87	3.82	4.07	4.04	4.23	4.14	4.33	4.51
31662.4	2.95	3.17	3.38	3.63	3.61	3.88	3.82	4.07	4.05	4.23	4.14	4.33	4.51
31665.3	2.95	3.17	3.38	3.63	3.62	3.88	3.82	4.08	4.05	4.23	4.14	4.33	4.50
31668.3	2.96	3.17	3.38	3.64	3.62	3.88	3.82	4.08	4.05	4.23	4.14	4.32	4.50
31671.2	2.96	3.17	3.38	3.64	3.62	3.88	3.82	4.08	4.05	4.23	4.14	4.32	4.50
31674.1	2.96	3.18	3.39	3.64	3.62	3.88	3.82	4.08	4.05	4.23	4.14	4.32	4.49
31677.0	2.96	3.18	3.39	3.64	3.62	3.88	3.82	4.08	4.05	4.23	4.14	4.32	4.49
31679.9	2.96	3.18	3.39	3.64	3.62	3.88	3.82	4.07	4.04	4.22	4.14	4.31	4.48
31682.8	2.96	3.18	3.39	3.64	3.62	3.88	3.82	4.07	4.04	4.22	4.13	4.31	4.47

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
31685.8	2.97	3.18	3.39	3.64	3.62	3.88	3.82	4.07	4.04	4.22	4.13	4.30	4.47
31688.7	2.97	3.19	3.40	3.64	3.62	3.88	3.82	4.06	4.04	4.22	4.13	4.30	4.46
31691.6	2.97	3.19	3.40	3.64	3.63	3.88	3.82	4.06	4.03	4.21	4.12	4.29	4.46
31694.5	2.97	3.19	3.40	3.64	3.63	3.88	3.82	4.06	4.03	4.21	4.12	4.29	4.45
31697.4	2.97	3.19	3.40	3.64	3.63	3.88	3.82	4.06	4.03	4.20	4.12	4.28	4.44
31700.3	2.98	3.20	3.41	3.65	3.63	3.88	3.82	4.05	4.03	4.20	4.11	4.27	4.43
31703.3	2.98	3.20	3.41	3.65	3.63	3.88	3.82	4.05	4.02	4.19	4.11	4.27	4.43
31706.2	2.98	3.20	3.41	3.65	3.63	3.87	3.82	4.05	4.02	4.19	4.11	4.26	4.42
31709.1	2.98	3.21	3.41	3.65	3.63	3.87	3.82	4.04	4.02	4.18	4.10	4.26	4.41
31712.0	2.99	3.21	3.41	3.65	3.63	3.87	3.82	4.04	4.02	4.18	4.10	4.25	4.40
31714.9	2.99	3.21	3.42	3.65	3.63	3.87	3.82	4.04	4.01	4.17	4.10	4.24	4.39
31717.8	2.99	3.21	3.42	3.65	3.63	3.87	3.82	4.04	4.01	4.17	4.09	4.24	4.39
31720.8	3.00	3.22	3.42	3.65	3.63	3.87	3.82	4.03	4.01	4.16	4.09	4.23	4.38
31723.7	3.00	3.22	3.42	3.65	3.63	3.87	3.82	4.03	4.01	4.16	4.08	4.23	4.37
31726.6	3.00	3.22	3.42	3.65	3.63	3.87	3.82	4.03	4.00	4.15	4.08	4.22	4.37
31729.5	3.00	3.23	3.42	3.65	3.64	3.87	3.82	4.02	4.00	4.15	4.08	4.22	4.36
31732.4	3.01	3.23	3.43	3.65	3.64	3.86	3.81	4.02	4.00	4.15	4.08	4.21	4.36
31735.3	3.01	3.23	3.43	3.65	3.64	3.86	3.81	4.02	4.00	4.14	4.07	4.21	4.35
31738.3	3.01	3.24	3.43	3.65	3.64	3.86	3.81	4.02	3.99	4.14	4.07	4.20	4.35
31741.2	3.02	3.24	3.43	3.65	3.64	3.86	3.81	4.01	3.99	4.14	4.07	4.20	4.34
31744.1	3.02	3.24	3.43	3.66	3.64	3.86	3.81	4.01	3.99	4.14	4.07	4.20	4.34
31747.0	3.02	3.25	3.44	3.66	3.64	3.86	3.81	4.01	3.99	4.14	4.07	4.20	4.34
31749.9	3.03	3.25	3.44	3.66	3.64	3.86	3.81	4.01	3.99	4.14	4.06	4.20	4.34
31752.8	3.03	3.25	3.44	3.66	3.64	3.86	3.81	4.01	3.98	4.14	4.06	4.20	4.34
31755.8	3.03	3.26	3.44	3.66	3.64	3.85	3.81	4.01	3.98	4.14	4.06	4.20	4.34
31758.7	3.04	3.26	3.44	3.66	3.64	3.85	3.81	4.00	3.98	4.13	4.06	4.20	4.34
31761.6	3.04	3.26	3.45	3.66	3.64	3.85	3.81	4.00	3.98	4.13	4.06	4.20	4.34
31764.5	3.05	3.27	3.45	3.66	3.64	3.85	3.81	4.00	3.98	4.13	4.06	4.20	4.34
31767.4	3.05	3.27	3.45	3.66	3.64	3.85	3.81	4.00	3.97	4.13	4.05	4.20	4.34
31770.3	3.05	3.27	3.45	3.66	3.65	3.85	3.81	3.99	3.97	4.13	4.05	4.20	4.34
31773.3	3.06	3.27	3.45	3.66	3.65	3.85	3.80	3.99	3.97	4.12	4.05	4.19	4.34
31776.2	3.06	3.28	3.46	3.66	3.65	3.85	3.80	3.99	3.97	4.12	4.04	4.19	4.33
31779.1	3.07	3.28	3.46	3.66	3.65	3.84	3.80	3.99	3.96	4.12	4.04	4.19	4.33
31782.0	3.07	3.29	3.46	3.66	3.65	3.84	3.80	3.98	3.96	4.11	4.04	4.18	4.32
31785.0	3.07	3.28	3.45	3.65	3.64	3.83	3.79	3.97	3.95	4.10	4.02	4.16	4.30
31788.0	3.06	3.27	3.45	3.64	3.63	3.82	3.78	3.96	3.94	4.08	4.01	4.15	4.28
31791.0	3.06	3.27	3.44	3.63	3.62	3.81	3.77	3.94	3.92	4.06	3.99	4.13	4.26
31794.0	3.05	3.26	3.43	3.63	3.61	3.80	3.76	3.93	3.91	4.05	3.98	4.11	4.24
31797.0	3.04	3.25	3.42	3.62	3.60	3.79	3.75	3.91	3.90	4.03	3.96	4.10	4.23
31800.0	3.04	3.25	3.42	3.61	3.59	3.77	3.74	3.90	3.88	4.02	3.95	4.08	4.21
31803.0	3.03	3.24	3.41	3.60	3.58	3.76	3.73	3.89	3.87	4.01	3.94	4.07	4.20
31806.0	3.03	3.24	3.40	3.59	3.58	3.75	3.72	3.88	3.86	4.00	3.93	4.06	4.19
31809.0	3.02	3.23	3.40	3.58	3.57	3.74	3.70	3.87	3.85	3.99	3.91	4.05	4.19
31812.0	3.02	3.22	3.39	3.57	3.56	3.73	3.69	3.85	3.84	3.98	3.90	4.04	4.18
31815.0	3.01	3.22	3.38	3.56	3.55	3.72	3.68	3.84	3.82	3.97	3.89	4.04	4.17
31818.0	3.01	3.21	3.38	3.55	3.54	3.71	3.67	3.83	3.81	3.96	3.88	4.03	4.16

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
31821.0	3.00	3.20	3.37	3.54	3.53	3.70	3.66	3.82	3.80	3.95	3.87	4.02	4.16
31824.0	2.99	3.20	3.36	3.53	3.52	3.69	3.65	3.81	3.79	3.94	3.86	4.01	4.15
31827.0	2.99	3.19	3.35	3.52	3.51	3.68	3.64	3.81	3.79	3.93	3.86	4.01	4.15
31830.0	2.98	3.18	3.35	3.51	3.50	3.67	3.63	3.80	3.78	3.92	3.85	4.00	4.15
31833.0	2.98	3.18	3.34	3.50	3.49	3.66	3.62	3.78	3.76	3.91	3.84	3.99	4.14
31836.0	2.97	3.17	3.33	3.49	3.48	3.64	3.61	3.77	3.75	3.90	3.82	3.98	4.13
31839.0	2.97	3.16	3.32	3.48	3.47	3.63	3.59	3.76	3.74	3.89	3.81	3.97	4.12
31842.0	2.96	3.16	3.32	3.48	3.46	3.62	3.58	3.74	3.73	3.88	3.80	3.96	4.11
31845.0	2.95	3.15	3.31	3.47	3.45	3.61	3.57	3.73	3.71	3.86	3.78	3.94	4.10
31848.0	2.95	3.14	3.30	3.46	3.44	3.60	3.56	3.72	3.70	3.84	3.77	3.93	4.08
31851.0	2.94	3.14	3.29	3.45	3.44	3.58	3.55	3.70	3.68	3.83	3.75	3.91	4.07
31854.0	2.94	3.13	3.29	3.44	3.43	3.57	3.54	3.69	3.67	3.81	3.74	3.89	4.05
31857.0	2.93	3.12	3.28	3.43	3.42	3.56	3.53	3.67	3.66	3.80	3.72	3.88	4.04
31860.0	2.92	3.12	3.27	3.42	3.41	3.55	3.51	3.66	3.64	3.78	3.71	3.86	4.02
31863.0	2.92	3.11	3.26	3.41	3.40	3.53	3.50	3.65	3.63	3.76	3.69	3.84	4.00
31866.0	2.91	3.10	3.25	3.40	3.39	3.52	3.49	3.63	3.61	3.75	3.68	3.83	3.98
31869.0	2.90	3.10	3.25	3.39	3.38	3.51	3.48	3.62	3.60	3.73	3.66	3.81	3.97
31872.0	2.90	3.09	3.24	3.38	3.37	3.50	3.47	3.60	3.59	3.72	3.65	3.79	3.95
31875.0	2.89	3.08	3.23	3.36	3.36	3.48	3.45	3.59	3.57	3.70	3.63	3.77	3.93
31878.0	2.89	3.07	3.22	3.35	3.35	3.47	3.44	3.57	3.56	3.68	3.62	3.76	3.91
31881.0	2.88	3.07	3.21	3.34	3.33	3.46	3.43	3.56	3.54	3.67	3.60	3.74	3.89
31884.0	2.87	3.06	3.20	3.33	3.32	3.45	3.42	3.54	3.53	3.65	3.58	3.72	3.88
31887.0	2.87	3.05	3.20	3.32	3.31	3.43	3.40	3.53	3.51	3.64	3.57	3.71	3.86
31890.0	2.86	3.04	3.19	3.31	3.30	3.42	3.39	3.51	3.50	3.62	3.55	3.69	3.84
31893.0	2.85	3.04	3.18	3.30	3.29	3.41	3.38	3.50	3.49	3.60	3.54	3.68	3.82
31896.0	2.85	3.03	3.17	3.29	3.28	3.39	3.37	3.49	3.47	3.59	3.52	3.66	3.81
31899.0	2.84	3.02	3.16	3.28	3.27	3.38	3.35	3.47	3.46	3.57	3.51	3.64	3.79
31902.0	2.83	3.01	3.15	3.27	3.26	3.37	3.34	3.46	3.44	3.56	3.49	3.63	3.77
31905.0	2.83	3.00	3.14	3.26	3.25	3.35	3.33	3.44	3.43	3.54	3.48	3.61	3.75
31908.0	2.82	3.00	3.13	3.25	3.24	3.34	3.32	3.43	3.41	3.52	3.46	3.59	3.74
31911.0	2.82	2.99	3.13	3.24	3.23	3.33	3.31	3.42	3.40	3.51	3.45	3.58	3.73
31913.9	2.82	2.99	3.12	3.23	3.22	3.32	3.30	3.41	3.39	3.50	3.44	3.57	3.71
31916.9	2.82	2.99	3.12	3.22	3.22	3.31	3.29	3.40	3.38	3.49	3.43	3.56	3.70
31919.8	2.81	2.98	3.11	3.22	3.21	3.31	3.28	3.39	3.37	3.48	3.42	3.55	3.69
31922.8	2.81	2.98	3.11	3.21	3.20	3.30	3.27	3.38	3.36	3.47	3.41	3.54	3.68
31925.7	2.81	2.97	3.10	3.20	3.19	3.29	3.26	3.37	3.35	3.46	3.40	3.53	3.67
31928.7	2.81	2.97	3.09	3.19	3.19	3.28	3.26	3.36	3.34	3.45	3.39	3.52	3.66
31931.6	2.81	2.97	3.09	3.18	3.18	3.27	3.25	3.35	3.33	3.44	3.38	3.51	3.65
31934.6	2.81	2.96	3.08	3.18	3.17	3.26	3.24	3.34	3.33	3.43	3.37	3.50	3.64
31937.5	2.81	2.96	3.08	3.17	3.16	3.25	3.23	3.33	3.32	3.42	3.36	3.49	3.63
31940.5	2.81	2.96	3.07	3.16	3.16	3.24	3.22	3.32	3.31	3.41	3.35	3.48	3.62
31943.4	2.81	2.95	3.07	3.15	3.15	3.23	3.21	3.31	3.30	3.40	3.34	3.47	3.61
31946.4	2.81	2.95	3.06	3.15	3.14	3.22	3.20	3.30	3.29	3.39	3.33	3.46	3.60
31949.3	2.80	2.95	3.06	3.14	3.13	3.22	3.19	3.29	3.28	3.38	3.32	3.45	3.59
31952.3	2.80	2.95	3.05	3.13	3.13	3.21	3.19	3.28	3.27	3.37	3.31	3.44	3.59
31955.2	2.80	2.94	3.05	3.12	3.12	3.20	3.18	3.27	3.26	3.36	3.30	3.43	3.58

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
31958.2	2.80	2.94	3.04	3.12	3.11	3.19	3.17	3.26	3.25	3.36	3.30	3.42	3.57
31961.1	2.80	2.94	3.04	3.11	3.10	3.18	3.16	3.25	3.24	3.35	3.29	3.42	3.56
31964.1	2.80	2.94	3.03	3.10	3.10	3.17	3.15	3.24	3.23	3.34	3.28	3.41	3.55
31967.0	2.80	2.93	3.03	3.09	3.09	3.16	3.14	3.23	3.22	3.33	3.27	3.40	3.54
31970.0	2.80	2.93	3.02	3.09	3.08	3.15	3.13	3.22	3.21	3.32	3.26	3.39	3.54
31973.0	2.80	2.93	3.02	3.08	3.08	3.14	3.13	3.22	3.20	3.31	3.25	3.38	3.53
31975.9	2.80	2.93	3.01	3.07	3.07	3.14	3.12	3.21	3.19	3.30	3.24	3.37	3.52
31978.9	2.80	2.93	3.01	3.07	3.06	3.13	3.11	3.20	3.18	3.29	3.23	3.36	3.51
31981.8	2.80	2.92	3.00	3.06	3.05	3.12	3.10	3.19	3.18	3.28	3.22	3.35	3.50
31984.8	2.80	2.92	3.00	3.05	3.05	3.11	3.09	3.18	3.17	3.27	3.21	3.34	3.48
31987.7	2.80	2.92	2.99	3.04	3.04	3.10	3.08	3.17	3.16	3.26	3.20	3.33	3.47
31990.7	2.80	2.92	2.99	3.04	3.03	3.09	3.08	3.16	3.15	3.25	3.19	3.31	3.46
31993.6	2.80	2.92	2.98	3.03	3.03	3.08	3.07	3.15	3.14	3.24	3.18	3.30	3.45
31996.6	2.80	2.92	2.98	3.02	3.02	3.07	3.06	3.14	3.13	3.23	3.17	3.29	3.44
31999.5	2.80	2.92	2.98	3.02	3.01	3.07	3.05	3.13	3.12	3.22	3.16	3.28	3.43
32002.5	2.80	2.92	2.97	3.01	3.01	3.06	3.04	3.12	3.11	3.21	3.15	3.27	3.42
32005.4	2.80	2.92	2.97	3.00	3.00	3.05	3.03	3.11	3.10	3.20	3.14	3.26	3.41
32008.4	2.81	2.91	2.96	2.99	2.99	3.04	3.02	3.10	3.09	3.19	3.13	3.25	3.40
32011.3	2.81	2.91	2.96	2.99	2.99	3.03	3.02	3.09	3.08	3.18	3.12	3.24	3.39
32014.3	2.81	2.91	2.96	2.98	2.98	3.02	3.01	3.08	3.07	3.17	3.11	3.23	3.38
32017.2	2.81	2.91	2.95	2.97	2.97	3.01	3.00	3.07	3.06	3.16	3.10	3.22	3.37
32020.2	2.81	2.91	2.95	2.97	2.97	3.00	2.99	3.06	3.05	3.15	3.09	3.22	3.36
32023.1	2.81	2.92	2.94	2.96	2.96	3.00	2.98	3.05	3.04	3.14	3.08	3.21	3.35
32026.1	2.81	2.92	2.94	2.96	2.96	2.99	2.97	3.04	3.03	3.13	3.07	3.20	3.34
32029.0	2.82	2.92	2.94	2.95	2.95	2.98	2.97	3.03	3.02	3.12	3.06	3.19	3.34
32032.0	2.82	2.92	2.94	2.95	2.95	2.97	2.96	3.02	3.01	3.11	3.06	3.18	3.33
32035.0	2.79	2.90	2.93	2.94	2.94	2.97	2.95	3.02	3.01	3.11	3.05	3.18	3.33
32037.9	2.77	2.89	2.92	2.94	2.94	2.96	2.95	3.02	3.01	3.11	3.05	3.18	3.33
32040.9	2.75	2.87	2.91	2.93	2.93	2.96	2.95	3.02	3.01	3.11	3.05	3.18	3.33
32043.8	2.73	2.85	2.90	2.93	2.93	2.96	2.95	3.01	3.00	3.11	3.05	3.18	3.33
32046.8	2.71	2.84	2.89	2.93	2.93	2.96	2.94	3.01	3.00	3.10	3.04	3.17	3.33
32049.7	2.70	2.82	2.89	2.92	2.92	2.95	2.94	3.01	3.00	3.10	3.04	3.17	3.33
32052.7	2.68	2.80	2.88	2.92	2.92	2.95	2.94	3.01	3.00	3.10	3.04	3.17	3.33
32055.7	2.67	2.78	2.87	2.91	2.91	2.95	2.94	3.00	2.99	3.10	3.04	3.17	3.33
32058.6	2.65	2.77	2.86	2.91	2.90	2.95	2.93	3.00	2.99	3.10	3.03	3.17	3.33
32061.6	2.64	2.75	2.85	2.90	2.90	2.94	2.93	3.00	2.99	3.10	3.03	3.17	3.33
32064.5	2.63	2.74	2.84	2.90	2.89	2.94	2.93	2.99	2.98	3.09	3.03	3.17	3.33
32067.5	2.62	2.73	2.83	2.89	2.89	2.94	2.92	2.99	2.98	3.09	3.03	3.16	3.32
32070.4	2.61	2.71	2.81	2.88	2.88	2.93	2.92	2.99	2.98	3.09	3.02	3.16	3.32
32073.4	2.60	2.70	2.80	2.88	2.87	2.93	2.92	2.99	2.98	3.09	3.02	3.16	3.32
32076.3	2.59	2.69	2.79	2.87	2.87	2.93	2.91	2.99	2.97	3.08	3.02	3.16	3.32
32079.3	2.59	2.68	2.78	2.86	2.86	2.92	2.91	2.98	2.97	3.08	3.02	3.16	3.32
32082.3	2.58	2.67	2.77	2.86	2.85	2.92	2.90	2.98	2.97	3.08	3.02	3.15	3.32
32085.2	2.58	2.66	2.76	2.85	2.85	2.92	2.90	2.98	2.97	3.08	3.01	3.15	3.32
32088.2	2.57	2.66	2.75	2.85	2.84	2.91	2.89	2.98	2.97	3.08	3.01	3.15	3.32
32091.1	2.57	2.65	2.74	2.84	2.84	2.91	2.89	2.98	2.96	3.08	3.01	3.15	3.32

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
32094.1	2.57	2.65	2.73	2.83	2.83	2.90	2.88	2.97	2.96	3.07	3.01	3.15	3.32
32097.0	2.57	2.64	2.72	2.83	2.82	2.90	2.88	2.97	2.96	3.07	3.01	3.15	3.33
32100.0	2.57	2.64	2.72	2.82	2.81	2.89	2.87	2.97	2.95	3.07	3.00	3.16	3.33
32103.0	2.57	2.63	2.71	2.81	2.80	2.89	2.87	2.96	2.95	3.07	3.00	3.16	3.34
32105.9	2.57	2.63	2.71	2.80	2.80	2.88	2.86	2.96	2.95	3.07	3.00	3.16	3.35
32108.9	2.58	2.63	2.70	2.80	2.79	2.88	2.86	2.96	2.94	3.07	3.00	3.15	3.35
32111.8	2.58	2.63	2.70	2.79	2.78	2.87	2.85	2.95	2.94	3.07	2.99	3.15	3.34
32114.8	2.58	2.63	2.69	2.78	2.78	2.87	2.85	2.95	2.94	3.06	2.99	3.15	3.34
32117.7	2.58	2.64	2.69	2.78	2.77	2.86	2.84	2.95	2.93	3.06	2.99	3.15	3.34
32120.7	2.58	2.64	2.69	2.77	2.77	2.86	2.84	2.94	2.93	3.06	2.98	3.14	3.33
32123.7	2.58	2.64	2.69	2.77	2.76	2.86	2.83	2.94	2.93	3.05	2.98	3.14	3.33
32126.6	2.59	2.64	2.69	2.77	2.76	2.85	2.83	2.94	2.92	3.05	2.98	3.14	3.33
32129.6	2.59	2.65	2.69	2.76	2.76	2.85	2.82	2.93	2.92	3.05	2.97	3.13	3.33
32132.5	2.59	2.65	2.69	2.76	2.75	2.84	2.82	2.93	2.91	3.04	2.97	3.13	3.32
32135.5	2.59	2.66	2.70	2.76	2.75	2.84	2.82	2.92	2.91	3.04	2.97	3.13	3.32
32138.4	2.59	2.67	2.70	2.76	2.75	2.84	2.81	2.92	2.91	3.04	2.96	3.13	3.32
32141.4	2.59	2.67	2.70	2.75	2.75	2.83	2.81	2.92	2.90	3.04	2.96	3.12	3.31
32144.3	2.59	2.68	2.71	2.75	2.75	2.83	2.81	2.91	2.90	3.03	2.96	3.12	3.31
32147.3	2.60	2.68	2.71	2.76	2.75	2.83	2.80	2.91	2.90	3.03	2.95	3.12	3.31
32150.3	2.60	2.68	2.72	2.76	2.75	2.82	2.80	2.91	2.89	3.03	2.95	3.11	3.31
32153.2	2.60	2.69	2.73	2.76	2.75	2.82	2.80	2.90	2.89	3.02	2.95	3.11	3.30
32156.2	2.61	2.69	2.74	2.76	2.76	2.82	2.80	2.90	2.89	3.02	2.94	3.11	3.30
32159.1	2.61	2.69	2.74	2.76	2.76	2.82	2.80	2.90	2.88	3.02	2.94	3.11	3.30
32162.1	2.62	2.70	2.75	2.77	2.77	2.82	2.80	2.90	2.88	3.02	2.94	3.10	3.30
32165.0	2.63	2.70	2.76	2.77	2.77	2.82	2.80	2.89	2.88	3.01	2.94	3.10	3.29
32168.0	2.63	2.71	2.77	2.78	2.78	2.82	2.80	2.89	2.88	3.01	2.93	3.10	3.29
32170.9	2.62	2.70	2.76	2.77	2.77	2.82	2.80	2.90	2.88	3.02	2.94	3.10	3.30
32173.8	2.61	2.69	2.75	2.77	2.76	2.82	2.80	2.90	2.88	3.02	2.94	3.11	3.31
32176.7	2.60	2.68	2.74	2.76	2.76	2.82	2.80	2.90	2.89	3.03	2.95	3.12	3.31
32179.6	2.59	2.68	2.73	2.76	2.76	2.82	2.80	2.91	2.89	3.04	2.95	3.13	3.32
32182.4	2.58	2.67	2.72	2.76	2.75	2.82	2.80	2.91	2.90	3.04	2.96	3.13	3.33
32185.3	2.57	2.66	2.71	2.75	2.75	2.83	2.80	2.92	2.90	3.05	2.97	3.14	3.34
32188.2	2.56	2.66	2.71	2.75	2.75	2.83	2.81	2.93	2.91	3.06	2.97	3.15	3.35
32191.1	2.56	2.65	2.70	2.75	2.75	2.83	2.81	2.93	2.91	3.07	2.98	3.16	3.35
32194.0	2.55	2.65	2.70	2.75	2.75	2.84	2.81	2.94	2.92	3.07	2.99	3.17	3.36
32196.9	2.55	2.64	2.69	2.76	2.75	2.84	2.82	2.95	2.93	3.08	3.00	3.17	3.37
32199.8	2.54	2.64	2.69	2.76	2.75	2.85	2.82	2.95	2.94	3.09	3.00	3.18	3.38
32202.7	2.54	2.64	2.69	2.76	2.75	2.86	2.83	2.96	2.94	3.10	3.01	3.19	3.39
32205.6	2.54	2.63	2.69	2.76	2.76	2.86	2.83	2.97	2.95	3.11	3.02	3.20	3.40
32208.4	2.54	2.63	2.69	2.77	2.76	2.87	2.84	2.98	2.96	3.12	3.03	3.21	3.41
32211.3	2.54	2.63	2.69	2.77	2.77	2.88	2.85	2.99	2.97	3.13	3.04	3.22	3.41
32214.2	2.53	2.63	2.69	2.78	2.77	2.89	2.85	3.00	2.98	3.14	3.05	3.23	3.42
32217.1	2.54	2.63	2.69	2.78	2.78	2.89	2.86	3.01	2.99	3.14	3.06	3.24	3.43
32220.0	2.54	2.63	2.69	2.79	2.78	2.90	2.87	3.02	3.00	3.15	3.07	3.24	3.44
32222.9	2.54	2.63	2.70	2.80	2.79	2.91	2.88	3.03	3.01	3.16	3.08	3.25	3.45
32225.8	2.54	2.63	2.70	2.80	2.80	2.92	2.89	3.04	3.02	3.17	3.09	3.26	3.46

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
32228.7	2.54	2.63	2.71	2.81	2.80	2.93	2.90	3.05	3.03	3.18	3.10	3.27	3.47
32231.6	2.54	2.63	2.71	2.82	2.81	2.94	2.91	3.06	3.04	3.19	3.11	3.28	3.48
32234.4	2.55	2.64	2.72	2.83	2.82	2.95	2.92	3.07	3.05	3.20	3.12	3.29	3.49
32237.3	2.55	2.64	2.73	2.84	2.83	2.96	2.93	3.08	3.06	3.21	3.13	3.30	3.50
32240.2	2.56	2.65	2.73	2.85	2.84	2.98	2.94	3.09	3.07	3.22	3.14	3.31	3.51
32243.1	2.56	2.65	2.74	2.86	2.85	2.99	2.96	3.10	3.08	3.24	3.15	3.32	3.52
32246.0	2.57	2.66	2.75	2.87	2.87	3.00	2.97	3.12	3.10	3.25	3.17	3.33	3.53
32248.9	2.57	2.67	2.76	2.89	2.88	3.01	2.98	3.13	3.11	3.26	3.18	3.35	3.54
32251.8	2.58	2.67	2.77	2.90	2.89	3.03	2.99	3.14	3.12	3.27	3.19	3.36	3.55
32254.7	2.58	2.68	2.78	2.91	2.90	3.04	3.01	3.16	3.14	3.28	3.20	3.37	3.56
32257.6	2.59	2.69	2.80	2.93	2.92	3.06	3.02	3.17	3.15	3.29	3.22	3.38	3.57
32260.4	2.60	2.70	2.81	2.94	2.93	3.07	3.04	3.18	3.16	3.31	3.23	3.39	3.58
32263.3	2.61	2.71	2.82	2.96	2.95	3.09	3.05	3.20	3.18	3.32	3.24	3.40	3.60
32266.2	2.62	2.73	2.84	2.98	2.97	3.10	3.07	3.21	3.19	3.33	3.26	3.42	3.61
32269.1	2.64	2.74	2.85	2.99	2.98	3.12	3.08	3.23	3.21	3.34	3.27	3.43	3.62
32272.0	2.65	2.75	2.87	3.01	3.00	3.13	3.10	3.24	3.22	3.36	3.29	3.44	3.63
32275.0	2.66	2.77	2.88	3.02	3.01	3.15	3.11	3.25	3.24	3.37	3.30	3.45	3.64
32278.0	2.67	2.78	2.89	3.04	3.03	3.16	3.13	3.27	3.25	3.38	3.31	3.46	3.65
32281.0	2.69	2.80	2.91	3.05	3.04	3.17	3.14	3.28	3.26	3.39	3.32	3.48	3.67
32284.0	2.70	2.81	2.92	3.07	3.06	3.19	3.16	3.29	3.28	3.41	3.34	3.49	3.68
32287.0	2.72	2.82	2.94	3.08	3.07	3.20	3.17	3.31	3.29	3.42	3.35	3.50	3.69
32290.0	2.73	2.84	2.95	3.10	3.09	3.22	3.19	3.32	3.30	3.43	3.36	3.52	3.71
32293.0	2.74	2.85	2.97	3.11	3.10	3.23	3.20	3.33	3.32	3.45	3.38	3.53	3.72
32296.0	2.76	2.87	2.98	3.13	3.12	3.25	3.22	3.35	3.33	3.46	3.39	3.54	3.73
32299.0	2.77	2.88	3.00	3.14	3.13	3.26	3.23	3.36	3.34	3.47	3.40	3.56	3.75
32302.0	2.79	2.90	3.01	3.16	3.15	3.28	3.25	3.38	3.36	3.49	3.42	3.57	3.76
32305.0	2.80	2.91	3.03	3.17	3.16	3.30	3.26	3.39	3.37	3.50	3.43	3.58	3.77
32308.0	2.82	2.93	3.05	3.19	3.18	3.31	3.28	3.41	3.39	3.51	3.45	3.60	3.79
32311.0	2.83	2.95	3.06	3.21	3.20	3.33	3.30	3.42	3.40	3.53	3.46	3.61	3.80
32314.0	2.85	2.96	3.08	3.22	3.21	3.34	3.31	3.44	3.42	3.54	3.48	3.63	3.81
32317.0	2.86	2.98	3.10	3.24	3.23	3.36	3.33	3.45	3.44	3.56	3.49	3.64	3.83
32320.0	2.88	3.00	3.11	3.26	3.25	3.38	3.35	3.47	3.45	3.57	3.51	3.66	3.84
32323.0	2.89	3.01	3.13	3.28	3.26	3.40	3.37	3.48	3.47	3.59	3.52	3.67	3.86
32326.0	2.91	3.03	3.15	3.29	3.28	3.41	3.38	3.50	3.49	3.60	3.54	3.69	3.87
32329.0	2.92	3.05	3.16	3.31	3.30	3.43	3.40	3.52	3.51	3.62	3.56	3.70	3.89
32332.0	2.94	3.06	3.18	3.33	3.32	3.45	3.42	3.54	3.52	3.64	3.57	3.72	3.90
32335.0	2.96	3.08	3.20	3.35	3.34	3.47	3.44	3.55	3.54	3.65	3.59	3.73	3.92
32338.0	2.97	3.10	3.22	3.37	3.36	3.49	3.46	3.57	3.56	3.67	3.61	3.75	3.94
32341.0	2.99	3.12	3.24	3.39	3.38	3.51	3.48	3.59	3.58	3.69	3.63	3.77	3.95
32344.0	3.01	3.14	3.26	3.41	3.40	3.53	3.50	3.61	3.60	3.71	3.64	3.78	3.97
32347.0	3.02	3.15	3.28	3.43	3.42	3.55	3.52	3.63	3.62	3.72	3.66	3.80	3.99
32350.0	3.04	3.17	3.30	3.45	3.44	3.57	3.54	3.65	3.64	3.74	3.68	3.82	4.00
32353.0	3.06	3.19	3.32	3.47	3.46	3.59	3.56	3.67	3.66	3.76	3.70	3.84	4.02
32356.0	3.07	3.21	3.34	3.49	3.48	3.61	3.58	3.69	3.68	3.78	3.72	3.85	4.04
32359.0	3.09	3.23	3.36	3.51	3.50	3.64	3.61	3.72	3.71	3.80	3.74	3.87	4.06
32362.0	3.11	3.25	3.38	3.54	3.52	3.66	3.63	3.74	3.73	3.82	3.76	3.89	4.08

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
32365.0	3.12	3.27	3.40	3.56	3.55	3.68	3.65	3.76	3.75	3.84	3.79	3.91	4.09
32368.0	3.14	3.29	3.42	3.58	3.57	3.71	3.68	3.79	3.77	3.86	3.81	3.93	4.11
32371.0	3.16	3.31	3.45	3.60	3.59	3.73	3.70	3.81	3.80	3.88	3.83	3.95	4.13
32374.0	3.18	3.33	3.47	3.63	3.62	3.76	3.73	3.83	3.82	3.90	3.85	3.97	4.15
32377.0	3.20	3.35	3.49	3.65	3.64	3.78	3.75	3.86	3.85	3.93	3.88	3.99	4.17
32380.0	3.22	3.37	3.51	3.68	3.66	3.81	3.78	3.88	3.87	3.95	3.90	4.02	4.19
32383.0	3.23	3.40	3.54	3.70	3.69	3.83	3.80	3.91	3.90	3.97	3.93	4.04	4.21
32386.0	3.25	3.42	3.56	3.73	3.71	3.86	3.83	3.94	3.93	3.99	3.95	4.06	4.23
32389.0	3.27	3.44	3.58	3.75	3.74	3.89	3.86	3.96	3.96	4.02	3.98	4.08	4.26
32392.0	3.29	3.46	3.61	3.78	3.77	3.91	3.89	3.99	3.99	4.04	4.01	4.11	4.28
32395.0	3.31	3.48	3.63	3.81	3.79	3.94	3.91	4.02	4.02	4.07	4.04	4.13	4.30
32398.0	3.33	3.50	3.66	3.83	3.82	3.97	3.94	4.05	4.05	4.10	4.07	4.16	4.32
32401.0	3.35	3.53	3.69	3.86	3.85	4.00	3.97	4.08	4.08	4.12	4.10	4.18	4.35
32404.0	3.37	3.55	3.71	3.89	3.88	4.03	4.00	4.12	4.11	4.15	4.13	4.21	4.37
32407.0	3.37	3.55	3.71	3.89	3.88	4.04	4.00	4.12	4.11	4.16	4.14	4.21	4.37
32409.9	3.36	3.54	3.70	3.89	3.87	4.04	4.00	4.12	4.11	4.16	4.14	4.22	4.38
32412.9	3.36	3.54	3.70	3.88	3.87	4.04	4.00	4.13	4.12	4.17	4.15	4.22	4.39
32415.8	3.36	3.53	3.70	3.88	3.87	4.04	4.00	4.13	4.12	4.17	4.15	4.23	4.39
32418.8	3.35	3.53	3.69	3.88	3.86	4.04	4.00	4.14	4.12	4.18	4.16	4.23	4.40
32421.7	3.35	3.52	3.69	3.88	3.86	4.04	4.00	4.14	4.12	4.18	4.16	4.23	4.40
32424.7	3.34	3.52	3.68	3.87	3.86	4.04	4.00	4.14	4.13	4.18	4.16	4.24	4.41
32427.6	3.34	3.51	3.68	3.87	3.86	4.04	3.99	4.15	4.13	4.19	4.17	4.24	4.41
32430.6	3.33	3.51	3.68	3.87	3.85	4.04	3.99	4.15	4.13	4.19	4.17	4.25	4.41
32433.5	3.32	3.50	3.67	3.86	3.85	4.04	3.99	4.15	4.13	4.20	4.17	4.25	4.42
32436.5	3.32	3.50	3.67	3.86	3.85	4.03	3.99	4.15	4.13	4.20	4.18	4.26	4.42
32439.4	3.31	3.49	3.66	3.86	3.84	4.03	3.99	4.15	4.13	4.21	4.18	4.26	4.43
32442.4	3.31	3.49	3.66	3.85	3.84	4.03	3.99	4.16	4.14	4.21	4.18	4.27	4.43
32445.3	3.30	3.48	3.65	3.85	3.83	4.03	3.98	4.16	4.14	4.22	4.19	4.27	4.44
32448.3	3.29	3.48	3.65	3.84	3.83	4.03	3.98	4.16	4.14	4.22	4.19	4.27	4.44
32451.2	3.29	3.47	3.64	3.84	3.83	4.03	3.98	4.16	4.14	4.22	4.19	4.28	4.45
32454.2	3.28	3.47	3.64	3.84	3.82	4.02	3.98	4.16	4.14	4.23	4.20	4.28	4.45
32457.1	3.27	3.46	3.63	3.83	3.82	4.02	3.97	4.16	4.14	4.23	4.20	4.29	4.46
32460.1	3.27	3.45	3.63	3.83	3.81	4.02	3.97	4.16	4.14	4.24	4.20	4.29	4.46
32463.0	3.26	3.45	3.62	3.82	3.81	4.02	3.97	4.16	4.14	4.24	4.20	4.30	4.47
32466.0	3.26	3.44	3.62	3.82	3.80	4.01	3.96	4.16	4.14	4.24	4.21	4.30	4.47
32469.0	3.25	3.44	3.61	3.81	3.80	4.01	3.96	4.17	4.14	4.25	4.21	4.30	4.48
32471.9	3.24	3.43	3.60	3.81	3.79	4.01	3.95	4.17	4.14	4.25	4.21	4.31	4.48
32474.9	3.24	3.42	3.60	3.80	3.79	4.00	3.95	4.17	4.14	4.25	4.21	4.31	4.49
32477.8	3.23	3.42	3.59	3.80	3.78	4.00	3.95	4.17	4.14	4.26	4.22	4.32	4.49
32480.8	3.22	3.41	3.59	3.79	3.78	4.00	3.94	4.17	4.14	4.26	4.22	4.32	4.50
32483.7	3.22	3.40	3.58	3.79	3.77	3.99	3.94	4.17	4.14	4.26	4.22	4.32	4.50
32486.7	3.21	3.40	3.57	3.78	3.77	3.99	3.93	4.17	4.14	4.27	4.22	4.33	4.50
32489.6	3.20	3.39	3.57	3.78	3.76	3.99	3.93	4.17	4.14	4.27	4.23	4.33	4.51
32492.6	3.19	3.38	3.56	3.77	3.75	3.98	3.92	4.17	4.14	4.27	4.23	4.33	4.51
32495.5	3.19	3.38	3.55	3.76	3.75	3.98	3.92	4.17	4.14	4.28	4.23	4.34	4.51
32498.5	3.18	3.37	3.55	3.76	3.74	3.97	3.91	4.17	4.14	4.28	4.23	4.34	4.52

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
32501.4	3.17	3.36	3.54	3.75	3.74	3.97	3.91	4.16	4.14	4.28	4.23	4.34	4.52
32504.4	3.16	3.35	3.53	3.75	3.73	3.97	3.90	4.16	4.13	4.29	4.23	4.35	4.53
32507.3	3.16	3.35	3.52	3.74	3.72	3.96	3.90	4.16	4.13	4.29	4.23	4.35	4.53
32510.3	3.15	3.34	3.52	3.73	3.72	3.96	3.89	4.16	4.13	4.29	4.23	4.35	4.53
32513.2	3.14	3.33	3.51	3.73	3.71	3.95	3.89	4.16	4.13	4.29	4.23	4.36	4.54
32516.2	3.13	3.33	3.50	3.72	3.70	3.95	3.88	4.16	4.12	4.30	4.23	4.36	4.54
32519.1	3.13	3.32	3.50	3.71	3.70	3.94	3.88	4.16	4.12	4.30	4.23	4.36	4.54
32522.1	3.12	3.31	3.49	3.71	3.69	3.93	3.87	4.15	4.12	4.30	4.23	4.36	4.55
32525.0	3.11	3.30	3.48	3.70	3.68	3.93	3.86	4.15	4.12	4.30	4.23	4.37	4.55
32528.0	3.10	3.30	3.47	3.69	3.68	3.92	3.86	4.15	4.11	4.30	4.23	4.37	4.55
32530.9	3.10	3.29	3.47	3.69	3.67	3.92	3.85	4.14	4.11	4.29	4.22	4.36	4.55
32533.8	3.09	3.28	3.46	3.68	3.67	3.91	3.85	4.14	4.10	4.28	4.22	4.36	4.55
32536.7	3.09	3.28	3.46	3.68	3.66	3.91	3.84	4.13	4.10	4.28	4.21	4.36	4.55
32539.6	3.08	3.27	3.45	3.67	3.66	3.91	3.84	4.12	4.09	4.27	4.19	4.35	4.55
32542.5	3.07	3.26	3.45	3.67	3.65	3.90	3.83	4.11	4.08	4.26	4.18	4.35	4.55
32545.4	3.07	3.26	3.44	3.66	3.65	3.90	3.83	4.11	4.07	4.26	4.17	4.35	4.55
32548.3	3.06	3.25	3.44	3.66	3.64	3.89	3.83	4.10	4.07	4.25	4.17	4.34	4.55
32551.2	3.06	3.25	3.43	3.65	3.64	3.89	3.82	4.09	4.06	4.24	4.16	4.34	4.55
32554.1	3.05	3.24	3.43	3.65	3.63	3.88	3.82	4.09	4.06	4.24	4.15	4.34	4.55
32557.0	3.04	3.24	3.42	3.64	3.63	3.88	3.81	4.08	4.05	4.24	4.14	4.34	4.55
32559.9	3.04	3.23	3.42	3.64	3.62	3.87	3.81	4.07	4.04	4.23	4.14	4.34	4.55
32562.8	3.03	3.23	3.41	3.64	3.62	3.87	3.80	4.06	4.04	4.23	4.13	4.34	4.55
32565.7	3.03	3.22	3.41	3.63	3.61	3.86	3.80	4.06	4.03	4.23	4.12	4.34	4.55
32568.6	3.02	3.22	3.40	3.63	3.61	3.86	3.80	4.05	4.02	4.23	4.12	4.34	4.55
32571.5	3.02	3.22	3.40	3.62	3.60	3.85	3.79	4.04	4.02	4.22	4.11	4.34	4.55
32574.4	3.01	3.21	3.39	3.62	3.60	3.85	3.79	4.04	4.01	4.22	4.11	4.34	4.55
32577.3	3.01	3.21	3.39	3.61	3.60	3.84	3.78	4.03	4.00	4.22	4.10	4.33	4.55
32580.2	3.00	3.20	3.39	3.61	3.59	3.84	3.77	4.03	4.00	4.22	4.10	4.33	4.55
32583.1	3.00	3.20	3.38	3.60	3.59	3.83	3.77	4.02	3.99	4.22	4.10	4.33	4.56
32586.0	3.00	3.19	3.38	3.60	3.58	3.83	3.77	4.02	3.99	4.22	4.10	4.33	4.56
32588.9	2.99	3.19	3.37	3.60	3.58	3.82	3.76	4.01	3.98	4.22	4.09	4.33	4.56
32591.8	2.99	3.19	3.37	3.59	3.57	3.82	3.76	4.01	3.98	4.22	4.09	4.33	4.56
32594.7	2.98	3.18	3.36	3.59	3.57	3.81	3.75	4.01	3.98	4.21	4.09	4.33	4.56
32597.6	2.98	3.18	3.36	3.58	3.57	3.81	3.75	4.00	3.97	4.21	4.09	4.33	4.56
32600.5	2.98	3.17	3.35	3.58	3.56	3.80	3.74	4.00	3.97	4.21	4.09	4.33	4.56
32603.4	2.97	3.17	3.35	3.58	3.56	3.80	3.74	4.00	3.97	4.21	4.09	4.32	4.57
32606.3	2.97	3.16	3.34	3.57	3.55	3.80	3.73	4.00	3.96	4.21	4.09	4.32	4.57
32609.2	2.97	3.16	3.34	3.57	3.55	3.79	3.73	4.00	3.96	4.21	4.09	4.32	4.57
32612.1	2.96	3.15	3.33	3.56	3.55	3.79	3.73	4.00	3.96	4.21	4.09	4.32	4.57
32615.0	2.96	3.15	3.33	3.56	3.54	3.78	3.72	4.00	3.96	4.21	4.09	4.32	4.57
32617.9	2.95	3.14	3.33	3.55	3.54	3.78	3.72	4.00	3.96	4.21	4.09	4.32	4.57
32620.8	2.95	3.14	3.32	3.55	3.53	3.78	3.72	4.00	3.96	4.21	4.09	4.32	4.57
32623.7	2.94	3.13	3.32	3.55	3.53	3.77	3.71	4.00	3.96	4.21	4.09	4.32	4.57
32626.6	2.94	3.13	3.31	3.54	3.52	3.77	3.71	4.00	3.96	4.21	4.10	4.32	4.58
32629.5	2.93	3.12	3.31	3.54	3.52	3.77	3.71	4.00	3.96	4.21	4.10	4.32	4.58
32632.4	2.93	3.12	3.30	3.53	3.52	3.77	3.70	4.00	3.96	4.21	4.10	4.32	4.58

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
32635.3	2.92	3.11	3.30	3.53	3.51	3.77	3.70	4.00	3.97	4.21	4.10	4.32	4.58
32638.2	2.92	3.11	3.30	3.53	3.51	3.77	3.70	4.01	3.97	4.21	4.10	4.32	4.58
32641.1	2.91	3.10	3.29	3.52	3.51	3.77	3.70	4.01	3.97	4.21	4.10	4.32	4.59
32644.0	2.91	3.10	3.29	3.52	3.50	3.77	3.70	4.01	3.97	4.21	4.10	4.32	4.59
32647.0	2.91	3.10	3.29	3.52	3.50	3.77	3.70	4.01	3.97	4.20	4.09	4.32	4.59
32650.0	2.91	3.10	3.29	3.52	3.51	3.77	3.70	4.01	3.97	4.19	4.09	4.31	4.58
32653.0	2.91	3.10	3.29	3.52	3.51	3.77	3.70	4.00	3.97	4.18	4.08	4.31	4.58
32656.0	2.91	3.10	3.29	3.52	3.51	3.77	3.70	4.00	3.97	4.18	4.08	4.30	4.58
32659.0	2.91	3.10	3.29	3.53	3.51	3.77	3.70	3.99	3.96	4.17	4.07	4.30	4.58
32662.0	2.91	3.10	3.29	3.53	3.51	3.77	3.70	3.99	3.96	4.16	4.06	4.29	4.58
32665.0	2.91	3.11	3.30	3.53	3.51	3.77	3.70	3.98	3.95	4.16	4.05	4.29	4.57
32668.0	2.91	3.11	3.30	3.53	3.51	3.78	3.71	3.98	3.95	4.15	4.04	4.29	4.57
32671.0	2.91	3.11	3.30	3.53	3.51	3.77	3.71	3.97	3.94	4.15	4.04	4.29	4.57
32674.0	2.91	3.11	3.30	3.53	3.51	3.77	3.71	3.97	3.94	4.15	4.03	4.28	4.57
32677.0	2.91	3.11	3.30	3.53	3.52	3.77	3.71	3.96	3.93	4.14	4.02	4.28	4.57
32680.0	2.92	3.11	3.30	3.53	3.52	3.77	3.71	3.95	3.93	4.14	4.02	4.28	4.57
32683.0	2.92	3.11	3.30	3.54	3.52	3.78	3.71	3.95	3.92	4.14	4.02	4.28	4.57
32686.0	2.92	3.11	3.31	3.54	3.52	3.78	3.71	3.94	3.92	4.13	4.01	4.27	4.57
32689.0	2.92	3.12	3.31	3.54	3.52	3.77	3.71	3.94	3.91	4.13	4.01	4.27	4.57
32692.0	2.92	3.12	3.31	3.54	3.52	3.77	3.71	3.93	3.91	4.13	4.01	4.27	4.57
32695.0	2.92	3.12	3.31	3.54	3.53	3.77	3.71	3.93	3.90	4.13	4.00	4.27	4.57
32698.0	2.92	3.12	3.31	3.55	3.53	3.77	3.72	3.93	3.90	4.13	4.00	4.27	4.57
32701.0	2.92	3.12	3.31	3.55	3.53	3.77	3.71	3.92	3.90	4.13	4.00	4.26	4.57
32704.0	2.93	3.13	3.32	3.55	3.53	3.76	3.71	3.92	3.89	4.13	4.00	4.26	4.57
32707.0	2.93	3.13	3.32	3.55	3.54	3.76	3.71	3.92	3.89	4.12	4.00	4.26	4.57
32710.0	2.93	3.13	3.32	3.56	3.54	3.76	3.71	3.92	3.89	4.12	4.00	4.26	4.57
32713.0	2.93	3.13	3.32	3.56	3.54	3.76	3.71	3.92	3.89	4.12	4.00	4.25	4.57
32716.0	2.93	3.13	3.33	3.56	3.54	3.76	3.71	3.92	3.89	4.12	4.00	4.25	4.57
32719.0	2.94	3.14	3.33	3.56	3.55	3.76	3.71	3.92	3.89	4.11	4.00	4.25	4.57
32722.0	2.94	3.14	3.33	3.56	3.55	3.75	3.71	3.92	3.89	4.11	4.00	4.25	4.57
32725.0	2.94	3.14	3.33	3.57	3.55	3.76	3.71	3.93	3.90	4.11	4.00	4.25	4.57
32728.0	2.94	3.14	3.34	3.57	3.55	3.76	3.71	3.93	3.90	4.11	4.00	4.25	4.57
32731.0	2.95	3.15	3.34	3.57	3.56	3.76	3.71	3.93	3.90	4.11	4.00	4.25	4.57
32734.0	2.95	3.15	3.34	3.58	3.56	3.76	3.71	3.93	3.90	4.10	4.00	4.25	4.57
32737.0	2.95	3.15	3.35	3.58	3.56	3.76	3.71	3.93	3.90	4.10	3.99	4.25	4.57
32740.0	2.95	3.16	3.35	3.58	3.57	3.77	3.72	3.93	3.91	4.10	3.99	4.24	4.57
32743.0	2.96	3.16	3.35	3.58	3.57	3.77	3.72	3.93	3.91	4.10	3.99	4.24	4.57
32746.0	2.96	3.16	3.36	3.59	3.57	3.78	3.73	3.93	3.91	4.10	3.99	4.24	4.56
32749.0	2.96	3.17	3.36	3.59	3.58	3.78	3.73	3.93	3.91	4.09	3.98	4.24	4.55
32752.0	2.97	3.17	3.36	3.60	3.58	3.79	3.74	3.93	3.91	4.09	3.98	4.23	4.55
32755.0	2.97	3.17	3.37	3.60	3.59	3.80	3.75	3.92	3.90	4.08	3.98	4.22	4.54
32758.0	2.98	3.18	3.37	3.61	3.59	3.80	3.75	3.92	3.90	4.08	3.97	4.22	4.54
32761.0	2.98	3.18	3.38	3.61	3.60	3.81	3.76	3.93	3.91	4.09	3.99	4.23	4.55
32764.0	2.98	3.18	3.38	3.62	3.60	3.81	3.76	3.94	3.92	4.09	3.99	4.23	4.55
32767.0	2.98	3.18	3.38	3.62	3.60	3.81	3.76	3.94	3.92	4.09	3.99	4.23	4.54
32770.0	2.98	3.19	3.38	3.62	3.60	3.82	3.77	3.94	3.92	4.10	3.99	4.23	4.55

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
32773.0	2.98	3.19	3.39	3.62	3.60	3.82	3.77	3.95	3.93	4.10	4.00	4.24	4.55
32776.0	2.99	3.19	3.39	3.62	3.61	3.82	3.77	3.96	3.94	4.11	4.01	4.25	4.56
32779.0	2.99	3.19	3.39	3.63	3.61	3.83	3.78	3.97	3.95	4.12	4.01	4.26	4.57
32782.0	2.99	3.20	3.39	3.63	3.61	3.83	3.78	3.97	3.95	4.13	4.02	4.27	4.58
32785.0	2.99	3.20	3.40	3.63	3.62	3.84	3.79	3.98	3.96	4.13	4.03	4.27	4.58
32788.0	2.99	3.20	3.40	3.64	3.62	3.85	3.79	3.99	3.97	4.14	4.04	4.28	4.59
32791.0	3.00	3.20	3.40	3.64	3.62	3.85	3.80	3.99	3.98	4.14	4.04	4.28	4.59
32794.0	3.00	3.21	3.40	3.64	3.63	3.86	3.80	4.01	3.99	4.15	4.05	4.29	4.60
32797.0	3.00	3.21	3.41	3.65	3.63	3.87	3.81	4.02	4.00	4.16	4.06	4.29	4.61
32800.0	3.00	3.21	3.41	3.65	3.63	3.87	3.82	4.03	4.01	4.17	4.07	4.30	4.61
32803.0	3.01	3.21	3.41	3.66	3.64	3.88	3.82	4.04	4.02	4.17	4.09	4.30	4.62
32806.0	3.01	3.22	3.42	3.66	3.64	3.89	3.83	4.06	4.03	4.19	4.10	4.31	4.62
32809.0	3.01	3.22	3.42	3.66	3.64	3.89	3.83	4.07	4.04	4.20	4.12	4.32	4.63
32812.0	3.01	3.22	3.42	3.67	3.65	3.90	3.84	4.08	4.05	4.22	4.13	4.33	4.63
32815.0	3.02	3.23	3.43	3.67	3.65	3.91	3.84	4.09	4.06	4.23	4.15	4.34	4.64
32818.0	3.02	3.23	3.43	3.67	3.66	3.91	3.85	4.10	4.08	4.25	4.16	4.36	4.65
32821.0	3.02	3.23	3.43	3.68	3.66	3.92	3.86	4.12	4.09	4.26	4.17	4.37	4.66
32824.0	3.03	3.24	3.44	3.69	3.67	3.93	3.87	4.13	4.10	4.28	4.19	4.39	4.67
32827.0	3.03	3.24	3.44	3.69	3.68	3.94	3.88	4.14	4.11	4.29	4.21	4.41	4.68
32830.0	3.03	3.24	3.45	3.70	3.68	3.96	3.89	4.15	4.12	4.31	4.22	4.42	4.69
32833.0	3.04	3.25	3.45	3.70	3.69	3.97	3.90	4.17	4.13	4.33	4.24	4.44	4.71
32836.0	3.04	3.25	3.45	3.71	3.69	3.98	3.91	4.18	4.15	4.34	4.25	4.46	4.72
32839.0	3.05	3.25	3.46	3.72	3.70	3.99	3.92	4.19	4.16	4.36	4.27	4.47	4.74
32842.0	3.05	3.26	3.46	3.72	3.70	4.00	3.92	4.20	4.17	4.38	4.29	4.49	4.76
32845.0	3.05	3.26	3.47	3.73	3.71	4.00	3.93	4.22	4.18	4.40	4.30	4.51	4.78
32848.0	3.06	3.26	3.47	3.73	3.71	4.01	3.93	4.23	4.19	4.41	4.31	4.53	4.80
32851.0	3.06	3.27	3.47	3.73	3.71	4.01	3.94	4.24	4.20	4.43	4.33	4.54	4.82
32854.0	3.07	3.27	3.48	3.74	3.72	4.02	3.94	4.25	4.21	4.45	4.34	4.56	4.84
32857.0	3.07	3.28	3.48	3.74	3.72	4.02	3.95	4.26	4.22	4.47	4.35	4.58	4.86
32860.0	3.07	3.28	3.49	3.75	3.73	4.03	3.95	4.27	4.23	4.49	4.37	4.60	4.88
32863.0	3.08	3.29	3.49	3.75	3.73	4.03	3.96	4.28	4.24	4.51	4.38	4.62	4.90
32866.0	3.08	3.29	3.50	3.76	3.74	4.04	3.96	4.29	4.25	4.53	4.40	4.64	4.92
32869.0	3.09	3.30	3.50	3.76	3.74	4.04	3.97	4.30	4.26	4.56	4.41	4.66	4.94
32872.0	3.09	3.30	3.51	3.77	3.75	4.05	3.97	4.32	4.27	4.58	4.43	4.69	4.97
32875.0	3.09	3.30	3.50	3.76	3.74	4.05	3.97	4.32	4.27	4.58	4.43	4.69	4.97
32878.0	3.09	3.30	3.50	3.76	3.74	4.04	3.97	4.31	4.27	4.58	4.43	4.69	4.98
32881.0	3.08	3.29	3.50	3.76	3.74	4.04	3.96	4.31	4.27	4.58	4.42	4.70	4.98
32884.0	3.08	3.29	3.50	3.76	3.74	4.04	3.96	4.31	4.26	4.58	4.42	4.70	4.98
32887.0	3.08	3.29	3.49	3.75	3.73	4.04	3.96	4.30	4.26	4.57	4.42	4.70	4.98
32890.0	3.08	3.29	3.49	3.75	3.73	4.03	3.95	4.30	4.26	4.57	4.41	4.69	4.98
32893.0	3.07	3.28	3.49	3.75	3.73	4.03	3.95	4.30	4.25	4.57	4.41	4.69	4.98
32896.0	3.07	3.28	3.48	3.74	3.72	4.03	3.95	4.29	4.25	4.56	4.41	4.69	4.98
32899.0	3.07	3.28	3.48	3.74	3.72	4.02	3.94	4.29	4.25	4.56	4.41	4.69	4.98
32902.0	3.07	3.27	3.48	3.74	3.72	4.02	3.94	4.29	4.24	4.55	4.40	4.68	4.97
32905.0	3.07	3.27	3.48	3.73	3.72	4.02	3.94	4.29	4.24	4.55	4.40	4.68	4.97
32908.0	3.06	3.27	3.47	3.73	3.71	4.01	3.93	4.28	4.24	4.55	4.39	4.67	4.96

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
32911.0	3.06	3.27	3.47	3.73	3.71	4.01	3.93	4.28	4.23	4.54	4.39	4.67	4.96
32914.0	3.06	3.26	3.47	3.72	3.71	4.01	3.93	4.27	4.23	4.53	4.39	4.66	4.95
32917.0	3.05	3.26	3.46	3.72	3.70	4.00	3.92	4.27	4.23	4.53	4.38	4.66	4.94
32920.0	3.05	3.26	3.46	3.72	3.70	4.00	3.92	4.27	4.22	4.52	4.38	4.65	4.94
32923.0	3.05	3.25	3.46	3.71	3.70	4.00	3.92	4.26	4.22	4.52	4.37	4.65	4.93
32926.0	3.05	3.25	3.45	3.71	3.69	3.99	3.91	4.26	4.22	4.51	4.37	4.64	4.93
32929.0	3.04	3.25	3.45	3.71	3.69	3.99	3.91	4.26	4.21	4.51	4.37	4.64	4.92
32932.0	3.04	3.24	3.45	3.70	3.68	3.99	3.91	4.25	4.21	4.51	4.36	4.64	4.92
32935.0	3.04	3.24	3.44	3.70	3.68	3.98	3.90	4.25	4.21	4.50	4.36	4.64	4.91
32938.0	3.04	3.24	3.44	3.70	3.68	3.98	3.90	4.25	4.20	4.50	4.36	4.63	4.91
32941.0	3.03	3.23	3.43	3.69	3.67	3.98	3.90	4.24	4.20	4.50	4.35	4.63	4.91
32944.0	3.03	3.23	3.43	3.69	3.67	3.97	3.89	4.24	4.20	4.49	4.35	4.63	4.91
32947.0	3.03	3.22	3.43	3.69	3.67	3.97	3.89	4.24	4.19	4.49	4.35	4.62	4.90
32950.0	3.02	3.22	3.42	3.68	3.66	3.97	3.89	4.23	4.19	4.49	4.34	4.62	4.90
32953.0	3.02	3.22	3.42	3.68	3.66	3.96	3.88	4.23	4.19	4.48	4.34	4.62	4.90
32956.0	3.01	3.21	3.41	3.67	3.65	3.96	3.88	4.23	4.18	4.48	4.34	4.62	4.90
32959.0	3.01	3.21	3.41	3.67	3.65	3.95	3.88	4.22	4.18	4.48	4.33	4.61	4.90
32962.0	3.01	3.20	3.41	3.67	3.65	3.95	3.87	4.22	4.18	4.47	4.33	4.61	4.89
32965.0	3.00	3.20	3.40	3.66	3.64	3.95	3.87	4.22	4.17	4.47	4.33	4.61	4.89
32968.0	3.00	3.20	3.40	3.66	3.64	3.94	3.86	4.21	4.17	4.47	4.32	4.61	4.89
32971.0	3.00	3.19	3.39	3.65	3.63	3.94	3.86	4.21	4.17	4.46	4.32	4.60	4.89
32974.0	2.99	3.19	3.39	3.65	3.63	3.94	3.86	4.21	4.16	4.46	4.32	4.60	4.89
32977.0	2.99	3.18	3.39	3.65	3.63	3.93	3.85	4.20	4.16	4.46	4.31	4.60	4.89
32980.0	2.98	3.18	3.38	3.64	3.62	3.93	3.85	4.20	4.15	4.45	4.31	4.60	4.89
32983.0	2.98	3.17	3.38	3.64	3.62	3.92	3.84	4.19	4.15	4.45	4.30	4.59	4.89
32986.0	2.97	3.17	3.37	3.63	3.61	3.92	3.84	4.19	4.15	4.45	4.30	4.59	4.89
32988.9	2.97	3.17	3.37	3.63	3.61	3.91	3.83	4.18	4.14	4.44	4.29	4.58	4.88
32991.8	2.97	3.17	3.37	3.62	3.60	3.91	3.83	4.17	4.13	4.43	4.28	4.57	4.87
32994.7	2.97	3.17	3.36	3.62	3.60	3.90	3.82	4.17	4.12	4.42	4.27	4.57	4.86
32997.6	2.97	3.16	3.36	3.61	3.59	3.89	3.81	4.16	4.11	4.41	4.27	4.56	4.85
33000.5	2.97	3.16	3.36	3.61	3.59	3.88	3.81	4.15	4.11	4.40	4.26	4.55	4.84
33003.4	2.97	3.16	3.35	3.60	3.58	3.88	3.80	4.14	4.10	4.40	4.25	4.54	4.84
33006.3	2.98	3.16	3.35	3.60	3.58	3.87	3.79	4.13	4.09	4.39	4.24	4.53	4.83
33009.2	2.98	3.16	3.35	3.59	3.57	3.86	3.79	4.12	4.08	4.38	4.23	4.53	4.82
33012.1	2.98	3.16	3.35	3.59	3.57	3.86	3.78	4.12	4.07	4.37	4.22	4.52	4.81
33015.0	2.98	3.16	3.34	3.58	3.56	3.85	3.77	4.11	4.07	4.36	4.22	4.51	4.80
33018.0	2.98	3.16	3.34	3.58	3.56	3.84	3.77	4.10	4.06	4.36	4.21	4.50	4.80
33020.9	2.98	3.16	3.34	3.57	3.55	3.84	3.76	4.09	4.05	4.35	4.20	4.50	4.79
33023.8	2.98	3.15	3.34	3.57	3.55	3.83	3.76	4.08	4.04	4.34	4.19	4.49	4.78
33026.7	2.98	3.15	3.33	3.56	3.55	3.82	3.75	4.08	4.03	4.33	4.18	4.48	4.77
33029.6	2.98	3.15	3.33	3.56	3.54	3.82	3.74	4.07	4.03	4.32	4.18	4.47	4.77
33032.5	2.98	3.15	3.33	3.55	3.54	3.81	3.74	4.06	4.02	4.32	4.17	4.47	4.76
33035.4	2.98	3.15	3.33	3.55	3.53	3.80	3.73	4.05	4.01	4.31	4.16	4.46	4.75
33038.3	2.98	3.15	3.32	3.54	3.53	3.80	3.72	4.05	4.00	4.30	4.15	4.45	4.74
33041.2	2.98	3.15	3.32	3.54	3.52	3.79	3.72	4.04	4.00	4.29	4.14	4.44	4.74
33044.1	2.98	3.15	3.32	3.54	3.52	3.78	3.71	4.03	3.99	4.29	4.14	4.43	4.73

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33047.0	2.98	3.15	3.32	3.53	3.51	3.78	3.71	4.02	3.98	4.28	4.13	4.43	4.72
33049.9	2.98	3.15	3.32	3.53	3.51	3.77	3.70	4.02	3.97	4.27	4.12	4.42	4.71
33052.8	2.99	3.15	3.31	3.52	3.51	3.76	3.70	4.01	3.97	4.26	4.11	4.41	4.70
33055.7	2.99	3.15	3.31	3.52	3.50	3.76	3.69	4.00	3.96	4.26	4.11	4.40	4.69
33058.6	2.99	3.15	3.31	3.51	3.50	3.75	3.68	3.99	3.95	4.25	4.10	4.40	4.68
33061.5	2.99	3.15	3.31	3.51	3.49	3.75	3.68	3.99	3.95	4.24	4.09	4.39	4.68
33064.4	2.99	3.15	3.31	3.51	3.49	3.74	3.67	3.98	3.94	4.23	4.08	4.38	4.67
33067.3	2.99	3.15	3.31	3.50	3.49	3.73	3.67	3.97	3.93	4.23	4.08	4.37	4.66
33070.2	2.99	3.15	3.30	3.50	3.48	3.73	3.66	3.97	3.93	4.22	4.07	4.37	4.65
33073.1	3.00	3.15	3.30	3.49	3.48	3.72	3.66	3.96	3.92	4.21	4.06	4.36	4.64
33076.0	3.00	3.15	3.30	3.49	3.47	3.72	3.65	3.95	3.91	4.20	4.06	4.35	4.64
33079.0	3.00	3.15	3.30	3.49	3.47	3.71	3.65	3.95	3.91	4.20	4.05	4.34	4.63
33081.9	3.00	3.15	3.30	3.48	3.47	3.71	3.64	3.94	3.90	4.19	4.04	4.34	4.62
33084.8	3.00	3.15	3.30	3.48	3.46	3.70	3.64	3.93	3.89	4.18	4.04	4.33	4.61
33087.7	3.01	3.15	3.30	3.47	3.46	3.69	3.63	3.93	3.89	4.18	4.03	4.32	4.60
33090.6	3.01	3.15	3.30	3.47	3.46	3.69	3.63	3.92	3.88	4.17	4.02	4.31	4.59
33093.5	3.01	3.15	3.29	3.47	3.45	3.68	3.62	3.91	3.87	4.16	4.01	4.31	4.58
33096.4	3.01	3.15	3.29	3.46	3.45	3.68	3.62	3.90	3.87	4.15	4.01	4.30	4.58
33099.3	3.02	3.15	3.29	3.46	3.45	3.67	3.61	3.90	3.86	4.15	4.00	4.29	4.57
33102.2	3.02	3.15	3.29	3.46	3.44	3.67	3.61	3.89	3.85	4.14	3.99	4.28	4.56
33105.1	3.02	3.15	3.29	3.45	3.44	3.66	3.60	3.88	3.84	4.13	3.98	4.27	4.55
33108.0	3.02	3.16	3.29	3.45	3.44	3.66	3.60	3.88	3.84	4.12	3.98	4.27	4.54
33110.9	3.02	3.15	3.29	3.45	3.44	3.65	3.59	3.88	3.84	4.12	3.98	4.27	4.54
33113.9	3.01	3.14	3.28	3.45	3.43	3.65	3.59	3.87	3.83	4.12	3.97	4.26	4.54
33116.8	3.01	3.14	3.28	3.44	3.43	3.65	3.59	3.87	3.83	4.11	3.97	4.26	4.54
33119.8	3.00	3.13	3.27	3.44	3.42	3.64	3.58	3.86	3.83	4.11	3.96	4.26	4.53
33122.7	2.99	3.13	3.27	3.43	3.42	3.64	3.58	3.86	3.82	4.10	3.96	4.25	4.53
33125.7	2.99	3.12	3.26	3.43	3.41	3.63	3.57	3.85	3.81	4.10	3.95	4.25	4.52
33128.6	2.98	3.11	3.25	3.42	3.40	3.62	3.56	3.84	3.81	4.09	3.94	4.24	4.52
33131.6	2.97	3.11	3.24	3.41	3.39	3.61	3.55	3.83	3.80	4.08	3.93	4.23	4.51
33134.5	2.97	3.10	3.23	3.40	3.38	3.60	3.54	3.82	3.79	4.07	3.92	4.22	4.50
33137.5	2.96	3.09	3.23	3.39	3.38	3.59	3.53	3.82	3.78	4.06	3.91	4.21	4.49
33140.4	2.95	3.08	3.22	3.38	3.37	3.59	3.53	3.81	3.77	4.05	3.91	4.20	4.48
33143.4	2.95	3.08	3.21	3.38	3.36	3.58	3.52	3.80	3.77	4.05	3.90	4.20	4.48
33146.3	2.94	3.07	3.21	3.37	3.36	3.58	3.52	3.80	3.76	4.04	3.89	4.19	4.47
33149.3	2.93	3.06	3.20	3.36	3.35	3.57	3.51	3.79	3.75	4.03	3.89	4.18	4.47
33152.2	2.93	3.06	3.19	3.35	3.34	3.56	3.50	3.78	3.75	4.03	3.88	4.18	4.46
33155.2	2.92	3.05	3.18	3.35	3.33	3.55	3.49	3.77	3.74	4.02	3.87	4.17	4.45
33158.1	2.91	3.04	3.17	3.34	3.32	3.54	3.48	3.77	3.73	4.01	3.86	4.16	4.45
33161.1	2.91	3.04	3.16	3.33	3.31	3.53	3.47	3.76	3.72	4.00	3.85	4.15	4.44
33164.0	2.90	3.03	3.15	3.31	3.30	3.52	3.46	3.75	3.71	3.99	3.84	4.14	4.43
33166.9	2.89	3.02	3.14	3.30	3.29	3.51	3.45	3.73	3.69	3.98	3.83	4.13	4.42
33169.9	2.89	3.01	3.13	3.29	3.27	3.49	3.43	3.71	3.68	3.96	3.81	4.11	4.41
33172.8	2.88	3.01	3.12	3.28	3.26	3.49	3.42	3.71	3.67	3.95	3.80	4.11	4.40
33175.8	2.87	3.00	3.11	3.27	3.26	3.48	3.42	3.70	3.66	3.94	3.79	4.10	4.39
33178.7	2.87	2.99	3.11	3.27	3.25	3.47	3.41	3.69	3.66	3.94	3.79	4.10	4.39

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33181.7	2.86	2.98	3.10	3.26	3.25	3.47	3.41	3.69	3.65	3.94	3.79	4.09	4.39
33184.6	2.85	2.98	3.09	3.25	3.24	3.46	3.40	3.68	3.65	3.93	3.78	4.09	4.38
33187.6	2.84	2.97	3.09	3.25	3.23	3.46	3.39	3.68	3.64	3.92	3.77	4.08	4.38
33190.5	2.84	2.96	3.08	3.24	3.23	3.45	3.38	3.67	3.63	3.92	3.77	4.07	4.37
33193.5	2.83	2.95	3.07	3.23	3.22	3.44	3.38	3.66	3.63	3.91	3.76	4.07	4.37
33196.4	2.82	2.95	3.06	3.22	3.21	3.43	3.37	3.65	3.62	3.90	3.75	4.06	4.36
33199.4	2.81	2.94	3.05	3.22	3.20	3.42	3.36	3.64	3.61	3.89	3.74	4.05	4.35
33202.3	2.81	2.93	3.05	3.21	3.19	3.41	3.35	3.63	3.59	3.88	3.73	4.04	4.34
33205.3	2.80	2.92	3.04	3.20	3.19	3.41	3.34	3.62	3.58	3.87	3.72	4.03	4.33
33208.2	2.79	2.91	3.03	3.19	3.18	3.40	3.34	3.61	3.58	3.86	3.71	4.02	4.32
33211.2	2.78	2.91	3.02	3.19	3.17	3.39	3.33	3.61	3.57	3.85	3.70	4.01	4.32
33214.1	2.78	2.90	3.02	3.18	3.17	3.39	3.33	3.60	3.57	3.85	3.70	4.01	4.32
33217.1	2.77	2.89	3.01	3.18	3.16	3.38	3.32	3.60	3.56	3.84	3.69	4.00	4.31
33220.0	2.76	2.88	3.00	3.17	3.16	3.38	3.32	3.59	3.56	3.83	3.69	3.99	4.31
33222.9	2.76	2.88	3.00	3.17	3.15	3.37	3.31	3.59	3.55	3.83	3.68	3.99	4.30
33225.9	2.76	2.88	3.00	3.16	3.15	3.37	3.31	3.58	3.55	3.82	3.68	3.98	4.29
33228.9	2.76	2.88	2.99	3.16	3.15	3.37	3.31	3.58	3.54	3.82	3.67	3.97	4.29
33231.8	2.75	2.87	2.99	3.16	3.14	3.37	3.30	3.58	3.54	3.81	3.67	3.97	4.28
33234.8	2.75	2.87	2.99	3.16	3.14	3.36	3.30	3.57	3.54	3.81	3.66	3.96	4.27
33237.7	2.75	2.87	2.98	3.15	3.14	3.36	3.30	3.57	3.54	3.81	3.66	3.96	4.26
33240.6	2.75	2.87	2.98	3.15	3.14	3.36	3.30	3.57	3.53	3.80	3.66	3.95	4.26
33243.6	2.75	2.87	2.98	3.15	3.13	3.36	3.29	3.56	3.53	3.80	3.65	3.95	4.25
33246.6	2.75	2.86	2.98	3.14	3.13	3.35	3.29	3.56	3.53	3.80	3.65	3.95	4.25
33249.5	2.74	2.86	2.97	3.14	3.13	3.35	3.29	3.56	3.52	3.79	3.65	3.94	4.24
33252.4	2.74	2.86	2.97	3.14	3.13	3.35	3.29	3.55	3.52	3.79	3.64	3.94	4.24
33255.4	2.74	2.86	2.97	3.14	3.12	3.34	3.28	3.55	3.52	3.78	3.64	3.93	4.24
33258.4	2.74	2.86	2.97	3.13	3.12	3.34	3.28	3.54	3.51	3.78	3.63	3.93	4.23
33261.3	2.74	2.85	2.96	3.13	3.12	3.33	3.27	3.54	3.50	3.77	3.63	3.92	4.22
33264.3	2.74	2.85	2.96	3.13	3.11	3.33	3.27	3.53	3.50	3.76	3.62	3.91	4.21
33267.2	2.74	2.85	2.96	3.13	3.11	3.33	3.27	3.53	3.49	3.76	3.61	3.91	4.20
33270.1	2.73	2.85	2.96	3.12	3.11	3.32	3.27	3.52	3.49	3.75	3.61	3.90	4.19
33273.1	2.73	2.85	2.95	3.12	3.11	3.32	3.26	3.51	3.48	3.74	3.60	3.88	4.18
33276.1	2.73	2.84	2.95	3.12	3.10	3.32	3.26	3.51	3.47	3.73	3.59	3.87	4.17
33279.0	2.73	2.84	2.95	3.11	3.10	3.31	3.26	3.50	3.47	3.72	3.58	3.86	4.16
33281.9	2.73	2.84	2.95	3.11	3.10	3.31	3.25	3.49	3.46	3.71	3.58	3.86	4.15
33284.9	2.73	2.84	2.94	3.11	3.09	3.30	3.25	3.49	3.46	3.70	3.57	3.85	4.14
33287.9	2.73	2.84	2.94	3.11	3.09	3.30	3.25	3.48	3.45	3.69	3.56	3.83	4.13
33290.8	2.73	2.84	2.94	3.10	3.09	3.29	3.24	3.47	3.44	3.68	3.55	3.82	4.11
33293.8	2.73	2.83	2.94	3.10	3.08	3.28	3.23	3.46	3.43	3.67	3.54	3.81	4.10
33296.7	2.73	2.83	2.93	3.09	3.08	3.28	3.22	3.45	3.42	3.66	3.53	3.80	4.10
33299.6	2.73	2.83	2.93	3.08	3.07	3.27	3.21	3.44	3.41	3.65	3.52	3.79	4.09
33302.6	2.73	2.83	2.93	3.07	3.06	3.26	3.21	3.43	3.40	3.64	3.51	3.78	4.08
33305.6	2.73	2.83	2.92	3.07	3.06	3.25	3.20	3.42	3.39	3.63	3.50	3.77	4.06
33308.5	2.72	2.83	2.92	3.06	3.05	3.24	3.19	3.41	3.38	3.62	3.49	3.76	4.05
33311.4	2.72	2.83	2.92	3.06	3.05	3.23	3.18	3.40	3.37	3.60	3.47	3.74	4.04
33314.4	2.72	2.83	2.92	3.05	3.04	3.22	3.17	3.39	3.36	3.59	3.46	3.73	4.03

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33317.4	2.72	2.83	2.91	3.05	3.04	3.22	3.17	3.38	3.36	3.58	3.46	3.73	4.02
33320.3	2.72	2.82	2.91	3.05	3.04	3.21	3.17	3.38	3.35	3.58	3.45	3.72	4.01
33323.3	2.72	2.82	2.91	3.04	3.03	3.21	3.16	3.37	3.34	3.57	3.44	3.71	4.00
33326.2	2.72	2.82	2.91	3.04	3.03	3.20	3.16	3.36	3.33	3.56	3.43	3.70	3.99
33329.1	2.73	2.82	2.90	3.04	3.02	3.20	3.15	3.35	3.33	3.55	3.42	3.69	3.98
33332.1	2.73	2.82	2.90	3.03	3.02	3.19	3.15	3.34	3.32	3.54	3.41	3.68	3.97
33335.1	2.73	2.82	2.90	3.03	3.01	3.19	3.14	3.33	3.31	3.52	3.40	3.66	3.96
33338.0	2.73	2.82	2.89	3.02	3.01	3.18	3.13	3.32	3.30	3.51	3.39	3.65	3.95
33341.0	2.73	2.82	2.89	3.02	3.01	3.17	3.13	3.32	3.29	3.51	3.39	3.64	3.94
33344.0	2.73	2.82	2.89	3.01	3.00	3.17	3.12	3.31	3.29	3.50	3.38	3.64	3.93
33347.0	2.73	2.82	2.89	3.01	3.00	3.16	3.12	3.30	3.28	3.49	3.37	3.63	3.92
33350.0	2.73	2.82	2.89	3.01	3.00	3.16	3.12	3.30	3.28	3.49	3.37	3.62	3.91
33353.0	2.73	2.82	2.89	3.01	3.00	3.16	3.11	3.30	3.27	3.48	3.36	3.62	3.91
33356.0	2.73	2.82	2.90	3.01	3.00	3.15	3.11	3.29	3.27	3.48	3.36	3.61	3.90
33359.0	2.74	2.82	2.90	3.00	3.00	3.15	3.11	3.29	3.27	3.47	3.36	3.61	3.90
33362.0	2.74	2.83	2.90	3.00	3.00	3.15	3.11	3.29	3.26	3.47	3.35	3.60	3.89
33365.0	2.74	2.83	2.90	3.00	2.99	3.15	3.11	3.28	3.26	3.46	3.35	3.59	3.88
33368.0	2.74	2.83	2.90	3.00	2.99	3.14	3.10	3.28	3.25	3.45	3.34	3.59	3.88
33371.0	2.74	2.83	2.90	3.00	2.99	3.14	3.10	3.27	3.25	3.45	3.33	3.58	3.87
33374.0	2.74	2.83	2.90	3.00	2.99	3.13	3.10	3.26	3.24	3.44	3.33	3.57	3.86
33377.0	2.75	2.83	2.90	3.00	2.99	3.13	3.09	3.26	3.24	3.43	3.32	3.57	3.85
33380.0	2.75	2.83	2.90	3.00	2.99	3.12	3.09	3.25	3.23	3.42	3.31	3.56	3.84
33383.0	2.75	2.83	2.90	3.00	2.99	3.12	3.08	3.24	3.22	3.42	3.31	3.55	3.83
33386.0	2.75	2.84	2.90	3.00	2.99	3.11	3.08	3.24	3.22	3.41	3.30	3.54	3.83
33389.0	2.75	2.84	2.90	3.00	2.99	3.11	3.08	3.23	3.21	3.40	3.29	3.53	3.82
33392.0	2.75	2.84	2.90	3.00	2.99	3.11	3.07	3.23	3.21	3.40	3.29	3.53	3.81
33395.0	2.76	2.84	2.91	3.00	2.99	3.11	3.07	3.23	3.21	3.39	3.28	3.52	3.80
33398.0	2.76	2.84	2.91	3.00	2.99	3.10	3.07	3.22	3.20	3.38	3.28	3.51	3.80
33401.0	2.76	2.85	2.91	3.00	2.99	3.10	3.07	3.21	3.20	3.38	3.27	3.50	3.79
33404.0	2.76	2.85	2.91	3.00	2.99	3.10	3.07	3.21	3.19	3.37	3.26	3.50	3.78
33407.0	2.77	2.85	2.91	3.00	2.99	3.10	3.07	3.20	3.19	3.36	3.26	3.49	3.77
33410.0	2.77	2.85	2.92	3.00	2.99	3.09	3.07	3.20	3.18	3.36	3.25	3.48	3.77
33413.0	2.77	2.85	2.92	3.00	2.99	3.09	3.07	3.19	3.18	3.35	3.25	3.48	3.76
33416.0	2.77	2.85	2.92	3.00	2.99	3.09	3.06	3.19	3.17	3.34	3.24	3.47	3.75
33419.0	2.78	2.86	2.92	3.00	2.99	3.09	3.06	3.19	3.17	3.34	3.24	3.47	3.75
33422.0	2.78	2.86	2.92	3.00	2.99	3.09	3.06	3.19	3.17	3.34	3.24	3.46	3.74
33425.0	2.78	2.86	2.92	3.00	3.00	3.09	3.06	3.18	3.17	3.33	3.23	3.45	3.73
33428.0	2.78	2.86	2.92	3.00	3.00	3.09	3.06	3.18	3.16	3.33	3.23	3.45	3.73
33431.0	2.79	2.86	2.92	3.00	3.00	3.09	3.06	3.18	3.16	3.32	3.23	3.44	3.72
33434.0	2.79	2.87	2.92	3.00	3.00	3.08	3.06	3.18	3.16	3.32	3.23	3.44	3.71
33437.0	2.79	2.87	2.93	3.00	3.00	3.08	3.06	3.18	3.16	3.31	3.22	3.43	3.71
33440.0	2.79	2.87	2.93	3.00	3.00	3.08	3.06	3.17	3.16	3.31	3.22	3.43	3.70
33443.0	2.80	2.87	2.93	3.00	3.00	3.08	3.06	3.17	3.16	3.31	3.22	3.42	3.69
33446.0	2.80	2.87	2.93	3.00	3.00	3.08	3.06	3.17	3.16	3.30	3.22	3.42	3.69
33449.0	2.80	2.87	2.93	3.00	3.00	3.08	3.06	3.17	3.16	3.30	3.22	3.41	3.68
33452.0	2.81	2.88	2.93	3.00	3.00	3.08	3.06	3.17	3.16	3.30	3.22	3.41	3.68

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33455.0	2.81	2.88	2.93	3.00	3.00	3.08	3.06	3.17	3.15	3.30	3.22	3.41	3.68
33458.0	2.81	2.88	2.93	3.00	3.00	3.08	3.06	3.17	3.15	3.30	3.22	3.40	3.67
33461.0	2.82	2.88	2.93	3.00	3.00	3.08	3.06	3.17	3.15	3.30	3.22	3.40	3.66
33464.0	2.82	2.89	2.93	3.00	3.00	3.08	3.06	3.17	3.15	3.30	3.21	3.40	3.66
33467.0	2.83	2.89	2.93	3.00	3.00	3.08	3.06	3.17	3.15	3.30	3.21	3.40	3.65
33470.0	2.83	2.89	2.94	3.00	3.00	3.08	3.06	3.17	3.15	3.30	3.21	3.40	3.65
33473.0	2.83	2.89	2.94	3.00	3.00	3.08	3.06	3.17	3.15	3.30	3.21	3.40	3.65
33475.9	2.83	2.89	2.94	3.00	3.00	3.08	3.06	3.17	3.15	3.30	3.21	3.40	3.65
33478.9	2.83	2.89	2.94	3.00	3.00	3.08	3.06	3.17	3.15	3.30	3.22	3.40	3.65
33481.8	2.83	2.89	2.94	3.00	3.00	3.08	3.06	3.17	3.15	3.30	3.22	3.40	3.65
33484.8	2.83	2.89	2.94	3.01	3.00	3.08	3.06	3.17	3.15	3.30	3.22	3.40	3.65
33487.7	2.83	2.89	2.94	3.01	3.00	3.08	3.06	3.17	3.16	3.30	3.22	3.40	3.65
33490.7	2.83	2.89	2.94	3.01	3.00	3.08	3.06	3.17	3.16	3.30	3.22	3.40	3.65
33493.6	2.83	2.89	2.94	3.01	3.00	3.08	3.06	3.17	3.16	3.30	3.22	3.41	3.65
33496.6	2.83	2.89	2.94	3.01	3.00	3.08	3.06	3.17	3.16	3.30	3.22	3.41	3.65
33499.5	2.83	2.89	2.94	3.01	3.00	3.08	3.06	3.17	3.16	3.30	3.22	3.41	3.65
33502.5	2.83	2.89	2.94	3.01	3.00	3.08	3.06	3.17	3.16	3.30	3.22	3.41	3.65
33505.5	2.83	2.89	2.94	3.01	3.00	3.08	3.06	3.18	3.16	3.30	3.22	3.41	3.65
33508.4	2.82	2.89	2.94	3.01	3.00	3.08	3.06	3.18	3.16	3.31	3.22	3.41	3.65
33511.4	2.82	2.89	2.94	3.01	3.00	3.08	3.06	3.18	3.16	3.31	3.22	3.41	3.65
33514.3	2.82	2.89	2.94	3.01	3.00	3.08	3.06	3.18	3.16	3.31	3.22	3.41	3.65
33517.3	2.82	2.89	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.22	3.41	3.65
33520.2	2.82	2.89	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.22	3.41	3.65
33523.2	2.82	2.89	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.22	3.41	3.65
33526.1	2.82	2.89	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.22	3.41	3.65
33529.1	2.81	2.89	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.22	3.41	3.65
33532.0	2.81	2.89	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.22	3.41	3.65
33535.0	2.81	2.89	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.23	3.41	3.64
33538.0	2.81	2.89	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.23	3.41	3.64
33540.9	2.81	2.89	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.23	3.41	3.64
33543.9	2.80	2.89	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.23	3.41	3.64
33546.8	2.80	2.89	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.23	3.41	3.63
33549.8	2.80	2.88	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.23	3.41	3.63
33552.7	2.80	2.88	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.23	3.41	3.63
33555.7	2.79	2.88	2.94	3.01	3.00	3.09	3.06	3.18	3.16	3.31	3.23	3.41	3.63
33558.6	2.79	2.88	2.94	3.01	3.00	3.09	3.06	3.18	3.17	3.31	3.23	3.41	3.63
33561.6	2.79	2.88	2.94	3.01	3.00	3.09	3.06	3.18	3.17	3.31	3.23	3.41	3.63
33564.5	2.79	2.88	2.94	3.01	3.00	3.09	3.06	3.18	3.17	3.31	3.23	3.41	3.63
33567.5	2.78	2.88	2.94	3.01	3.00	3.09	3.06	3.18	3.17	3.31	3.23	3.41	3.63
33570.5	2.78	2.87	2.94	3.01	3.00	3.09	3.06	3.18	3.17	3.31	3.23	3.41	3.63
33573.4	2.78	2.87	2.94	3.00	3.00	3.09	3.06	3.18	3.17	3.31	3.23	3.41	3.63
33576.4	2.77	2.87	2.93	3.00	3.00	3.09	3.06	3.18	3.17	3.32	3.23	3.41	3.63
33579.3	2.77	2.87	2.93	3.00	3.00	3.09	3.06	3.18	3.17	3.32	3.23	3.41	3.62
33582.3	2.77	2.87	2.93	3.00	3.00	3.09	3.06	3.18	3.17	3.32	3.23	3.41	3.62
33585.2	2.76	2.87	2.93	3.00	3.00	3.09	3.06	3.18	3.17	3.32	3.23	3.41	3.62
33588.2	2.76	2.86	2.93	3.00	3.00	3.09	3.06	3.18	3.17	3.32	3.23	3.41	3.62

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33591.1	2.76	2.86	2.93	3.00	3.00	3.09	3.06	3.18	3.17	3.32	3.23	3.41	3.61
33594.1	2.75	2.86	2.93	3.00	2.99	3.09	3.06	3.18	3.17	3.32	3.23	3.41	3.61
33597.0	2.75	2.86	2.93	3.00	2.99	3.09	3.06	3.18	3.17	3.32	3.23	3.41	3.61
33600.0	2.75	2.85	2.93	3.00	2.99	3.09	3.06	3.18	3.17	3.32	3.23	3.41	3.61
33602.8	2.75	2.86	2.93	3.00	2.99	3.09	3.06	3.19	3.17	3.32	3.23	3.42	3.61
33605.7	2.75	2.86	2.93	3.00	3.00	3.09	3.07	3.19	3.17	3.32	3.24	3.42	3.61
33608.5	2.75	2.86	2.93	3.00	3.00	3.09	3.07	3.19	3.18	3.33	3.24	3.42	3.62
33611.4	2.75	2.86	2.93	3.00	3.00	3.10	3.07	3.20	3.18	3.33	3.24	3.43	3.62
33614.2	2.75	2.87	2.93	3.01	3.00	3.10	3.07	3.20	3.18	3.34	3.25	3.43	3.62
33617.1	2.76	2.87	2.93	3.01	3.00	3.10	3.07	3.20	3.18	3.34	3.25	3.44	3.63
33619.9	2.76	2.87	2.94	3.01	3.00	3.10	3.08	3.20	3.19	3.34	3.25	3.44	3.63
33622.8	2.76	2.87	2.94	3.01	3.00	3.11	3.08	3.21	3.19	3.35	3.26	3.44	3.63
33625.6	2.77	2.88	2.94	3.01	3.01	3.11	3.08	3.21	3.19	3.35	3.26	3.45	3.64
33628.4	2.77	2.88	2.94	3.01	3.01	3.11	3.08	3.21	3.20	3.35	3.26	3.45	3.64
33631.3	2.77	2.88	2.94	3.02	3.01	3.11	3.09	3.22	3.20	3.36	3.27	3.46	3.65
33634.1	2.78	2.88	2.95	3.02	3.01	3.12	3.09	3.22	3.20	3.36	3.27	3.46	3.65
33637.0	2.78	2.89	2.95	3.02	3.01	3.12	3.09	3.22	3.21	3.36	3.27	3.46	3.65
33639.8	2.78	2.89	2.95	3.02	3.02	3.12	3.09	3.23	3.21	3.37	3.27	3.47	3.66
33642.7	2.79	2.89	2.95	3.02	3.02	3.12	3.09	3.23	3.21	3.37	3.28	3.47	3.66
33645.5	2.79	2.89	2.95	3.03	3.02	3.13	3.10	3.23	3.21	3.37	3.28	3.47	3.67
33648.3	2.80	2.90	2.95	3.03	3.02	3.13	3.10	3.23	3.22	3.38	3.28	3.48	3.67
33651.2	2.80	2.90	2.96	3.03	3.03	3.13	3.10	3.24	3.22	3.38	3.29	3.48	3.67
33654.0	2.81	2.90	2.96	3.03	3.03	3.13	3.10	3.24	3.22	3.38	3.29	3.49	3.68
33656.9	2.81	2.91	2.96	3.04	3.03	3.14	3.11	3.24	3.23	3.39	3.29	3.49	3.68
33659.7	2.82	2.91	2.96	3.04	3.03	3.14	3.11	3.25	3.23	3.39	3.30	3.49	3.69
33662.6	2.82	2.91	2.97	3.04	3.04	3.14	3.11	3.25	3.23	3.39	3.30	3.50	3.69
33665.4	2.82	2.92	2.97	3.04	3.04	3.14	3.11	3.25	3.23	3.40	3.30	3.50	3.69
33668.3	2.83	2.92	2.97	3.05	3.04	3.15	3.12	3.26	3.24	3.40	3.31	3.50	3.70
33671.1	2.83	2.92	2.97	3.05	3.04	3.15	3.12	3.26	3.24	3.40	3.31	3.51	3.70
33673.9	2.84	2.93	2.98	3.05	3.05	3.15	3.12	3.26	3.24	3.41	3.31	3.51	3.71
33676.8	2.84	2.93	2.98	3.05	3.05	3.15	3.12	3.26	3.25	3.41	3.32	3.51	3.71
33679.6	2.85	2.93	2.98	3.06	3.05	3.16	3.13	3.27	3.25	3.42	3.32	3.52	3.72
33682.5	2.85	2.94	2.99	3.06	3.05	3.16	3.13	3.27	3.25	3.42	3.32	3.52	3.72
33685.3	2.86	2.94	2.99	3.06	3.06	3.16	3.13	3.27	3.26	3.42	3.33	3.53	3.73
33688.2	2.86	2.94	2.99	3.07	3.06	3.17	3.14	3.28	3.26	3.43	3.33	3.53	3.73
33691.0	2.87	2.95	3.00	3.07	3.06	3.17	3.14	3.28	3.26	3.43	3.33	3.53	3.73
33693.9	2.86	2.94	2.99	3.07	3.06	3.17	3.14	3.28	3.26	3.43	3.33	3.53	3.73
33696.8	2.86	2.94	2.99	3.07	3.06	3.17	3.14	3.28	3.26	3.43	3.33	3.53	3.73
33699.7	2.86	2.94	2.99	3.06	3.06	3.17	3.13	3.28	3.26	3.43	3.33	3.53	3.73
33702.6	2.86	2.94	2.99	3.06	3.06	3.16	3.13	3.28	3.26	3.42	3.33	3.53	3.73
33705.5	2.85	2.93	2.99	3.06	3.06	3.16	3.13	3.27	3.25	3.42	3.33	3.53	3.73
33708.4	2.85	2.93	2.98	3.06	3.05	3.16	3.13	3.27	3.25	3.42	3.32	3.52	3.73
33711.3	2.85	2.93	2.98	3.06	3.05	3.16	3.13	3.27	3.25	3.42	3.32	3.52	3.73
33714.2	2.84	2.93	2.98	3.05	3.05	3.16	3.13	3.27	3.25	3.42	3.32	3.52	3.72
33717.1	2.84	2.93	2.98	3.05	3.05	3.15	3.12	3.26	3.25	3.41	3.32	3.52	3.72
33720.0	2.84	2.92	2.98	3.05	3.04	3.15	3.12	3.26	3.24	3.41	3.32	3.51	3.72

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33722.9	2.84	2.92	2.98	3.05	3.04	3.15	3.12	3.26	3.24	3.41	3.31	3.51	3.71
33725.8	2.83	2.92	2.97	3.05	3.04	3.15	3.12	3.26	3.24	3.41	3.31	3.51	3.71
33728.7	2.83	2.92	2.97	3.05	3.04	3.15	3.12	3.26	3.24	3.41	3.31	3.51	3.71
33731.6	2.83	2.91	2.97	3.04	3.04	3.15	3.12	3.26	3.24	3.40	3.31	3.50	3.70
33734.5	2.82	2.91	2.97	3.04	3.04	3.15	3.11	3.25	3.24	3.40	3.31	3.50	3.70
33737.4	2.82	2.91	2.97	3.04	3.04	3.14	3.11	3.25	3.24	3.40	3.31	3.50	3.69
33740.3	2.82	2.91	2.96	3.04	3.03	3.14	3.11	3.25	3.23	3.40	3.30	3.50	3.69
33743.2	2.81	2.90	2.96	3.04	3.03	3.14	3.11	3.25	3.23	3.40	3.30	3.50	3.68
33746.1	2.81	2.90	2.96	3.04	3.03	3.14	3.11	3.25	3.23	3.40	3.30	3.50	3.68
33749.0	2.81	2.90	2.96	3.04	3.03	3.14	3.11	3.25	3.23	3.40	3.30	3.49	3.68
33751.9	2.81	2.90	2.96	3.03	3.03	3.14	3.11	3.25	3.23	3.40	3.30	3.49	3.67
33754.8	2.80	2.89	2.95	3.03	3.03	3.14	3.11	3.25	3.23	3.39	3.30	3.49	3.67
33757.7	2.80	2.89	2.95	3.03	3.02	3.14	3.11	3.25	3.23	3.39	3.30	3.49	3.67
33760.6	2.80	2.89	2.95	3.03	3.02	3.14	3.10	3.25	3.23	3.39	3.30	3.49	3.67
33763.5	2.79	2.89	2.95	3.03	3.02	3.14	3.10	3.25	3.23	3.39	3.30	3.49	3.67
33766.4	2.79	2.89	2.95	3.03	3.02	3.13	3.10	3.24	3.23	3.39	3.30	3.49	3.67
33769.3	2.79	2.88	2.94	3.03	3.02	3.13	3.10	3.24	3.22	3.39	3.29	3.48	3.67
33772.2	2.79	2.88	2.94	3.02	3.02	3.13	3.10	3.24	3.22	3.39	3.29	3.48	3.66
33775.1	2.78	2.88	2.94	3.02	3.02	3.13	3.10	3.24	3.22	3.38	3.29	3.48	3.66
33778.0	2.78	2.88	2.94	3.02	3.01	3.13	3.10	3.24	3.22	3.38	3.29	3.48	3.65
33780.9	2.78	2.87	2.94	3.02	3.01	3.13	3.10	3.24	3.22	3.38	3.29	3.48	3.65
33783.8	2.77	2.87	2.93	3.02	3.01	3.13	3.10	3.24	3.22	3.38	3.29	3.47	3.64
33786.7	2.77	2.87	2.93	3.02	3.01	3.13	3.10	3.24	3.22	3.38	3.29	3.47	3.63
33789.6	2.77	2.87	2.93	3.02	3.01	3.13	3.09	3.24	3.22	3.37	3.28	3.47	3.63
33792.5	2.77	2.87	2.93	3.01	3.01	3.13	3.09	3.24	3.22	3.37	3.28	3.46	3.62
33795.4	2.76	2.86	2.93	3.01	3.01	3.13	3.09	3.24	3.22	3.37	3.28	3.46	3.61
33798.3	2.76	2.86	2.93	3.01	3.01	3.13	3.09	3.23	3.22	3.37	3.28	3.46	3.61
33801.2	2.76	2.86	2.92	3.01	3.00	3.12	3.09	3.23	3.22	3.37	3.28	3.45	3.60
33804.1	2.75	2.86	2.92	3.01	3.00	3.12	3.09	3.23	3.22	3.36	3.28	3.45	3.59
33807.0	2.75	2.85	2.92	3.01	3.00	3.12	3.09	3.23	3.22	3.36	3.28	3.45	3.58
33809.9	2.78	2.89	2.96	3.05	3.05	3.17	3.14	3.29	3.27	3.42	3.33	3.50	3.64
33812.8	2.82	2.94	3.01	3.10	3.10	3.23	3.19	3.34	3.32	3.47	3.39	3.56	3.70
33815.8	2.84	2.97	3.05	3.15	3.14	3.27	3.24	3.39	3.37	3.53	3.44	3.61	3.75
33818.7	2.86	3.01	3.09	3.19	3.18	3.32	3.28	3.44	3.42	3.58	3.49	3.67	3.81
33821.6	2.87	3.04	3.12	3.23	3.22	3.36	3.32	3.49	3.47	3.63	3.54	3.71	3.86
33824.5	2.89	3.06	3.16	3.27	3.26	3.41	3.37	3.54	3.52	3.67	3.58	3.76	3.91
33827.5	2.90	3.08	3.19	3.30	3.30	3.45	3.41	3.58	3.56	3.72	3.63	3.80	3.95
33830.4	2.91	3.10	3.22	3.34	3.33	3.49	3.45	3.62	3.60	3.76	3.67	3.85	4.00
33833.3	2.92	3.12	3.24	3.37	3.36	3.52	3.48	3.66	3.64	3.80	3.71	3.89	4.04
33836.2	2.93	3.13	3.27	3.40	3.39	3.56	3.51	3.70	3.68	3.84	3.75	3.93	4.08
33839.2	2.94	3.14	3.28	3.43	3.42	3.59	3.54	3.73	3.71	3.88	3.78	3.96	4.11
33842.1	2.95	3.15	3.30	3.45	3.44	3.62	3.57	3.76	3.74	3.91	3.81	3.99	4.15
33845.0	2.96	3.16	3.31	3.47	3.46	3.64	3.59	3.78	3.76	3.94	3.84	4.02	4.17
33847.9	2.96	3.17	3.32	3.50	3.48	3.66	3.62	3.81	3.79	3.96	3.87	4.05	4.21
33850.8	2.97	3.18	3.33	3.51	3.50	3.69	3.64	3.83	3.81	3.99	3.89	4.07	4.23
33853.8	2.98	3.19	3.34	3.53	3.51	3.71	3.66	3.86	3.83	4.01	3.91	4.10	4.25

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33856.7	2.99	3.20	3.35	3.54	3.53	3.72	3.68	3.88	3.85	4.03	3.93	4.11	4.27
33859.6	2.99	3.20	3.36	3.55	3.54	3.74	3.69	3.90	3.88	4.05	3.96	4.13	4.29
33862.5	3.00	3.21	3.37	3.56	3.55	3.76	3.70	3.92	3.89	4.07	3.97	4.15	4.31
33865.5	3.01	3.22	3.38	3.57	3.56	3.77	3.72	3.93	3.91	4.09	3.99	4.17	4.33
33868.4	3.01	3.22	3.38	3.58	3.56	3.78	3.73	3.95	3.92	4.11	4.01	4.20	4.35
33871.3	3.02	3.23	3.39	3.59	3.57	3.79	3.74	3.96	3.94	4.12	4.03	4.22	4.38
33874.2	3.02	3.24	3.40	3.60	3.58	3.80	3.75	3.98	3.95	4.14	4.04	4.23	4.41
33877.2	3.03	3.24	3.41	3.61	3.59	3.81	3.76	3.99	3.96	4.16	4.05	4.25	4.43
33880.1	3.04	3.25	3.41	3.61	3.60	3.82	3.77	4.00	3.97	4.17	4.06	4.26	4.45
33883.0	3.04	3.26	3.42	3.62	3.61	3.83	3.77	4.01	3.98	4.18	4.08	4.28	4.46
33886.0	3.03	3.25	3.41	3.61	3.60	3.82	3.76	4.00	3.97	4.17	4.06	4.26	4.44
33888.9	3.02	3.24	3.40	3.61	3.59	3.81	3.76	3.99	3.96	4.15	4.05	4.25	4.43
33891.9	3.01	3.23	3.40	3.60	3.59	3.80	3.75	3.98	3.95	4.14	4.04	4.24	4.41
33894.8	3.00	3.22	3.39	3.60	3.58	3.80	3.75	3.97	3.95	4.13	4.04	4.23	4.39
33897.8	2.99	3.21	3.38	3.60	3.58	3.80	3.74	3.97	3.94	4.13	4.03	4.22	4.37
33900.7	2.98	3.20	3.38	3.59	3.58	3.79	3.74	3.96	3.94	4.12	4.03	4.21	4.36
33903.7	2.97	3.19	3.37	3.59	3.57	3.79	3.73	3.96	3.93	4.12	4.02	4.21	4.35
33906.6	2.96	3.18	3.36	3.58	3.57	3.78	3.73	3.95	3.93	4.11	4.02	4.20	4.34
33909.6	2.95	3.17	3.36	3.58	3.56	3.77	3.72	3.94	3.92	4.10	4.01	4.19	4.33
33912.5	2.94	3.16	3.35	3.57	3.55	3.76	3.71	3.93	3.91	4.09	4.00	4.17	4.31
33915.5	2.93	3.14	3.34	3.55	3.54	3.74	3.69	3.92	3.89	4.07	3.98	4.16	4.29
33918.5	2.91	3.13	3.33	3.54	3.53	3.73	3.68	3.90	3.87	4.05	3.96	4.14	4.27
33921.4	2.90	3.12	3.31	3.52	3.50	3.70	3.65	3.87	3.85	4.02	3.94	4.11	4.24
33924.4	2.89	3.10	3.29	3.49	3.48	3.67	3.62	3.84	3.82	4.00	3.91	4.08	4.21
33927.3	2.87	3.08	3.27	3.46	3.45	3.64	3.59	3.80	3.78	3.96	3.87	4.04	4.17
33930.3	2.86	3.06	3.25	3.43	3.42	3.61	3.56	3.77	3.74	3.92	3.83	4.00	4.13
33933.2	2.84	3.04	3.22	3.40	3.39	3.57	3.52	3.72	3.70	3.87	3.79	3.96	4.08
33936.2	2.83	3.02	3.19	3.37	3.35	3.53	3.48	3.68	3.66	3.83	3.74	3.91	4.04
33939.1	2.81	2.99	3.15	3.33	3.32	3.48	3.44	3.63	3.61	3.78	3.69	3.86	3.98
33942.1	2.79	2.97	3.12	3.29	3.28	3.44	3.40	3.58	3.56	3.72	3.64	3.80	3.93
33945.0	2.76	2.93	3.08	3.24	3.23	3.39	3.35	3.53	3.51	3.66	3.58	3.74	3.86
33948.0	2.74	2.89	3.04	3.20	3.19	3.34	3.30	3.47	3.45	3.60	3.53	3.68	3.80
33950.9	2.74	2.89	3.04	3.20	3.19	3.34	3.30	3.47	3.45	3.61	3.53	3.68	3.80
33953.9	2.74	2.89	3.04	3.20	3.19	3.35	3.31	3.48	3.46	3.61	3.53	3.68	3.80
33956.8	2.74	2.89	3.04	3.20	3.19	3.35	3.31	3.48	3.46	3.61	3.53	3.69	3.81
33959.8	2.74	2.89	3.04	3.20	3.19	3.36	3.31	3.48	3.46	3.61	3.54	3.69	3.81
33962.7	2.74	2.89	3.04	3.20	3.19	3.36	3.32	3.49	3.47	3.62	3.54	3.70	3.82
33965.7	2.74	2.90	3.04	3.20	3.19	3.36	3.32	3.49	3.47	3.62	3.55	3.70	3.83
33968.6	2.74	2.90	3.04	3.21	3.19	3.36	3.32	3.50	3.48	3.63	3.55	3.71	3.83
33971.6	2.74	2.90	3.04	3.21	3.19	3.36	3.32	3.50	3.48	3.63	3.56	3.71	3.84
33974.5	2.75	2.90	3.04	3.21	3.19	3.36	3.32	3.50	3.48	3.64	3.56	3.72	3.84
33977.5	2.75	2.90	3.04	3.21	3.19	3.36	3.32	3.51	3.48	3.64	3.56	3.72	3.85
33980.4	2.75	2.90	3.04	3.21	3.19	3.36	3.32	3.51	3.48	3.64	3.56	3.72	3.85
33983.4	2.75	2.90	3.04	3.21	3.19	3.36	3.32	3.51	3.48	3.64	3.56	3.73	3.86
33986.3	2.75	2.90	3.04	3.21	3.19	3.36	3.32	3.51	3.48	3.65	3.57	3.73	3.86
33989.3	2.75	2.90	3.04	3.21	3.20	3.36	3.32	3.51	3.49	3.65	3.57	3.74	3.87

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
33992.2	2.75	2.90	3.04	3.21	3.20	3.37	3.32	3.51	3.49	3.66	3.57	3.74	3.88
33995.2	2.75	2.90	3.04	3.21	3.20	3.37	3.32	3.52	3.50	3.66	3.58	3.75	3.89
33998.1	2.75	2.90	3.04	3.21	3.20	3.37	3.33	3.52	3.50	3.67	3.58	3.76	3.90
34001.1	2.75	2.90	3.04	3.21	3.20	3.37	3.33	3.52	3.50	3.67	3.59	3.76	3.90
34004.0	2.76	2.90	3.04	3.21	3.20	3.37	3.33	3.53	3.50	3.67	3.59	3.76	3.90
34006.9	2.76	2.90	3.04	3.21	3.20	3.37	3.33	3.52	3.50	3.67	3.59	3.76	3.90
34009.9	2.76	2.90	3.04	3.21	3.20	3.37	3.33	3.52	3.50	3.67	3.59	3.76	3.91
34012.8	2.76	2.90	3.04	3.21	3.20	3.37	3.33	3.53	3.50	3.68	3.59	3.77	3.91
34015.8	2.76	2.90	3.04	3.21	3.20	3.38	3.33	3.53	3.50	3.68	3.59	3.77	3.91
34018.7	2.76	2.90	3.04	3.21	3.20	3.38	3.33	3.53	3.51	3.69	3.60	3.78	3.92
34021.7	2.76	2.90	3.04	3.21	3.20	3.38	3.34	3.54	3.51	3.69	3.60	3.78	3.93
34024.6	2.76	2.90	3.04	3.21	3.20	3.38	3.34	3.54	3.52	3.69	3.61	3.79	3.93
34027.6	2.77	2.90	3.04	3.21	3.20	3.39	3.34	3.54	3.52	3.70	3.61	3.79	3.94
34030.5	2.77	2.90	3.04	3.21	3.20	3.39	3.34	3.54	3.52	3.70	3.61	3.79	3.94
34033.5	2.77	2.91	3.04	3.21	3.20	3.39	3.34	3.55	3.52	3.70	3.61	3.79	3.94
34036.4	2.77	2.91	3.04	3.21	3.20	3.39	3.34	3.55	3.52	3.70	3.61	3.80	3.94
34039.4	2.77	2.91	3.04	3.21	3.20	3.39	3.34	3.55	3.52	3.70	3.61	3.80	3.95
34042.3	2.77	2.91	3.04	3.21	3.20	3.38	3.33	3.55	3.52	3.70	3.61	3.80	3.95
34045.3	2.78	2.91	3.04	3.21	3.20	3.38	3.33	3.54	3.52	3.70	3.61	3.80	3.95
34048.2	2.78	2.91	3.04	3.20	3.19	3.37	3.33	3.54	3.51	3.70	3.60	3.79	3.94
34051.2	2.78	2.91	3.04	3.20	3.19	3.37	3.32	3.53	3.50	3.69	3.60	3.78	3.93
34054.1	2.78	2.91	3.03	3.19	3.18	3.36	3.31	3.52	3.50	3.68	3.59	3.78	3.92
34057.1	2.78	2.91	3.03	3.19	3.18	3.36	3.31	3.52	3.49	3.68	3.59	3.77	3.92
34060.0	2.79	2.90	3.02	3.18	3.17	3.35	3.30	3.51	3.49	3.67	3.58	3.76	3.91
34062.9	2.79	2.91	3.02	3.18	3.17	3.35	3.30	3.51	3.49	3.67	3.58	3.76	3.91
34065.8	2.79	2.91	3.03	3.18	3.17	3.35	3.30	3.52	3.49	3.67	3.58	3.77	3.92
34068.7	2.80	2.91	3.03	3.18	3.17	3.35	3.30	3.52	3.49	3.68	3.58	3.78	3.92
34071.6	2.80	2.91	3.03	3.18	3.17	3.35	3.30	3.52	3.50	3.68	3.59	3.78	3.92
34074.4	2.80	2.91	3.03	3.18	3.17	3.35	3.30	3.53	3.50	3.68	3.59	3.78	3.93
34077.3	2.81	2.92	3.03	3.18	3.17	3.35	3.30	3.53	3.50	3.69	3.59	3.78	3.93
34080.2	2.81	2.92	3.03	3.18	3.17	3.35	3.30	3.53	3.50	3.69	3.59	3.78	3.93
34083.1	2.82	2.92	3.03	3.18	3.17	3.35	3.30	3.53	3.50	3.69	3.60	3.78	3.94
34086.0	2.82	2.93	3.04	3.18	3.17	3.36	3.31	3.53	3.50	3.70	3.59	3.79	3.94
34088.9	2.83	2.93	3.04	3.18	3.17	3.36	3.31	3.53	3.50	3.70	3.60	3.79	3.94
34091.8	2.83	2.93	3.04	3.19	3.18	3.36	3.31	3.53	3.51	3.70	3.60	3.80	3.95
34094.7	2.83	2.94	3.05	3.19	3.18	3.36	3.31	3.54	3.51	3.70	3.61	3.80	3.95
34097.6	2.84	2.94	3.05	3.19	3.18	3.36	3.31	3.54	3.51	3.70	3.61	3.80	3.95
34100.4	2.84	2.95	3.05	3.19	3.18	3.37	3.31	3.54	3.51	3.71	3.61	3.80	3.95
34103.3	2.85	2.95	3.06	3.20	3.19	3.37	3.32	3.54	3.51	3.71	3.61	3.81	3.96
34106.2	2.85	2.95	3.06	3.20	3.19	3.37	3.32	3.55	3.52	3.72	3.61	3.81	3.96
34109.1	2.86	2.96	3.07	3.21	3.20	3.37	3.32	3.55	3.52	3.72	3.62	3.81	3.97
34112.0	2.86	2.96	3.07	3.21	3.20	3.38	3.33	3.56	3.52	3.72	3.62	3.82	3.97
34114.9	2.86	2.97	3.08	3.22	3.21	3.38	3.33	3.56	3.53	3.73	3.62	3.82	3.98
34117.8	2.87	2.97	3.08	3.22	3.21	3.39	3.34	3.56	3.53	3.73	3.63	3.83	3.98
34120.7	2.87	2.98	3.09	3.23	3.22	3.39	3.34	3.57	3.54	3.74	3.64	3.84	3.99
34123.6	2.88	2.98	3.09	3.23	3.22	3.40	3.35	3.57	3.54	3.74	3.64	3.84	3.99

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
34126.4	2.88	2.99	3.10	3.24	3.23	3.40	3.35	3.58	3.55	3.74	3.65	3.84	3.99
34129.3	2.89	2.99	3.10	3.24	3.23	3.41	3.36	3.58	3.55	3.75	3.65	3.84	4.00
34132.2	2.89	3.00	3.11	3.25	3.24	3.41	3.36	3.59	3.56	3.75	3.66	3.85	4.00
34135.1	2.90	3.00	3.11	3.25	3.24	3.42	3.37	3.59	3.56	3.76	3.66	3.85	4.01
34138.0	2.90	3.00	3.12	3.26	3.25	3.42	3.37	3.59	3.56	3.76	3.67	3.86	4.02
34140.9	2.90	3.01	3.12	3.26	3.25	3.43	3.38	3.60	3.57	3.77	3.67	3.86	4.02
34143.8	2.91	3.01	3.13	3.27	3.26	3.43	3.39	3.60	3.58	3.78	3.68	3.87	4.03
34146.7	2.91	3.02	3.13	3.28	3.26	3.44	3.39	3.61	3.58	3.78	3.68	3.88	4.03
34149.6	2.92	3.02	3.14	3.28	3.27	3.45	3.40	3.62	3.59	3.78	3.69	3.88	4.04
34152.4	2.92	3.03	3.14	3.29	3.28	3.45	3.40	3.62	3.60	3.79	3.69	3.88	4.04
34155.3	2.93	3.03	3.15	3.29	3.28	3.46	3.41	3.63	3.60	3.79	3.70	3.89	4.04
34158.2	2.93	3.04	3.15	3.30	3.29	3.47	3.42	3.64	3.61	3.79	3.70	3.89	4.04
34161.1	2.94	3.05	3.16	3.31	3.29	3.47	3.43	3.65	3.62	3.80	3.71	3.89	4.05
34164.0	2.94	3.05	3.16	3.31	3.30	3.48	3.43	3.65	3.63	3.81	3.72	3.90	4.05
34166.9	2.95	3.06	3.17	3.32	3.31	3.48	3.44	3.66	3.63	3.81	3.72	3.90	4.05
34169.9	2.95	3.06	3.17	3.32	3.31	3.49	3.44	3.66	3.63	3.81	3.73	3.90	4.05
34172.8	2.95	3.07	3.18	3.32	3.31	3.49	3.44	3.66	3.63	3.81	3.73	3.90	4.05
34175.8	2.96	3.07	3.18	3.33	3.32	3.49	3.45	3.67	3.64	3.82	3.73	3.90	4.04
34178.7	2.96	3.08	3.19	3.33	3.32	3.50	3.45	3.67	3.64	3.82	3.74	3.90	4.04
34181.7	2.97	3.08	3.19	3.34	3.33	3.50	3.45	3.67	3.64	3.82	3.74	3.91	4.05
34184.6	2.97	3.09	3.20	3.34	3.33	3.51	3.46	3.68	3.65	3.82	3.74	3.91	4.05
34187.6	2.98	3.09	3.20	3.35	3.34	3.51	3.46	3.68	3.65	3.83	3.75	3.91	4.05
34190.5	2.98	3.10	3.21	3.35	3.34	3.52	3.47	3.69	3.66	3.83	3.75	3.91	4.05
34193.5	2.99	3.11	3.22	3.36	3.35	3.53	3.48	3.69	3.66	3.83	3.76	3.91	4.05
34196.4	2.99	3.12	3.23	3.37	3.36	3.54	3.49	3.70	3.67	3.84	3.76	3.92	4.06
34199.4	3.00	3.12	3.23	3.38	3.37	3.54	3.49	3.70	3.68	3.84	3.77	3.92	4.06
34202.3	3.00	3.13	3.24	3.38	3.37	3.55	3.50	3.71	3.68	3.84	3.77	3.92	4.06
34205.3	3.01	3.14	3.25	3.39	3.38	3.55	3.50	3.71	3.68	3.84	3.77	3.92	4.06
34208.2	3.01	3.14	3.26	3.39	3.38	3.55	3.51	3.71	3.69	3.85	3.78	3.93	4.06
34211.2	3.02	3.15	3.27	3.40	3.39	3.56	3.51	3.72	3.69	3.85	3.78	3.93	4.06
34214.1	3.03	3.16	3.28	3.41	3.40	3.56	3.51	3.72	3.69	3.85	3.78	3.93	4.07
34217.1	3.03	3.17	3.29	3.42	3.41	3.57	3.52	3.73	3.70	3.86	3.79	3.93	4.07
34220.0	3.04	3.18	3.31	3.43	3.42	3.58	3.53	3.73	3.71	3.86	3.79	3.94	4.07
34222.9	3.04	3.20	3.33	3.45	3.44	3.59	3.54	3.74	3.72	3.87	3.80	3.94	4.07
34225.9	3.05	3.21	3.35	3.47	3.46	3.60	3.56	3.76	3.73	3.88	3.81	3.95	4.08
34228.8	3.06	3.22	3.36	3.49	3.48	3.62	3.58	3.77	3.74	3.89	3.82	3.96	4.08
34231.8	3.06	3.23	3.37	3.50	3.50	3.63	3.59	3.78	3.75	3.90	3.84	3.97	4.09
34234.7	3.07	3.24	3.38	3.52	3.51	3.64	3.61	3.79	3.76	3.91	3.85	3.97	4.09
34237.7	3.08	3.24	3.39	3.53	3.52	3.66	3.62	3.80	3.77	3.91	3.85	3.98	4.09
34240.6	3.08	3.25	3.40	3.54	3.53	3.67	3.63	3.81	3.78	3.92	3.86	3.98	4.10
34243.6	3.09	3.26	3.40	3.54	3.54	3.68	3.64	3.81	3.79	3.93	3.87	3.99	4.10
34246.5	3.10	3.27	3.41	3.55	3.55	3.68	3.65	3.82	3.80	3.93	3.88	3.99	4.10
34249.5	3.10	3.27	3.42	3.56	3.55	3.69	3.66	3.83	3.81	3.94	3.88	3.99	4.10
34252.4	3.11	3.28	3.42	3.57	3.56	3.70	3.67	3.84	3.81	3.94	3.89	4.00	4.11
34255.4	3.12	3.29	3.43	3.58	3.57	3.72	3.68	3.85	3.82	3.95	3.90	4.00	4.11
34258.3	3.13	3.30	3.44	3.59	3.58	3.73	3.69	3.86	3.83	3.96	3.91	4.01	4.11

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
34261.3	3.13	3.31	3.45	3.60	3.59	3.74	3.70	3.87	3.84	3.97	3.91	4.01	4.12
34264.2	3.14	3.31	3.45	3.60	3.59	3.74	3.70	3.87	3.85	3.97	3.92	4.01	4.12
34267.2	3.15	3.32	3.46	3.61	3.60	3.75	3.71	3.88	3.86	3.98	3.93	4.02	4.12
34270.1	3.16	3.33	3.47	3.62	3.61	3.76	3.72	3.89	3.86	3.99	3.93	4.02	4.12
34273.1	3.17	3.34	3.48	3.63	3.62	3.77	3.73	3.89	3.87	3.99	3.94	4.03	4.13
34276.0	3.17	3.35	3.49	3.64	3.63	3.78	3.74	3.90	3.88	4.00	3.95	4.03	4.13
34279.0	3.17	3.34	3.48	3.63	3.62	3.77	3.73	3.90	3.87	3.99	3.94	4.02	4.12
34282.0	3.17	3.34	3.48	3.63	3.62	3.77	3.73	3.89	3.87	3.98	3.94	4.02	4.11
34285.0	3.16	3.33	3.47	3.62	3.61	3.77	3.73	3.89	3.87	3.98	3.93	4.01	4.10
34288.0	3.16	3.33	3.47	3.62	3.61	3.76	3.72	3.88	3.86	3.97	3.92	4.00	4.09
34291.0	3.15	3.32	3.46	3.61	3.60	3.75	3.72	3.88	3.86	3.97	3.92	4.00	4.08
34294.0	3.15	3.32	3.46	3.61	3.60	3.75	3.71	3.87	3.85	3.96	3.91	3.99	4.07
34297.0	3.15	3.31	3.45	3.60	3.59	3.74	3.70	3.86	3.84	3.95	3.90	3.98	4.06
34300.0	3.14	3.31	3.45	3.60	3.59	3.74	3.70	3.85	3.83	3.94	3.89	3.97	4.05
34303.0	3.14	3.30	3.44	3.59	3.58	3.73	3.69	3.85	3.83	3.93	3.89	3.96	4.04
34306.0	3.13	3.30	3.44	3.59	3.58	3.73	3.69	3.84	3.82	3.92	3.88	3.95	4.04
34309.0	3.13	3.29	3.43	3.58	3.57	3.72	3.68	3.83	3.81	3.92	3.87	3.95	4.03
34312.0	3.13	3.29	3.43	3.58	3.57	3.72	3.68	3.83	3.81	3.91	3.87	3.94	4.02
34315.0	3.12	3.28	3.42	3.57	3.56	3.71	3.67	3.82	3.80	3.90	3.86	3.93	4.01
34318.0	3.12	3.28	3.42	3.57	3.56	3.70	3.67	3.82	3.80	3.90	3.85	3.93	4.00
34321.0	3.11	3.28	3.41	3.56	3.55	3.70	3.66	3.81	3.79	3.89	3.85	3.92	4.00
34324.0	3.11	3.27	3.41	3.56	3.55	3.69	3.66	3.80	3.79	3.88	3.84	3.91	3.99
34327.0	3.11	3.27	3.40	3.55	3.54	3.69	3.65	3.80	3.78	3.88	3.84	3.91	3.98
34330.0	3.10	3.26	3.40	3.55	3.54	3.68	3.64	3.79	3.77	3.87	3.83	3.90	3.97
34333.0	3.10	3.26	3.40	3.54	3.53	3.68	3.64	3.79	3.77	3.87	3.82	3.90	3.97
34336.0	3.10	3.25	3.39	3.54	3.53	3.67	3.63	3.78	3.76	3.86	3.82	3.89	3.96
34339.0	3.09	3.25	3.39	3.53	3.52	3.67	3.63	3.78	3.76	3.86	3.81	3.89	3.95
34342.0	3.09	3.24	3.38	3.53	3.52	3.66	3.62	3.77	3.75	3.85	3.81	3.88	3.95
34345.0	3.08	3.24	3.38	3.52	3.51	3.66	3.62	3.76	3.75	3.84	3.80	3.87	3.94
34348.0	3.08	3.23	3.37	3.52	3.51	3.65	3.61	3.76	3.74	3.84	3.80	3.87	3.93
34351.0	3.08	3.23	3.37	3.51	3.50	3.65	3.61	3.75	3.74	3.83	3.79	3.86	3.93
34354.0	3.07	3.23	3.36	3.51	3.50	3.64	3.60	3.75	3.73	3.83	3.78	3.86	3.92
34357.0	3.07	3.22	3.36	3.50	3.49	3.63	3.60	3.74	3.73	3.82	3.78	3.85	3.91
34360.0	3.06	3.22	3.36	3.50	3.49	3.63	3.59	3.74	3.72	3.81	3.77	3.84	3.90
34363.0	3.06	3.21	3.35	3.49	3.49	3.62	3.59	3.73	3.71	3.81	3.77	3.84	3.90
34366.0	3.06	3.21	3.35	3.49	3.48	3.62	3.58	3.73	3.71	3.80	3.76	3.83	3.89
34369.0	3.05	3.20	3.34	3.48	3.48	3.61	3.58	3.72	3.70	3.80	3.76	3.82	3.88
34372.0	3.05	3.20	3.34	3.48	3.47	3.61	3.57	3.72	3.70	3.79	3.75	3.82	3.87
34375.0	3.05	3.19	3.33	3.48	3.47	3.60	3.57	3.71	3.69	3.78	3.74	3.81	3.86
34378.0	3.04	3.19	3.33	3.47	3.46	3.60	3.56	3.70	3.69	3.78	3.74	3.81	3.86
34381.0	3.04	3.19	3.33	3.47	3.46	3.59	3.56	3.70	3.68	3.77	3.73	3.80	3.85
34384.0	3.03	3.18	3.32	3.46	3.45	3.59	3.55	3.69	3.68	3.76	3.73	3.79	3.84
34386.9	3.03	3.18	3.32	3.46	3.45	3.58	3.55	3.69	3.67	3.76	3.72	3.79	3.83
34389.8	3.03	3.17	3.31	3.45	3.44	3.58	3.54	3.68	3.67	3.75	3.71	3.78	3.82
34392.6	3.02	3.17	3.31	3.45	3.44	3.57	3.54	3.68	3.66	3.75	3.71	3.77	3.82
34395.5	3.02	3.16	3.30	3.44	3.43	3.57	3.53	3.67	3.65	3.74	3.70	3.77	3.81

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
34398.4	3.02	3.16	3.30	3.43	3.42	3.56	3.53	3.66	3.65	3.73	3.70	3.76	3.80
34401.3	3.01	3.16	3.29	3.43	3.42	3.56	3.52	3.66	3.64	3.73	3.69	3.75	3.80
34404.1	3.01	3.15	3.29	3.42	3.41	3.55	3.51	3.65	3.63	3.72	3.68	3.75	3.79
34407.0	3.01	3.15	3.28	3.42	3.41	3.54	3.51	3.64	3.63	3.71	3.68	3.74	3.78
34409.9	3.00	3.14	3.28	3.41	3.40	3.54	3.50	3.64	3.62	3.71	3.67	3.73	3.78
34412.8	3.00	3.14	3.27	3.41	3.40	3.53	3.50	3.63	3.61	3.70	3.66	3.73	3.77
34415.6	3.00	3.13	3.27	3.40	3.39	3.53	3.49	3.62	3.61	3.69	3.66	3.72	3.76
34418.5	2.99	3.13	3.26	3.39	3.39	3.52	3.48	3.62	3.60	3.68	3.65	3.71	3.75
34421.4	2.99	3.13	3.26	3.39	3.38	3.51	3.48	3.61	3.59	3.68	3.64	3.70	3.75
34424.3	2.99	3.12	3.25	3.38	3.37	3.51	3.47	3.60	3.59	3.67	3.63	3.70	3.74
34427.1	2.98	3.12	3.24	3.38	3.37	3.50	3.47	3.60	3.58	3.66	3.63	3.69	3.73
34430.0	2.98	3.11	3.24	3.37	3.36	3.49	3.46	3.59	3.57	3.65	3.62	3.68	3.72
34432.9	2.98	3.11	3.23	3.36	3.36	3.49	3.45	3.58	3.57	3.65	3.61	3.67	3.72
34435.8	2.97	3.10	3.23	3.36	3.35	3.48	3.45	3.57	3.56	3.64	3.60	3.67	3.71
34438.6	2.97	3.10	3.22	3.35	3.34	3.48	3.44	3.57	3.55	3.63	3.60	3.66	3.70
34441.5	2.97	3.09	3.22	3.35	3.34	3.47	3.44	3.56	3.54	3.62	3.59	3.65	3.69
34444.4	2.96	3.09	3.21	3.34	3.33	3.46	3.43	3.55	3.53	3.61	3.58	3.64	3.68
34447.3	2.96	3.08	3.21	3.34	3.33	3.46	3.42	3.54	3.52	3.60	3.57	3.63	3.67
34450.1	2.95	3.08	3.20	3.33	3.32	3.45	3.42	3.53	3.51	3.59	3.56	3.62	3.66
34453.0	2.95	3.08	3.20	3.32	3.31	3.44	3.41	3.52	3.50	3.58	3.55	3.61	3.65
34455.9	2.95	3.07	3.19	3.32	3.31	3.43	3.40	3.51	3.49	3.57	3.54	3.60	3.64
34458.8	2.94	3.07	3.18	3.31	3.30	3.43	3.40	3.50	3.49	3.56	3.53	3.59	3.63
34461.6	2.94	3.06	3.18	3.31	3.30	3.42	3.39	3.49	3.48	3.56	3.52	3.58	3.62
34464.5	2.94	3.06	3.17	3.30	3.29	3.41	3.38	3.49	3.47	3.55	3.51	3.57	3.61
34467.4	2.93	3.05	3.17	3.29	3.28	3.41	3.38	3.48	3.47	3.54	3.51	3.56	3.60
34470.3	2.93	3.05	3.16	3.29	3.28	3.40	3.37	3.47	3.46	3.53	3.50	3.56	3.60
34473.1	2.92	3.04	3.16	3.28	3.27	3.39	3.36	3.46	3.45	3.52	3.49	3.55	3.59
34476.0	2.92	3.04	3.15	3.27	3.27	3.39	3.36	3.45	3.45	3.51	3.48	3.54	3.58
34478.9	2.92	3.03	3.15	3.27	3.26	3.38	3.35	3.45	3.44	3.50	3.47	3.53	3.57
34481.9	2.92	3.03	3.14	3.27	3.26	3.38	3.35	3.44	3.43	3.50	3.47	3.52	3.56
34484.8	2.92	3.03	3.14	3.26	3.26	3.37	3.35	3.43	3.43	3.49	3.46	3.52	3.56
34487.8	2.91	3.03	3.14	3.26	3.25	3.37	3.34	3.43	3.42	3.49	3.45	3.51	3.55
34490.7	2.91	3.03	3.14	3.26	3.25	3.36	3.34	3.42	3.42	3.48	3.45	3.50	3.54
34493.6	2.91	3.02	3.13	3.25	3.25	3.36	3.34	3.42	3.41	3.47	3.44	3.50	3.54
34496.6	2.91	3.02	3.13	3.25	3.24	3.36	3.33	3.41	3.40	3.46	3.43	3.49	3.53
34499.5	2.91	3.02	3.13	3.25	3.24	3.35	3.33	3.40	3.40	3.46	3.42	3.48	3.52
34502.5	2.91	3.02	3.13	3.25	3.24	3.35	3.33	3.40	3.39	3.45	3.42	3.47	3.51
34505.4	2.91	3.01	3.12	3.24	3.23	3.34	3.32	3.39	3.39	3.44	3.41	3.47	3.51
34508.4	2.91	3.01	3.12	3.24	3.23	3.34	3.32	3.39	3.38	3.44	3.41	3.46	3.50
34511.3	2.90	3.01	3.12	3.24	3.23	3.34	3.32	3.39	3.38	3.43	3.40	3.46	3.50
34514.2	2.90	3.01	3.12	3.23	3.23	3.33	3.31	3.38	3.38	3.43	3.40	3.45	3.49
34517.2	2.90	3.01	3.11	3.23	3.22	3.33	3.31	3.38	3.38	3.43	3.40	3.45	3.49
34520.1	2.90	3.00	3.11	3.23	3.22	3.33	3.31	3.38	3.37	3.42	3.39	3.45	3.48
34523.1	2.90	3.00	3.11	3.23	3.22	3.33	3.31	3.38	3.37	3.42	3.39	3.44	3.48
34526.0	2.90	3.00	3.11	3.22	3.21	3.32	3.30	3.37	3.37	3.41	3.39	3.44	3.47
34528.9	2.90	3.00	3.10	3.22	3.21	3.32	3.30	3.37	3.36	3.41	3.38	3.43	3.47

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
34531.9	2.90	3.00	3.10	3.22	3.21	3.32	3.30	3.37	3.36	3.40	3.38	3.43	3.46
34534.8	2.89	2.99	3.10	3.21	3.21	3.31	3.29	3.36	3.36	3.40	3.38	3.42	3.46
34537.8	2.89	2.99	3.10	3.21	3.20	3.31	3.29	3.36	3.35	3.39	3.37	3.42	3.45
34540.7	2.89	2.99	3.09	3.21	3.20	3.31	3.29	3.36	3.35	3.39	3.37	3.41	3.45
34543.6	2.89	2.99	3.09	3.20	3.20	3.30	3.28	3.35	3.35	3.38	3.36	3.40	3.44
34546.6	2.89	2.99	3.09	3.20	3.19	3.30	3.28	3.35	3.34	3.38	3.36	3.40	3.44
34549.5	2.89	2.99	3.09	3.20	3.19	3.30	3.28	3.35	3.34	3.37	3.36	3.39	3.43
34552.5	2.89	2.98	3.08	3.20	3.19	3.29	3.27	3.34	3.34	3.37	3.35	3.39	3.43
34555.4	2.89	2.98	3.08	3.19	3.19	3.29	3.27	3.34	3.33	3.37	3.35	3.38	3.42
34558.4	2.88	2.98	3.08	3.19	3.18	3.29	3.27	3.33	3.33	3.36	3.35	3.38	3.42
34561.3	2.88	2.98	3.08	3.19	3.18	3.28	3.26	3.33	3.32	3.36	3.34	3.37	3.41
34564.2	2.88	2.98	3.08	3.19	3.18	3.28	3.26	3.33	3.32	3.35	3.34	3.37	3.41
34567.2	2.88	2.97	3.07	3.18	3.17	3.28	3.26	3.32	3.32	3.35	3.33	3.37	3.40
34570.1	2.88	2.97	3.07	3.18	3.17	3.28	3.26	3.32	3.31	3.35	3.33	3.36	3.40
34573.1	2.88	2.97	3.07	3.18	3.17	3.27	3.25	3.32	3.31	3.34	3.33	3.36	3.39
34576.0	2.88	2.97	3.07	3.17	3.17	3.27	3.25	3.31	3.31	3.34	3.32	3.35	3.39
34579.0	2.88	2.97	3.07	3.18	3.17	3.27	3.25	3.31	3.31	3.34	3.32	3.35	3.39
34581.9	2.88	2.97	3.07	3.18	3.17	3.27	3.25	3.31	3.31	3.34	3.32	3.35	3.39
34584.9	2.88	2.98	3.08	3.18	3.18	3.27	3.25	3.31	3.31	3.34	3.32	3.35	3.39
34587.9	2.88	2.98	3.08	3.18	3.18	3.27	3.25	3.31	3.31	3.34	3.33	3.36	3.39
34590.9	2.89	2.98	3.08	3.19	3.18	3.27	3.25	3.32	3.31	3.34	3.33	3.36	3.39
34593.8	2.89	2.98	3.08	3.19	3.18	3.27	3.26	3.32	3.31	3.35	3.33	3.36	3.39
34596.8	2.89	2.99	3.09	3.19	3.19	3.28	3.26	3.32	3.32	3.35	3.33	3.36	3.40
34599.8	2.89	2.99	3.09	3.20	3.19	3.28	3.26	3.32	3.32	3.35	3.34	3.36	3.40
34602.8	2.89	2.99	3.09	3.20	3.19	3.28	3.27	3.33	3.32	3.35	3.34	3.37	3.40
34605.7	2.90	2.99	3.10	3.20	3.20	3.29	3.27	3.33	3.32	3.36	3.34	3.37	3.40
34608.7	2.90	3.00	3.10	3.21	3.20	3.29	3.27	3.33	3.33	3.36	3.34	3.37	3.40
34611.7	2.90	3.00	3.10	3.21	3.20	3.29	3.27	3.33	3.33	3.36	3.35	3.37	3.41
34614.6	2.90	3.00	3.11	3.21	3.21	3.30	3.28	3.34	3.33	3.36	3.35	3.38	3.41
34617.6	2.90	3.00	3.11	3.22	3.21	3.30	3.28	3.34	3.34	3.37	3.35	3.38	3.41
34620.6	2.90	3.01	3.11	3.22	3.21	3.30	3.29	3.34	3.34	3.37	3.35	3.38	3.41
34623.6	2.91	3.01	3.12	3.22	3.22	3.31	3.29	3.35	3.34	3.37	3.36	3.39	3.42
34626.5	2.91	3.01	3.12	3.23	3.22	3.31	3.29	3.35	3.35	3.38	3.36	3.39	3.42
34629.5	2.91	3.01	3.12	3.23	3.23	3.31	3.30	3.35	3.35	3.38	3.36	3.39	3.42
34632.5	2.91	3.02	3.12	3.23	3.23	3.32	3.30	3.36	3.35	3.38	3.37	3.40	3.42
34635.4	2.91	3.02	3.13	3.24	3.23	3.32	3.30	3.36	3.36	3.39	3.37	3.40	3.43
34638.4	2.92	3.02	3.13	3.24	3.24	3.32	3.31	3.36	3.36	3.39	3.37	3.40	3.43
34641.4	2.92	3.02	3.13	3.25	3.24	3.33	3.31	3.37	3.36	3.39	3.38	3.41	3.43
34644.4	2.92	3.03	3.14	3.25	3.24	3.33	3.31	3.37	3.37	3.40	3.38	3.41	3.44
34647.3	2.92	3.03	3.14	3.25	3.25	3.33	3.32	3.37	3.37	3.40	3.38	3.41	3.44
34650.3	2.93	3.03	3.14	3.26	3.25	3.34	3.32	3.38	3.37	3.40	3.39	3.42	3.44
34653.3	2.93	3.04	3.15	3.26	3.25	3.34	3.32	3.38	3.38	3.41	3.39	3.42	3.45
34656.3	2.93	3.04	3.15	3.26	3.26	3.34	3.33	3.39	3.38	3.41	3.39	3.42	3.45
34659.2	2.93	3.04	3.16	3.27	3.26	3.35	3.33	3.39	3.38	3.41	3.40	3.43	3.45
34662.2	2.94	3.04	3.16	3.27	3.26	3.35	3.33	3.39	3.39	3.42	3.40	3.43	3.46
34665.2	2.94	3.05	3.16	3.27	3.27	3.35	3.34	3.40	3.39	3.42	3.41	3.43	3.46

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
34668.1	2.94	3.05	3.17	3.28	3.27	3.36	3.34	3.40	3.39	3.42	3.41	3.44	3.46
34671.1	2.94	3.05	3.17	3.28	3.28	3.36	3.35	3.40	3.40	3.43	3.41	3.44	3.47
34674.1	2.94	3.06	3.17	3.29	3.28	3.37	3.35	3.41	3.40	3.43	3.42	3.44	3.47
34677.1	2.95	3.06	3.18	3.29	3.28	3.37	3.35	3.41	3.40	3.43	3.42	3.45	3.47
34680.0	2.95	3.06	3.18	3.29	3.29	3.37	3.36	3.41	3.41	3.44	3.42	3.45	3.48
34683.0	2.95	3.07	3.18	3.30	3.29	3.38	3.36	3.42	3.41	3.44	3.43	3.45	3.48
34685.9	2.95	3.06	3.18	3.29	3.29	3.37	3.36	3.41	3.41	3.43	3.42	3.45	3.48
34688.7	2.95	3.06	3.18	3.29	3.28	3.37	3.35	3.41	3.40	3.43	3.42	3.44	3.47
34691.6	2.94	3.06	3.17	3.28	3.28	3.36	3.35	3.40	3.40	3.42	3.41	3.44	3.46
34694.5	2.94	3.05	3.17	3.28	3.27	3.36	3.34	3.40	3.39	3.42	3.40	3.43	3.46
34697.3	2.94	3.05	3.17	3.27	3.27	3.35	3.33	3.39	3.38	3.41	3.40	3.43	3.45
34700.2	2.93	3.05	3.16	3.27	3.26	3.35	3.33	3.38	3.38	3.41	3.39	3.42	3.45
34703.1	2.93	3.05	3.16	3.27	3.26	3.34	3.32	3.38	3.37	3.40	3.39	3.42	3.44
34705.9	2.93	3.04	3.16	3.26	3.26	3.34	3.32	3.37	3.37	3.40	3.38	3.41	3.44
34708.8	2.92	3.04	3.15	3.26	3.25	3.33	3.31	3.37	3.36	3.39	3.38	3.40	3.43
34711.7	2.92	3.04	3.15	3.25	3.25	3.33	3.31	3.36	3.36	3.38	3.37	3.40	3.42
34714.6	2.92	3.03	3.15	3.25	3.24	3.32	3.30	3.36	3.35	3.38	3.37	3.39	3.42
34717.4	2.91	3.03	3.14	3.24	3.24	3.31	3.30	3.35	3.35	3.37	3.36	3.39	3.41
34720.3	2.91	3.03	3.14	3.24	3.23	3.31	3.29	3.35	3.34	3.37	3.35	3.38	3.41
34723.2	2.90	3.02	3.14	3.23	3.23	3.30	3.29	3.34	3.33	3.36	3.35	3.37	3.40
34726.0	2.90	3.02	3.13	3.23	3.22	3.30	3.28	3.33	3.33	3.36	3.34	3.37	3.39
34728.9	2.90	3.02	3.13	3.22	3.22	3.29	3.28	3.33	3.32	3.35	3.34	3.36	3.39
34731.8	2.89	3.01	3.13	3.22	3.21	3.29	3.27	3.32	3.32	3.34	3.33	3.36	3.38
34734.6	2.89	3.01	3.12	3.21	3.21	3.28	3.27	3.32	3.31	3.34	3.32	3.35	3.38
34737.5	2.89	3.01	3.12	3.21	3.20	3.27	3.26	3.31	3.30	3.33	3.32	3.34	3.37
34740.4	2.88	3.00	3.12	3.20	3.20	3.27	3.26	3.30	3.30	3.33	3.31	3.34	3.36
34743.2	2.88	3.00	3.11	3.20	3.20	3.26	3.25	3.30	3.29	3.32	3.31	3.33	3.36
34746.1	2.87	3.00	3.11	3.19	3.19	3.26	3.24	3.29	3.29	3.31	3.30	3.33	3.35
34749.0	2.87	2.99	3.10	3.19	3.19	3.25	3.24	3.29	3.28	3.31	3.29	3.32	3.34
34751.8	2.87	2.99	3.10	3.19	3.18	3.25	3.23	3.28	3.27	3.30	3.29	3.31	3.34
34754.7	2.86	2.99	3.10	3.18	3.18	3.24	3.23	3.27	3.27	3.30	3.28	3.31	3.33
34757.6	2.86	2.98	3.09	3.18	3.17	3.23	3.22	3.27	3.26	3.29	3.27	3.30	3.33
34760.4	2.85	2.98	3.09	3.17	3.17	3.23	3.22	3.26	3.26	3.28	3.27	3.29	3.32
34763.3	2.85	2.98	3.09	3.17	3.16	3.22	3.21	3.25	3.25	3.28	3.26	3.29	3.31
34766.2	2.84	2.97	3.08	3.16	3.16	3.22	3.20	3.25	3.24	3.27	3.26	3.28	3.31
34769.1	2.84	2.97	3.08	3.16	3.15	3.21	3.20	3.24	3.24	3.26	3.25	3.28	3.30
34771.9	2.84	2.96	3.07	3.15	3.15	3.20	3.19	3.24	3.23	3.26	3.24	3.27	3.30
34774.8	2.83	2.96	3.07	3.15	3.14	3.20	3.19	3.23	3.22	3.25	3.24	3.26	3.29
34777.7	2.83	2.96	3.07	3.14	3.14	3.19	3.18	3.22	3.22	3.25	3.23	3.26	3.28
34780.5	2.82	2.95	3.06	3.14	3.13	3.19	3.18	3.22	3.21	3.24	3.23	3.25	3.28
34783.4	2.82	2.95	3.06	3.13	3.13	3.18	3.17	3.21	3.21	3.23	3.22	3.25	3.27
34786.3	2.82	2.95	3.05	3.12	3.12	3.17	3.16	3.20	3.20	3.23	3.21	3.24	3.27
34789.1	2.81	2.94	3.05	3.12	3.12	3.17	3.16	3.20	3.19	3.22	3.21	3.23	3.26
34792.0	2.81	2.94	3.05	3.11	3.11	3.16	3.15	3.19	3.19	3.21	3.20	3.23	3.25
34794.9	2.81	2.94	3.04	3.11	3.11	3.16	3.15	3.19	3.19	3.21	3.20	3.22	3.25
34797.8	2.81	2.94	3.04	3.11	3.11	3.16	3.15	3.19	3.19	3.21	3.20	3.22	3.25

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
34800.7	2.81	2.94	3.04	3.11	3.11	3.16	3.15	3.19	3.19	3.21	3.20	3.22	3.25
34803.6	2.81	2.94	3.04	3.11	3.11	3.16	3.15	3.19	3.19	3.21	3.20	3.22	3.25
34806.5	2.81	2.94	3.04	3.11	3.11	3.16	3.15	3.19	3.19	3.21	3.20	3.22	3.25
34809.4	2.81	2.94	3.04	3.11	3.11	3.17	3.15	3.19	3.19	3.21	3.20	3.23	3.25
34812.3	2.81	2.94	3.03	3.11	3.11	3.17	3.16	3.19	3.19	3.22	3.20	3.23	3.25
34815.2	2.81	2.93	3.03	3.12	3.11	3.17	3.16	3.20	3.19	3.22	3.20	3.23	3.25
34818.1	2.81	2.93	3.03	3.12	3.11	3.17	3.16	3.20	3.20	3.22	3.21	3.23	3.25
34821.0	2.82	2.93	3.03	3.12	3.11	3.18	3.17	3.20	3.20	3.22	3.21	3.23	3.25
34824.0	2.82	2.93	3.03	3.12	3.12	3.18	3.17	3.21	3.20	3.23	3.21	3.24	3.26
34826.9	2.82	2.93	3.03	3.13	3.12	3.19	3.17	3.21	3.21	3.23	3.22	3.24	3.26
34829.8	2.82	2.93	3.02	3.13	3.12	3.19	3.18	3.22	3.21	3.23	3.22	3.24	3.26
34832.7	2.82	2.93	3.02	3.13	3.12	3.20	3.18	3.22	3.22	3.24	3.23	3.25	3.27
34835.6	2.82	2.93	3.02	3.13	3.13	3.20	3.19	3.22	3.22	3.24	3.23	3.25	3.27
34838.5	2.82	2.93	3.02	3.13	3.13	3.20	3.19	3.23	3.22	3.25	3.23	3.26	3.28
34841.4	2.82	2.93	3.02	3.13	3.12	3.20	3.19	3.23	3.23	3.25	3.24	3.26	3.28
34844.3	2.82	2.92	3.01	3.13	3.12	3.21	3.19	3.23	3.23	3.25	3.24	3.26	3.28
34847.2	2.82	2.92	3.01	3.13	3.12	3.21	3.19	3.23	3.23	3.25	3.24	3.26	3.28
34850.1	2.82	2.92	3.01	3.13	3.12	3.21	3.19	3.23	3.23	3.25	3.24	3.26	3.28
34853.0	2.82	2.92	3.01	3.13	3.12	3.20	3.19	3.23	3.23	3.25	3.24	3.26	3.28
34855.9	2.82	2.92	3.01	3.13	3.12	3.20	3.19	3.23	3.23	3.25	3.24	3.26	3.28
34858.8	2.82	2.92	3.01	3.13	3.12	3.20	3.19	3.23	3.23	3.25	3.24	3.26	3.28
34861.7	2.82	2.92	3.00	3.12	3.11	3.20	3.19	3.23	3.23	3.25	3.24	3.26	3.28
34864.6	2.82	2.92	3.00	3.12	3.11	3.20	3.19	3.23	3.22	3.25	3.23	3.26	3.28
34867.5	2.82	2.91	3.00	3.12	3.11	3.20	3.19	3.23	3.22	3.25	3.23	3.26	3.28
34870.4	2.82	2.91	3.00	3.12	3.11	3.20	3.18	3.22	3.22	3.24	3.23	3.26	3.28
34873.3	2.82	2.91	3.00	3.12	3.11	3.20	3.18	3.22	3.22	3.24	3.23	3.25	3.27
34876.2	2.82	2.91	2.99	3.12	3.11	3.19	3.18	3.22	3.22	3.24	3.23	3.25	3.27
34879.1	2.82	2.91	2.99	3.12	3.11	3.19	3.18	3.22	3.22	3.24	3.23	3.25	3.27
34882.0	2.82	2.91	2.99	3.11	3.10	3.19	3.18	3.22	3.21	3.24	3.22	3.25	3.27
34885.0	2.82	2.90	2.99	3.11	3.10	3.19	3.18	3.22	3.21	3.24	3.22	3.25	3.27
34887.9	2.82	2.90	2.99	3.11	3.10	3.19	3.17	3.21	3.21	3.23	3.22	3.25	3.27
34890.8	2.82	2.90	2.98	3.11	3.10	3.19	3.17	3.21	3.21	3.23	3.22	3.24	3.26
34893.7	2.82	2.90	2.98	3.11	3.10	3.18	3.17	3.21	3.21	3.23	3.22	3.24	3.26
34896.6	2.82	2.90	2.98	3.11	3.10	3.18	3.17	3.21	3.21	3.23	3.22	3.24	3.26
34899.5	2.82	2.89	2.98	3.11	3.10	3.18	3.17	3.21	3.20	3.23	3.21	3.24	3.26
34902.4	2.82	2.89	2.98	3.10	3.09	3.18	3.17	3.20	3.20	3.22	3.21	3.24	3.26
34905.3	2.82	2.89	2.98	3.10	3.09	3.18	3.16	3.20	3.20	3.22	3.21	3.23	3.25
34908.2	2.81	2.89	2.97	3.10	3.09	3.17	3.16	3.20	3.20	3.22	3.21	3.23	3.25
34911.1	2.81	2.89	2.97	3.10	3.09	3.17	3.16	3.20	3.20	3.22	3.21	3.23	3.25
34914.0	2.81	2.88	2.97	3.10	3.09	3.17	3.16	3.20	3.19	3.22	3.20	3.23	3.25
34917.0	2.81	2.89	2.97	3.10	3.09	3.17	3.16	3.20	3.19	3.22	3.20	3.23	3.25
34919.9	2.82	2.89	2.98	3.10	3.09	3.17	3.16	3.20	3.20	3.22	3.21	3.23	3.25
34922.9	2.82	2.89	2.98	3.10	3.09	3.18	3.16	3.20	3.20	3.22	3.21	3.23	3.25
34925.9	2.82	2.90	2.98	3.11	3.10	3.18	3.17	3.20	3.20	3.22	3.21	3.23	3.25
34928.9	2.82	2.90	2.98	3.11	3.10	3.18	3.17	3.20	3.20	3.22	3.21	3.23	3.25
34931.9	2.83	2.90	2.99	3.11	3.10	3.18	3.17	3.21	3.20	3.22	3.21	3.23	3.25

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
34934.8	2.83	2.91	2.99	3.11	3.10	3.18	3.17	3.21	3.20	3.22	3.21	3.24	3.25
34937.8	2.83	2.91	2.99	3.12	3.11	3.18	3.17	3.21	3.21	3.23	3.21	3.24	3.25
34940.8	2.83	2.91	3.00	3.12	3.11	3.19	3.18	3.21	3.21	3.23	3.21	3.24	3.26
34943.8	2.83	2.92	3.00	3.12	3.11	3.19	3.18	3.21	3.21	3.23	3.22	3.24	3.25
34946.7	2.84	2.92	3.01	3.12	3.11	3.19	3.18	3.21	3.21	3.23	3.22	3.24	3.25
34949.7	2.84	2.92	3.01	3.13	3.12	3.19	3.18	3.21	3.21	3.23	3.22	3.24	3.25
34952.7	2.84	2.93	3.01	3.13	3.12	3.19	3.18	3.21	3.21	3.23	3.22	3.24	3.26
34955.6	2.84	2.93	3.02	3.13	3.12	3.19	3.18	3.22	3.21	3.23	3.22	3.24	3.26
34958.6	2.84	2.93	3.02	3.13	3.12	3.20	3.19	3.22	3.21	3.23	3.22	3.24	3.26
34961.6	2.85	2.94	3.02	3.14	3.13	3.20	3.19	3.22	3.22	3.23	3.22	3.24	3.26
34964.6	2.85	2.94	3.03	3.14	3.13	3.20	3.19	3.22	3.22	3.23	3.22	3.24	3.26
34967.6	2.85	2.95	3.03	3.14	3.13	3.20	3.19	3.22	3.22	3.23	3.23	3.24	3.26
34970.5	2.85	2.95	3.04	3.14	3.14	3.20	3.20	3.22	3.22	3.24	3.23	3.24	3.26
34973.5	2.85	2.95	3.04	3.15	3.14	3.21	3.20	3.23	3.22	3.24	3.23	3.25	3.26
34976.5	2.86	2.96	3.04	3.15	3.14	3.21	3.20	3.23	3.22	3.24	3.23	3.25	3.26
34979.4	2.86	2.96	3.05	3.15	3.15	3.21	3.20	3.23	3.23	3.24	3.23	3.25	3.26
34982.4	2.86	2.96	3.05	3.16	3.15	3.21	3.21	3.23	3.23	3.24	3.24	3.25	3.27
34985.4	2.86	2.97	3.06	3.16	3.15	3.22	3.21	3.23	3.23	3.24	3.24	3.25	3.27
34988.4	2.86	2.97	3.06	3.16	3.16	3.22	3.21	3.24	3.23	3.25	3.24	3.25	3.27
34991.4	2.86	2.97	3.06	3.17	3.16	3.22	3.21	3.24	3.24	3.25	3.24	3.26	3.27
34994.3	2.87	2.98	3.07	3.17	3.16	3.22	3.22	3.24	3.24	3.25	3.24	3.26	3.27
34997.3	2.87	2.98	3.07	3.17	3.17	3.23	3.22	3.24	3.24	3.25	3.25	3.26	3.27
35000.3	2.87	2.98	3.08	3.18	3.17	3.23	3.22	3.24	3.24	3.26	3.25	3.26	3.28
35003.3	2.87	2.99	3.08	3.18	3.17	3.23	3.22	3.25	3.24	3.26	3.25	3.26	3.28
35006.2	2.87	2.99	3.09	3.18	3.18	3.23	3.23	3.25	3.25	3.26	3.25	3.27	3.28
35009.2	2.87	2.99	3.09	3.19	3.18	3.24	3.23	3.25	3.25	3.26	3.26	3.27	3.28
35012.2	2.88	3.00	3.10	3.19	3.19	3.24	3.23	3.25	3.25	3.27	3.26	3.27	3.28
35015.1	2.88	3.00	3.10	3.20	3.19	3.24	3.24	3.26	3.26	3.27	3.26	3.27	3.29
35018.1	2.88	3.00	3.11	3.20	3.19	3.25	3.24	3.26	3.26	3.27	3.27	3.28	3.29
35021.1	2.88	3.01	3.11	3.21	3.20	3.25	3.24	3.26	3.26	3.27	3.27	3.28	3.29
35024.1	2.88	3.01	3.12	3.21	3.20	3.25	3.25	3.27	3.27	3.28	3.27	3.28	3.30
35027.1	2.88	3.01	3.12	3.21	3.21	3.26	3.25	3.27	3.27	3.28	3.28	3.29	3.30
35030.0	2.89	3.02	3.13	3.22	3.21	3.26	3.26	3.27	3.27	3.28	3.28	3.29	3.30
35033.0	2.89	3.02	3.14	3.22	3.22	3.27	3.26	3.28	3.28	3.29	3.28	3.29	3.30
35035.9	2.89	3.02	3.14	3.23	3.22	3.27	3.26	3.28	3.28	3.29	3.29	3.30	3.31
35038.8	2.88	3.02	3.14	3.23	3.22	3.27	3.27	3.29	3.28	3.30	3.29	3.30	3.31
35041.7	2.88	3.02	3.13	3.23	3.22	3.28	3.27	3.29	3.29	3.30	3.29	3.30	3.32
35044.5	2.88	3.02	3.13	3.23	3.23	3.28	3.27	3.29	3.29	3.30	3.30	3.31	3.32
35047.4	2.88	3.02	3.13	3.24	3.23	3.28	3.28	3.30	3.29	3.31	3.30	3.31	3.32
35050.3	2.88	3.01	3.13	3.24	3.23	3.29	3.28	3.30	3.30	3.31	3.31	3.32	3.33
35053.2	2.88	3.01	3.13	3.24	3.23	3.29	3.29	3.31	3.30	3.31	3.31	3.32	3.33
35056.1	2.87	3.01	3.13	3.24	3.24	3.30	3.29	3.31	3.31	3.32	3.31	3.33	3.34
35059.0	2.87	3.01	3.13	3.25	3.24	3.30	3.30	3.32	3.32	3.33	3.32	3.33	3.34
35061.8	2.87	3.01	3.13	3.25	3.24	3.31	3.30	3.32	3.32	3.33	3.33	3.34	3.35
35064.7	2.87	3.01	3.13	3.25	3.24	3.32	3.31	3.33	3.33	3.34	3.33	3.34	3.35
35067.6	2.87	3.01	3.13	3.25	3.25	3.32	3.32	3.33	3.33	3.34	3.34	3.35	3.36

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
35070.5	2.86	3.01	3.13	3.26	3.25	3.33	3.32	3.34	3.34	3.35	3.34	3.35	3.36
35073.4	2.86	3.00	3.13	3.26	3.25	3.33	3.32	3.35	3.34	3.35	3.35	3.36	3.37
35076.3	2.86	3.00	3.13	3.26	3.25	3.34	3.33	3.35	3.35	3.36	3.35	3.36	3.37
35079.2	2.86	3.00	3.13	3.27	3.26	3.34	3.33	3.36	3.35	3.36	3.36	3.37	3.38
35082.0	2.86	3.00	3.13	3.27	3.26	3.35	3.34	3.36	3.36	3.37	3.36	3.37	3.39
35084.9	2.85	3.00	3.13	3.27	3.26	3.35	3.34	3.36	3.36	3.38	3.37	3.38	3.39
35087.8	2.85	3.00	3.13	3.27	3.26	3.36	3.34	3.37	3.37	3.38	3.37	3.39	3.40
35090.7	2.85	2.99	3.13	3.28	3.27	3.36	3.35	3.38	3.37	3.39	3.38	3.39	3.40
35093.6	2.85	2.99	3.13	3.28	3.27	3.36	3.35	3.38	3.38	3.39	3.38	3.40	3.41
35096.5	2.84	2.99	3.13	3.28	3.27	3.37	3.36	3.39	3.38	3.40	3.39	3.40	3.41
35099.3	2.84	2.99	3.13	3.28	3.27	3.37	3.36	3.39	3.39	3.40	3.40	3.41	3.42
35102.2	2.84	2.99	3.13	3.29	3.28	3.38	3.37	3.40	3.40	3.41	3.40	3.41	3.42
35105.1	2.84	2.99	3.12	3.29	3.28	3.38	3.37	3.40	3.40	3.41	3.41	3.42	3.43
35108.0	2.84	2.98	3.12	3.29	3.28	3.39	3.37	3.41	3.41	3.42	3.41	3.42	3.43
35111.0	2.84	2.98	3.12	3.29	3.28	3.39	3.37	3.41	3.41	3.42	3.41	3.42	3.43
35114.0	2.84	2.98	3.12	3.29	3.28	3.39	3.37	3.41	3.41	3.42	3.41	3.42	3.43
35117.0	2.84	2.98	3.12	3.28	3.27	3.39	3.37	3.41	3.41	3.42	3.41	3.42	3.43
35120.0	2.84	2.98	3.11	3.28	3.27	3.39	3.37	3.41	3.41	3.42	3.41	3.42	3.43
35123.0	2.84	2.98	3.11	3.28	3.27	3.39	3.37	3.41	3.41	3.42	3.41	3.42	3.43
35126.0	2.84	2.98	3.11	3.28	3.27	3.39	3.37	3.41	3.41	3.42	3.41	3.42	3.43
35129.0	2.84	2.98	3.11	3.27	3.26	3.39	3.37	3.41	3.41	3.42	3.41	3.42	3.43
35132.0	2.84	2.98	3.11	3.27	3.26	3.38	3.37	3.41	3.41	3.42	3.41	3.42	3.43
35135.0	2.84	2.98	3.11	3.27	3.26	3.38	3.37	3.41	3.41	3.42	3.41	3.42	3.43
35138.0	2.84	2.98	3.10	3.27	3.25	3.38	3.36	3.41	3.40	3.41	3.41	3.42	3.43
35141.0	2.84	2.98	3.10	3.26	3.25	3.38	3.36	3.40	3.40	3.41	3.41	3.42	3.43
35144.0	2.84	2.98	3.10	3.26	3.25	3.38	3.36	3.40	3.40	3.41	3.41	3.42	3.42
35147.0	2.84	2.98	3.10	3.26	3.25	3.38	3.36	3.40	3.40	3.41	3.40	3.41	3.42
35150.0	2.85	2.98	3.10	3.26	3.25	3.37	3.35	3.40	3.40	3.41	3.40	3.41	3.42
35153.0	2.85	2.99	3.10	3.25	3.24	3.37	3.35	3.40	3.39	3.40	3.40	3.41	3.42
35156.0	2.85	2.99	3.10	3.25	3.24	3.37	3.35	3.39	3.39	3.40	3.40	3.41	3.42
35159.0	2.85	2.99	3.10	3.25	3.24	3.37	3.35	3.39	3.39	3.40	3.40	3.41	3.42
35162.0	2.85	2.99	3.09	3.25	3.24	3.37	3.35	3.39	3.39	3.40	3.39	3.40	3.41
35165.0	2.85	2.99	3.09	3.25	3.23	3.36	3.34	3.39	3.39	3.40	3.39	3.40	3.41
35168.0	2.85	2.99	3.09	3.24	3.23	3.36	3.34	3.39	3.39	3.40	3.39	3.40	3.41
35171.0	2.85	3.00	3.09	3.24	3.23	3.36	3.34	3.39	3.38	3.39	3.39	3.40	3.41
35174.0	2.85	3.00	3.09	3.24	3.23	3.36	3.34	3.38	3.38	3.39	3.39	3.40	3.41
35177.0	2.85	3.00	3.09	3.24	3.23	3.36	3.34	3.38	3.38	3.39	3.39	3.40	3.41
35180.0	2.85	3.00	3.09	3.24	3.23	3.36	3.34	3.39	3.38	3.40	3.39	3.40	3.41
35183.0	2.85	3.00	3.09	3.23	3.22	3.36	3.34	3.39	3.38	3.40	3.39	3.41	3.42
35186.0	2.85	3.00	3.09	3.23	3.22	3.36	3.33	3.39	3.38	3.40	3.39	3.41	3.42
35189.0	2.85	3.00	3.09	3.23	3.22	3.36	3.33	3.39	3.38	3.40	3.39	3.41	3.42
35192.0	2.85	3.01	3.09	3.23	3.22	3.35	3.33	3.39	3.38	3.40	3.39	3.41	3.42
35195.0	2.85	3.01	3.10	3.23	3.22	3.35	3.33	3.39	3.38	3.40	3.39	3.41	3.42
35198.0	2.85	3.01	3.10	3.23	3.22	3.35	3.33	3.39	3.38	3.40	3.39	3.41	3.42
35201.0	2.85	3.01	3.10	3.23	3.22	3.35	3.33	3.39	3.38	3.40	3.39	3.41	3.42
35204.0	2.85	3.01	3.10	3.23	3.22	3.35	3.33	3.39	3.38	3.40	3.39	3.41	3.42

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
35207.0	2.85	3.02	3.10	3.22	3.21	3.35	3.32	3.38	3.38	3.40	3.39	3.41	3.42
35210.0	2.85	3.02	3.10	3.22	3.21	3.35	3.32	3.39	3.38	3.40	3.39	3.41	3.42
35213.0	2.85	3.02	3.11	3.24	3.23	3.37	3.34	3.41	3.40	3.42	3.41	3.43	3.44
35215.9	2.84	3.02	3.13	3.25	3.24	3.38	3.35	3.43	3.42	3.44	3.43	3.45	3.46
35218.9	2.84	3.02	3.14	3.26	3.25	3.40	3.36	3.45	3.44	3.46	3.45	3.47	3.48
35221.9	2.84	3.02	3.15	3.27	3.26	3.41	3.38	3.46	3.46	3.48	3.47	3.48	3.50
35224.9	2.84	3.02	3.16	3.28	3.28	3.42	3.39	3.48	3.47	3.49	3.49	3.50	3.51
35227.8	2.84	3.02	3.17	3.30	3.29	3.43	3.40	3.49	3.49	3.51	3.50	3.52	3.53
35230.8	2.84	3.02	3.17	3.31	3.30	3.45	3.41	3.51	3.50	3.53	3.52	3.53	3.54
35233.8	2.84	3.02	3.18	3.32	3.31	3.46	3.42	3.52	3.51	3.54	3.53	3.55	3.56
35236.8	2.84	3.02	3.18	3.33	3.32	3.47	3.44	3.54	3.53	3.56	3.55	3.56	3.57
35239.7	2.84	3.02	3.19	3.34	3.33	3.49	3.45	3.55	3.54	3.57	3.57	3.58	3.58
35242.7	2.84	3.02	3.19	3.35	3.34	3.50	3.46	3.57	3.56	3.59	3.58	3.59	3.60
35245.7	2.84	3.02	3.19	3.36	3.35	3.51	3.47	3.59	3.57	3.60	3.60	3.61	3.62
35248.7	2.84	3.02	3.19	3.37	3.36	3.52	3.48	3.60	3.59	3.62	3.61	3.62	3.63
35251.6	2.84	3.02	3.20	3.38	3.37	3.53	3.49	3.61	3.60	3.63	3.63	3.64	3.64
35254.6	2.84	3.03	3.20	3.39	3.37	3.54	3.50	3.63	3.61	3.65	3.64	3.65	3.66
35257.6	2.84	3.03	3.20	3.39	3.38	3.55	3.51	3.64	3.63	3.66	3.66	3.67	3.67
35260.6	2.85	3.03	3.20	3.40	3.39	3.56	3.52	3.65	3.64	3.68	3.67	3.68	3.69
35263.5	2.85	3.03	3.20	3.41	3.40	3.57	3.53	3.67	3.65	3.69	3.69	3.70	3.70
35266.5	2.85	3.03	3.20	3.41	3.40	3.58	3.54	3.68	3.66	3.71	3.70	3.71	3.71
35269.5	2.85	3.03	3.21	3.42	3.41	3.59	3.55	3.69	3.68	3.72	3.72	3.72	3.73
35272.4	2.86	3.03	3.21	3.42	3.41	3.60	3.55	3.71	3.69	3.73	3.73	3.74	3.74
35275.4	2.86	3.04	3.21	3.43	3.41	3.61	3.56	3.72	3.70	3.75	3.74	3.75	3.75
35278.4	2.87	3.04	3.21	3.43	3.42	3.61	3.57	3.73	3.71	3.76	3.75	3.76	3.76
35281.4	2.87	3.04	3.21	3.44	3.42	3.62	3.58	3.74	3.72	3.77	3.77	3.77	3.77
35284.3	2.88	3.05	3.21	3.44	3.42	3.63	3.58	3.75	3.73	3.78	3.78	3.78	3.79
35287.3	2.88	3.05	3.22	3.44	3.43	3.64	3.59	3.76	3.74	3.79	3.79	3.80	3.80
35290.3	2.89	3.05	3.22	3.44	3.43	3.64	3.59	3.77	3.75	3.81	3.81	3.81	3.81
35293.3	2.89	3.06	3.22	3.45	3.43	3.65	3.60	3.79	3.76	3.82	3.82	3.83	3.83
35296.2	2.90	3.06	3.23	3.45	3.43	3.65	3.60	3.80	3.77	3.84	3.84	3.84	3.84
35299.2	2.90	3.07	3.23	3.45	3.44	3.66	3.61	3.81	3.78	3.85	3.84	3.85	3.85
35302.2	2.91	3.07	3.23	3.46	3.44	3.67	3.61	3.82	3.79	3.85	3.85	3.86	3.86
35305.2	2.92	3.08	3.24	3.46	3.44	3.67	3.62	3.82	3.79	3.86	3.86	3.86	3.87
35308.1	2.93	3.08	3.24	3.46	3.45	3.67	3.62	3.83	3.80	3.87	3.87	3.87	3.87
35311.1	2.94	3.09	3.25	3.47	3.45	3.68	3.62	3.84	3.81	3.87	3.87	3.88	3.88
35314.1	2.94	3.09	3.25	3.47	3.45	3.68	3.63	3.84	3.81	3.88	3.88	3.88	3.89
35317.1	2.95	3.10	3.26	3.47	3.46	3.69	3.63	3.85	3.82	3.89	3.89	3.89	3.89
35320.0	2.96	3.11	3.26	3.48	3.46	3.69	3.63	3.85	3.82	3.89	3.89	3.90	3.90
35323.0	2.96	3.11	3.27	3.48	3.47	3.69	3.64	3.86	3.83	3.90	3.90	3.90	3.90
35323.0	2.93	3.06	3.18	3.37	3.36	3.55	3.50	3.69	3.66	3.72	3.72	3.72	3.72
35332.3	2.98	3.11	3.24	3.44	3.42	3.62	3.58	3.77	3.74	3.80	3.80	3.80	3.80
35341.5	3.03	3.17	3.30	3.51	3.49	3.70	3.65	3.85	3.82	3.88	3.88	3.88	3.89
35350.8	3.08	3.23	3.37	3.58	3.57	3.79	3.73	3.94	3.91	3.97	3.97	3.97	3.98
35360.0	3.13	3.29	3.44	3.66	3.64	3.87	3.82	4.03	4.00	4.07	4.07	4.07	4.07
35370.0	3.17	3.34	3.49	3.71	3.70	3.92	3.87	4.08	4.05	4.11	4.11	4.11	4.12

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
35380.0	3.22	3.40	3.54	3.76	3.75	3.98	3.92	4.13	4.10	4.16	4.16	4.16	4.17
35386.3	3.56	3.75	3.90	4.13	4.11	4.34	4.29	4.50	4.46	4.53	4.53	4.53	4.53
35392.5	3.99	4.19	4.33	4.56	4.55	4.78	4.73	4.93	4.90	4.97	4.96	4.96	4.97
35400.0	2.39	2.51	2.65	2.82	2.81	2.97	2.93	3.34	3.25	3.84	3.52	4.20	4.94
35407.5	4.62	4.85	5.04	5.24	5.23	5.41	5.36	5.56	5.53	5.68	5.62	5.77	5.88
35413.3	4.03	4.22	4.40	4.60	4.58	4.76	4.72	4.90	4.88	4.99	4.95	5.03	5.06
35419.0	3.57	3.74	3.91	4.09	4.08	4.25	4.21	4.38	4.36	4.45	4.43	4.48	4.50
35425.8	3.21	3.39	3.55	3.73	3.72	3.90	3.85	4.03	4.01	4.14	4.08	4.22	4.27
35432.7	2.93	3.10	3.25	3.43	3.42	3.60	3.55	3.75	3.72	3.90	3.81	4.02	4.15
35439.5	2.74	2.89	3.03	3.20	3.19	3.37	3.32	3.52	3.50	3.70	3.60	3.84	4.03
35446.3	2.57	2.71	2.84	3.00	2.99	3.16	3.11	3.31	3.29	3.49	3.38	3.63	3.85
35453.2	2.51	2.63	2.74	2.87	2.86	3.01	2.97	3.16	3.13	3.32	3.22	3.45	3.67
35460.0	2.45	2.55	2.64	2.75	2.74	2.88	2.84	3.01	2.99	3.16	3.08	3.29	3.50
35470.0	2.49	2.58	2.67	2.79	2.78	2.92	2.88	3.05	3.02	3.20	3.11	3.32	3.53
35480.0	2.52	2.63	2.71	2.83	2.82	2.95	2.91	3.08	3.06	3.23	3.15	3.36	3.56
35489.7	2.56	2.67	2.76	2.86	2.86	2.99	2.95	3.12	3.09	3.27	3.18	3.39	3.59
35499.3	2.61	2.72	2.80	2.90	2.90	3.02	2.98	3.15	3.13	3.30	3.22	3.43	3.62
35509.0	2.65	2.76	2.85	2.95	2.94	3.06	3.03	3.19	3.17	3.34	3.25	3.46	3.65
35518.7	2.70	2.82	2.90	2.99	2.99	3.11	3.07	3.23	3.21	3.38	3.30	3.51	3.68
35528.3	2.76	2.87	2.95	3.05	3.04	3.16	3.12	3.28	3.25	3.43	3.34	3.56	3.73
35538.0	3.08	3.29	3.48	3.69	3.68	3.93	3.85	4.17	4.12	4.44	4.28	4.65	4.95
35538.0	2.82	2.94	3.01	3.10	3.09	3.21	3.17	3.32	3.30	3.48	3.39	3.61	3.78
35540.8	3.07	3.28	3.46	3.68	3.66	3.91	3.84	4.15	4.11	4.42	4.26	4.63	4.93
35543.7	3.06	3.26	3.45	3.66	3.65	3.90	3.82	4.13	4.09	4.39	4.24	4.61	4.91
35546.5	3.05	3.25	3.43	3.65	3.63	3.88	3.81	4.11	4.07	4.37	4.22	4.58	4.89
35549.4	3.04	3.24	3.42	3.63	3.61	3.86	3.79	4.09	4.05	4.35	4.20	4.56	4.87
35552.2	3.03	3.22	3.40	3.61	3.60	3.85	3.77	4.07	4.03	4.32	4.17	4.53	4.84
35555.1	3.02	3.21	3.38	3.60	3.58	3.83	3.76	4.05	4.01	4.29	4.14	4.50	4.81
35557.9	3.00	3.19	3.37	3.58	3.57	3.81	3.74	4.02	3.98	4.26	4.12	4.47	4.78
35560.8	2.99	3.18	3.35	3.57	3.55	3.79	3.72	4.00	3.96	4.24	4.09	4.44	4.75
35563.6	2.98	3.16	3.33	3.55	3.53	3.77	3.70	3.97	3.93	4.20	4.06	4.40	4.71
35566.4	2.97	3.15	3.32	3.53	3.52	3.74	3.68	3.94	3.90	4.17	4.03	4.37	4.67
35569.3	2.95	3.13	3.30	3.51	3.50	3.71	3.65	3.91	3.87	4.13	4.00	4.33	4.63
35572.1	2.94	3.12	3.28	3.49	3.48	3.69	3.63	3.88	3.84	4.09	3.96	4.29	4.59
35575.0	2.92	3.10	3.27	3.47	3.45	3.66	3.60	3.84	3.81	4.05	3.92	4.25	4.54
35577.8	2.91	3.08	3.25	3.44	3.43	3.63	3.57	3.80	3.77	4.01	3.88	4.21	4.50
35580.7	2.89	3.06	3.23	3.42	3.40	3.60	3.54	3.76	3.73	3.97	3.84	4.16	4.45
35583.5	2.87	3.05	3.21	3.39	3.38	3.56	3.51	3.72	3.69	3.93	3.80	4.11	4.40
35586.3	2.86	3.03	3.19	3.36	3.35	3.52	3.47	3.67	3.64	3.88	3.75	4.06	4.35
35589.2	2.84	3.01	3.16	3.33	3.32	3.48	3.43	3.63	3.60	3.83	3.71	4.01	4.30
35592.0	2.82	2.99	3.14	3.29	3.28	3.43	3.39	3.58	3.55	3.78	3.66	3.96	4.24
35594.9	2.80	2.97	3.11	3.26	3.25	3.39	3.35	3.54	3.51	3.73	3.61	3.91	4.18
35597.7	2.78	2.94	3.08	3.21	3.20	3.34	3.30	3.49	3.46	3.68	3.56	3.85	4.12
35600.6	2.77	2.92	3.05	3.17	3.16	3.29	3.25	3.44	3.41	3.62	3.51	3.79	4.06
35603.4	2.74	2.89	3.01	3.12	3.11	3.24	3.20	3.38	3.35	3.57	3.45	3.73	3.97
35606.3	2.72	2.86	2.97	3.07	3.06	3.19	3.15	3.33	3.30	3.51	3.40	3.67	3.89

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
35609.1	2.70	2.83	2.92	3.02	3.01	3.14	3.10	3.27	3.24	3.45	3.34	3.60	3.81
35611.9	2.67	2.80	2.87	2.96	2.96	3.08	3.04	3.22	3.19	3.39	3.28	3.53	3.72
35614.8	2.64	2.75	2.81	2.91	2.90	3.02	2.99	3.15	3.13	3.32	3.22	3.45	3.64
35617.6	2.62	2.70	2.76	2.85	2.85	2.97	2.93	3.10	3.07	3.25	3.16	3.37	3.56
35620.5	2.58	2.64	2.70	2.80	2.79	2.91	2.87	3.03	3.01	3.17	3.09	3.29	3.49
35623.3	2.54	2.59	2.65	2.74	2.73	2.85	2.81	2.97	2.95	3.10	3.02	3.22	3.42
35626.2	2.48	2.53	2.59	2.68	2.67	2.79	2.75	2.90	2.88	3.03	2.95	3.15	3.35
35629.0	2.43	2.47	2.53	2.62	2.61	2.72	2.69	2.83	2.81	2.97	2.88	3.09	3.28
35631.9	2.43	2.48	2.54	2.63	2.62	2.74	2.70	2.84	2.82	2.98	2.89	3.10	3.29
35634.9	2.44	2.49	2.55	2.64	2.63	2.75	2.71	2.85	2.83	2.99	2.91	3.11	3.29
35637.8	2.45	2.50	2.56	2.65	2.64	2.76	2.72	2.87	2.85	3.00	2.92	3.12	3.30
35640.7	2.45	2.50	2.57	2.66	2.65	2.77	2.73	2.88	2.86	3.01	2.93	3.13	3.30
35643.7	2.46	2.51	2.58	2.67	2.66	2.78	2.74	2.89	2.87	3.02	2.94	3.14	3.30
35646.6	2.47	2.52	2.58	2.68	2.67	2.79	2.76	2.90	2.88	3.03	2.96	3.15	3.31
35649.5	2.47	2.53	2.59	2.69	2.68	2.80	2.76	2.92	2.90	3.04	2.97	3.16	3.31
35652.5	2.47	2.53	2.60	2.70	2.69	2.81	2.77	2.93	2.91	3.06	2.98	3.17	3.31
35655.4	2.48	2.54	2.61	2.71	2.70	2.82	2.78	2.94	2.92	3.07	2.99	3.18	3.31
35658.3	2.48	2.55	2.61	2.72	2.71	2.83	2.79	2.95	2.93	3.08	3.00	3.18	3.31
35661.3	2.49	2.55	2.62	2.72	2.71	2.84	2.80	2.96	2.94	3.09	3.02	3.19	3.32
35664.2	2.49	2.56	2.63	2.73	2.72	2.85	2.81	2.98	2.95	3.10	3.03	3.21	3.33
35667.1	2.49	2.56	2.63	2.74	2.73	2.86	2.82	2.99	2.96	3.11	3.04	3.22	3.34
35670.1	2.50	2.57	2.64	2.75	2.74	2.87	2.83	3.00	2.97	3.13	3.05	3.23	3.34
35673.0	2.50	2.57	2.65	2.75	2.75	2.88	2.84	3.01	2.98	3.14	3.06	3.24	3.35
35675.9	2.50	2.58	2.65	2.76	2.75	2.89	2.85	3.02	2.99	3.15	3.07	3.25	3.36
35678.9	2.50	2.58	2.66	2.77	2.76	2.89	2.85	3.03	3.00	3.16	3.08	3.26	3.36
35681.8	2.51	2.59	2.66	2.78	2.77	2.90	2.86	3.04	3.01	3.17	3.09	3.28	3.37
35684.7	2.51	2.59	2.67	2.78	2.77	2.91	2.87	3.05	3.02	3.18	3.10	3.29	3.37
35687.7	2.51	2.60	2.68	2.79	2.78	2.92	2.88	3.06	3.03	3.20	3.11	3.30	3.38
35690.6	2.52	2.60	2.68	2.79	2.78	2.93	2.88	3.06	3.04	3.21	3.12	3.31	3.39
35693.5	2.52	2.61	2.69	2.80	2.79	2.93	2.89	3.07	3.05	3.22	3.13	3.32	3.40
35696.5	2.53	2.61	2.69	2.81	2.80	2.94	2.90	3.08	3.06	3.23	3.14	3.33	3.41
35699.4	2.53	2.61	2.69	2.81	2.80	2.95	2.90	3.09	3.06	3.24	3.15	3.35	3.43
35702.3	2.53	2.62	2.70	2.82	2.81	2.95	2.91	3.10	3.07	3.25	3.16	3.36	3.44
35705.3	2.54	2.62	2.70	2.82	2.81	2.96	2.92	3.11	3.08	3.26	3.17	3.37	3.46
35708.2	2.54	2.62	2.71	2.83	2.82	2.97	2.92	3.12	3.09	3.27	3.18	3.38	3.47
35711.1	2.55	2.63	2.71	2.83	2.82	2.97	2.93	3.12	3.10	3.28	3.19	3.39	3.49
35714.1	2.56	2.63	2.72	2.84	2.83	2.98	2.93	3.13	3.10	3.29	3.19	3.40	3.50
35717.0	2.56	2.63	2.72	2.84	2.83	2.99	2.94	3.14	3.11	3.30	3.20	3.41	3.51
35719.9	2.55	2.63	2.71	2.84	2.83	2.98	2.94	3.14	3.11	3.30	3.20	3.41	3.51
35722.8	2.54	2.62	2.71	2.84	2.83	2.98	2.93	3.14	3.11	3.30	3.20	3.42	3.51
35725.8	2.53	2.61	2.70	2.83	2.82	2.98	2.93	3.13	3.11	3.30	3.20	3.42	3.52
35728.7	2.52	2.61	2.70	2.83	2.82	2.98	2.93	3.13	3.10	3.30	3.20	3.42	3.52
35731.6	2.51	2.60	2.69	2.83	2.81	2.97	2.92	3.13	3.10	3.30	3.20	3.42	3.52
35734.5	2.50	2.59	2.69	2.82	2.81	2.97	2.92	3.13	3.10	3.30	3.19	3.42	3.53
35737.5	2.49	2.58	2.68	2.82	2.81	2.97	2.92	3.13	3.10	3.30	3.19	3.42	3.55
35740.4	2.48	2.58	2.68	2.81	2.80	2.97	2.92	3.13	3.10	3.30	3.19	3.42	3.57

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
35743.3	2.47	2.57	2.67	2.81	2.80	2.96	2.91	3.12	3.09	3.29	3.19	3.42	3.58
35746.2	2.46	2.56	2.67	2.81	2.79	2.96	2.91	3.12	3.09	3.29	3.19	3.42	3.59
35749.2	2.45	2.55	2.66	2.80	2.79	2.96	2.91	3.12	3.09	3.29	3.18	3.42	3.61
35752.1	2.44	2.55	2.66	2.80	2.79	2.95	2.90	3.12	3.09	3.29	3.18	3.42	3.61
35755.0	2.43	2.54	2.65	2.79	2.78	2.95	2.90	3.11	3.08	3.29	3.18	3.42	3.62
35757.9	2.42	2.53	2.64	2.79	2.78	2.95	2.90	3.11	3.08	3.29	3.18	3.42	3.63
35760.8	2.41	2.52	2.64	2.78	2.77	2.94	2.89	3.11	3.08	3.29	3.18	3.42	3.63
35763.8	2.40	2.52	2.63	2.78	2.77	2.94	2.89	3.11	3.08	3.28	3.17	3.42	3.63
35766.7	2.39	2.51	2.62	2.77	2.76	2.94	2.88	3.10	3.07	3.28	3.17	3.42	3.63
35769.6	2.38	2.50	2.62	2.77	2.76	2.93	2.88	3.10	3.07	3.28	3.17	3.41	3.63
35772.5	2.37	2.49	2.61	2.77	2.75	2.93	2.88	3.10	3.07	3.28	3.17	3.41	3.63
35775.5	2.36	2.48	2.61	2.76	2.75	2.93	2.87	3.09	3.06	3.28	3.16	3.41	3.63
35778.4	2.35	2.48	2.60	2.76	2.74	2.92	2.87	3.09	3.06	3.27	3.16	3.41	3.63
35781.3	2.34	2.47	2.59	2.75	2.74	2.92	2.86	3.09	3.06	3.27	3.16	3.40	3.61
35784.2	2.33	2.46	2.59	2.75	2.73	2.91	2.86	3.09	3.05	3.27	3.15	3.40	3.62
35787.2	2.32	2.45	2.58	2.74	2.73	2.91	2.86	3.08	3.05	3.26	3.15	3.38	3.57
35790.1	2.31	2.44	2.57	2.74	2.72	2.91	2.85	3.08	3.05	3.26	3.15	3.38	3.58
35793.0	2.29	2.44	2.57	2.73	2.72	2.90	2.85	3.07	3.04	3.26	3.14	3.37	3.60
35795.0	4.20	4.44	4.64	4.86	4.85	5.08	5.02	5.29	5.25	5.51	5.37	5.66	6.35
35797.0	1.78	1.92	2.04	2.19	2.18	2.33	2.29	2.45	2.43	2.58	2.51	2.65	2.82
35800.0	1.78	1.92	2.04	2.19	2.18	2.33	2.29	2.45	2.43	2.59	2.51	2.65	2.81
35803.0	1.78	1.92	2.05	2.19	2.18	2.33	2.29	2.46	2.44	2.59	2.51	2.66	2.79
35806.0	1.78	1.92	2.05	2.19	2.18	2.33	2.29	2.46	2.44	2.59	2.51	2.66	2.81
35809.0	1.78	1.92	2.05	2.19	2.18	2.33	2.29	2.46	2.44	2.59	2.52	2.66	2.81
35812.0	1.80	1.94	2.07	2.21	2.20	2.35	2.31	2.48	2.46	2.61	2.53	2.68	2.83
35814.9	1.81	1.95	2.08	2.23	2.22	2.37	2.33	2.50	2.48	2.63	2.55	2.70	2.85
35817.9	1.83	1.97	2.10	2.24	2.23	2.38	2.34	2.51	2.49	2.65	2.57	2.72	2.87
35820.9	1.85	1.99	2.11	2.26	2.25	2.40	2.36	2.53	2.51	2.67	2.59	2.73	2.89
35823.9	1.86	2.00	2.13	2.28	2.27	2.42	2.38	2.55	2.53	2.69	2.60	2.75	2.91
35826.8	1.88	2.02	2.15	2.29	2.28	2.44	2.40	2.57	2.55	2.70	2.62	2.77	2.93
35829.8	1.90	2.04	2.17	2.31	2.30	2.46	2.41	2.59	2.57	2.72	2.64	2.79	2.95
35832.8	1.92	2.06	2.18	2.33	2.32	2.47	2.43	2.61	2.58	2.74	2.66	2.81	2.97
35835.7	1.93	2.07	2.20	2.35	2.34	2.49	2.45	2.63	2.60	2.76	2.68	2.83	2.99
35838.7	1.95	2.09	2.22	2.37	2.36	2.51	2.47	2.65	2.62	2.79	2.70	2.85	3.01
35841.7	1.97	2.11	2.24	2.39	2.38	2.53	2.49	2.67	2.64	2.81	2.72	2.88	3.04
35844.6	1.99	2.13	2.26	2.41	2.40	2.55	2.51	2.69	2.66	2.83	2.74	2.90	3.06
35847.6	2.01	2.15	2.28	2.43	2.42	2.57	2.53	2.71	2.69	2.85	2.76	2.92	3.08
35850.6	2.03	2.17	2.30	2.45	2.44	2.59	2.55	2.73	2.71	2.87	2.79	2.95	3.11
35853.6	2.05	2.19	2.32	2.47	2.46	2.62	2.57	2.75	2.73	2.90	2.81	2.97	3.14
35856.5	2.07	2.21	2.34	2.49	2.48	2.64	2.59	2.77	2.75	2.92	2.83	2.99	3.16
35859.5	2.10	2.24	2.37	2.51	2.50	2.66	2.62	2.80	2.77	2.95	2.85	3.02	3.19
35862.5	2.12	2.26	2.39	2.54	2.53	2.68	2.64	2.82	2.80	2.97	2.88	3.05	3.22
35865.4	2.14	2.28	2.41	2.56	2.55	2.71	2.66	2.85	2.82	3.00	2.90	3.07	3.25
35868.4	2.17	2.31	2.43	2.58	2.57	2.73	2.69	2.87	2.85	3.02	2.93	3.10	3.28
35871.4	2.19	2.33	2.46	2.61	2.60	2.76	2.71	2.89	2.87	3.05	2.95	3.13	3.31
35874.4	2.22	2.36	2.48	2.63	2.62	2.78	2.74	2.92	2.90	3.07	2.98	3.16	3.34

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
35877.3	2.25	2.38	2.51	2.66	2.65	2.81	2.76	2.95	2.92	3.10	3.01	3.19	3.38
35880.3	2.27	2.41	2.54	2.69	2.67	2.83	2.79	2.97	2.95	3.13	3.03	3.22	3.41
35883.3	2.30	2.44	2.56	2.71	2.70	2.86	2.82	3.00	2.98	3.16	3.06	3.25	3.45
35886.2	2.33	2.47	2.59	2.74	2.73	2.89	2.84	3.03	3.00	3.19	3.09	3.29	3.48
35889.2	2.36	2.49	2.62	2.77	2.76	2.92	2.87	3.06	3.03	3.22	3.12	3.32	3.52
35892.2	2.39	2.53	2.65	2.80	2.79	2.94	2.90	3.09	3.06	3.25	3.15	3.36	3.56
35895.1	2.43	2.56	2.68	2.83	2.82	2.97	2.93	3.12	3.09	3.28	3.18	3.40	3.61
35898.1	2.46	2.59	2.71	2.86	2.85	3.01	2.96	3.15	3.12	3.31	3.21	3.43	3.64
35901.1	2.50	2.62	2.74	2.89	2.88	3.04	2.99	3.18	3.15	3.35	3.24	3.47	3.69
35904.1	2.54	2.66	2.78	2.92	2.91	3.07	3.03	3.21	3.19	3.38	3.27	3.51	3.72
35907.0	2.58	2.70	2.81	2.96	2.95	3.10	3.06	3.25	3.22	3.42	3.31	3.55	3.77
35910.0	2.62	2.73	2.85	2.99	2.98	3.14	3.09	3.28	3.25	3.45	3.34	3.59	3.81
35913.0	2.63	2.75	2.87	3.01	3.00	3.15	3.11	3.30	3.27	3.47	3.36	3.61	3.84
35915.9	2.64	2.76	2.88	3.03	3.02	3.17	3.13	3.32	3.29	3.49	3.38	3.63	3.85
35918.9	2.66	2.78	2.90	3.04	3.03	3.19	3.15	3.33	3.31	3.51	3.40	3.65	3.88
35921.9	2.67	2.79	2.91	3.06	3.05	3.21	3.16	3.35	3.33	3.53	3.42	3.67	3.89
35924.9	2.68	2.81	2.93	3.08	3.07	3.23	3.18	3.37	3.34	3.55	3.43	3.69	3.92
35927.8	2.70	2.82	2.95	3.09	3.08	3.24	3.20	3.39	3.36	3.56	3.45	3.71	3.94
35930.8	2.71	2.84	2.96	3.11	3.10	3.26	3.22	3.41	3.38	3.58	3.47	3.73	3.97
35933.8	2.72	2.85	2.98	3.13	3.12	3.28	3.23	3.43	3.40	3.60	3.49	3.75	3.99
35936.7	2.73	2.87	2.99	3.15	3.14	3.30	3.25	3.44	3.42	3.62	3.51	3.77	4.02
35939.7	2.75	2.88	3.01	3.16	3.15	3.32	3.27	3.46	3.44	3.64	3.53	3.79	4.04
35942.7	2.76	2.90	3.03	3.18	3.17	3.33	3.29	3.48	3.46	3.66	3.55	3.81	4.07
35945.6	2.77	2.91	3.04	3.20	3.19	3.35	3.31	3.50	3.47	3.68	3.57	3.83	4.10
35948.6	2.78	2.92	3.06	3.21	3.20	3.37	3.32	3.52	3.49	3.70	3.59	3.86	4.12
35951.6	2.79	2.94	3.07	3.23	3.22	3.39	3.34	3.54	3.51	3.72	3.61	3.88	4.15
35954.6	2.80	2.95	3.09	3.25	3.24	3.41	3.36	3.56	3.53	3.74	3.63	3.90	4.18
35957.5	2.81	2.96	3.10	3.27	3.26	3.43	3.38	3.58	3.55	3.76	3.65	3.92	4.21
35960.5	2.82	2.98	3.12	3.28	3.27	3.44	3.40	3.60	3.57	3.78	3.67	3.94	4.24
35963.5	2.83	2.99	3.14	3.30	3.29	3.46	3.42	3.62	3.59	3.81	3.69	3.96	4.26
35966.4	2.84	3.00	3.15	3.32	3.31	3.48	3.43	3.64	3.61	3.83	3.71	3.99	4.29
35969.4	2.85	3.02	3.17	3.34	3.33	3.50	3.45	3.66	3.63	3.85	3.73	4.01	4.31
35972.4	2.86	3.03	3.18	3.35	3.34	3.52	3.47	3.68	3.65	3.87	3.75	4.03	4.34
35975.4	2.87	3.04	3.20	3.37	3.36	3.54	3.49	3.70	3.67	3.89	3.77	4.05	4.37
35978.3	2.88	3.05	3.21	3.39	3.38	3.56	3.51	3.72	3.69	3.91	3.79	4.08	4.39
35981.3	2.89	3.06	3.22	3.41	3.39	3.58	3.53	3.74	3.71	3.93	3.81	4.10	4.42
35984.3	2.90	3.08	3.24	3.42	3.41	3.60	3.55	3.76	3.73	3.96	3.83	4.12	4.45
35987.2	2.91	3.09	3.25	3.44	3.43	3.62	3.56	3.78	3.75	3.98	3.85	4.15	4.48
35990.2	2.92	3.10	3.27	3.46	3.45	3.63	3.58	3.80	3.77	4.00	3.87	4.17	4.50
35993.2	2.93	3.11	3.28	3.48	3.46	3.65	3.60	3.82	3.79	4.02	3.89	4.19	4.53
35996.1	2.93	3.12	3.30	3.49	3.48	3.67	3.62	3.84	3.81	4.04	3.92	4.22	4.56
35999.1	2.94	3.13	3.31	3.51	3.50	3.69	3.64	3.86	3.83	4.07	3.94	4.24	4.59
36002.1	2.95	3.14	3.32	3.53	3.51	3.71	3.66	3.88	3.85	4.09	3.96	4.26	4.62
36005.1	2.96	3.15	3.34	3.54	3.53	3.73	3.68	3.91	3.87	4.11	3.98	4.29	4.65
36008.0	2.96	3.16	3.35	3.56	3.55	3.75	3.70	3.93	3.90	4.14	4.00	4.31	4.68
36011.0	2.97	3.18	3.36	3.58	3.56	3.77	3.72	3.95	3.92	4.16	4.03	4.34	4.71

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36013.9	2.98	3.18	3.37	3.58	3.57	3.78	3.72	3.95	3.92	4.16	4.03	4.34	4.72
36016.8	2.98	3.19	3.38	3.59	3.57	3.78	3.73	3.96	3.92	4.17	4.03	4.34	4.72
36019.8	2.99	3.20	3.38	3.59	3.58	3.79	3.73	3.96	3.93	4.17	4.04	4.35	4.73
36022.7	3.00	3.20	3.39	3.60	3.59	3.79	3.74	3.96	3.93	4.17	4.04	4.35	4.73
36025.6	3.01	3.21	3.40	3.61	3.59	3.80	3.74	3.97	3.94	4.18	4.04	4.36	4.74
36028.5	3.01	3.22	3.41	3.61	3.60	3.80	3.75	3.97	3.94	4.18	4.05	4.36	4.75
36031.4	3.02	3.23	3.41	3.62	3.60	3.81	3.75	3.98	3.95	4.19	4.05	4.36	4.75
36034.4	3.03	3.24	3.42	3.62	3.61	3.81	3.76	3.98	3.95	4.19	4.06	4.37	4.76
36037.3	3.04	3.24	3.43	3.63	3.62	3.82	3.76	3.99	3.96	4.19	4.06	4.37	4.77
36040.2	3.05	3.25	3.44	3.64	3.62	3.82	3.77	3.99	3.96	4.20	4.07	4.38	4.77
36043.1	3.05	3.26	3.44	3.65	3.63	3.83	3.78	4.00	3.97	4.20	4.07	4.38	4.78
36046.1	3.06	3.27	3.45	3.65	3.64	3.83	3.78	4.00	3.97	4.21	4.08	4.39	4.79
36049.0	3.07	3.28	3.46	3.66	3.65	3.84	3.79	4.01	3.98	4.21	4.08	4.39	4.79
36051.9	3.08	3.29	3.47	3.67	3.65	3.85	3.79	4.01	3.98	4.22	4.09	4.40	4.80
36054.8	3.09	3.30	3.48	3.67	3.66	3.85	3.80	4.02	3.99	4.22	4.09	4.40	4.81
36057.7	3.10	3.31	3.49	3.68	3.67	3.86	3.81	4.02	3.99	4.23	4.10	4.41	4.82
36060.7	3.11	3.32	3.50	3.69	3.68	3.87	3.82	4.03	4.00	4.23	4.10	4.41	4.82
36063.6	3.12	3.33	3.51	3.70	3.69	3.87	3.82	4.04	4.01	4.24	4.11	4.42	4.83
36066.5	3.13	3.34	3.52	3.71	3.69	3.88	3.83	4.04	4.01	4.24	4.12	4.42	4.83
36069.4	3.14	3.35	3.53	3.72	3.70	3.89	3.84	4.05	4.02	4.25	4.12	4.43	4.84
36072.3	3.15	3.36	3.54	3.72	3.71	3.90	3.85	4.05	4.03	4.26	4.13	4.44	4.84
36075.3	3.16	3.37	3.55	3.73	3.72	3.90	3.85	4.06	4.03	4.26	4.13	4.44	4.85
36078.2	3.17	3.38	3.56	3.74	3.73	3.91	3.86	4.07	4.04	4.27	4.14	4.45	4.85
36081.1	3.18	3.39	3.57	3.75	3.74	3.92	3.87	4.08	4.05	4.27	4.15	4.46	4.86
36084.0	3.19	3.40	3.58	3.76	3.75	3.93	3.88	4.08	4.05	4.28	4.16	4.46	4.86
36086.9	3.20	3.41	3.59	3.77	3.76	3.94	3.89	4.09	4.06	4.29	4.16	4.47	4.87
36089.9	3.21	3.42	3.60	3.78	3.77	3.95	3.90	4.10	4.07	4.30	4.17	4.48	4.88
36092.8	3.22	3.44	3.61	3.79	3.78	3.96	3.91	4.11	4.08	4.30	4.18	4.48	4.88
36095.7	3.23	3.45	3.63	3.80	3.79	3.96	3.92	4.11	4.09	4.31	4.19	4.49	4.89
36098.6	3.25	3.46	3.64	3.81	3.80	3.97	3.93	4.12	4.10	4.32	4.19	4.50	4.89
36101.6	3.26	3.47	3.65	3.83	3.82	3.98	3.94	4.13	4.10	4.33	4.20	4.51	4.90
36104.5	3.27	3.49	3.66	3.84	3.83	3.99	3.95	4.14	4.11	4.34	4.21	4.52	4.90
36107.4	3.28	3.50	3.68	3.85	3.84	4.00	3.96	4.15	4.12	4.34	4.22	4.52	4.91
36110.3	3.30	3.51	3.69	3.86	3.85	4.02	3.97	4.16	4.13	4.35	4.23	4.53	4.91
36113.2	3.31	3.53	3.71	3.88	3.86	4.03	3.98	4.17	4.14	4.36	4.24	4.54	4.91
36116.2	3.32	3.54	3.72	3.89	3.88	4.04	3.99	4.18	4.15	4.37	4.25	4.54	4.91
36119.1	3.34	3.56	3.74	3.90	3.89	4.05	4.01	4.19	4.16	4.38	4.26	4.55	4.91
36122.0	3.35	3.57	3.75	3.92	3.91	4.06	4.02	4.20	4.17	4.39	4.27	4.56	4.92
36124.9	3.33	3.55	3.73	3.90	3.89	4.04	4.00	4.18	4.16	4.37	4.25	4.54	4.90
36127.7	3.31	3.53	3.71	3.88	3.87	4.03	3.98	4.17	4.14	4.36	4.24	4.53	4.89
36130.6	3.30	3.51	3.69	3.86	3.85	4.01	3.97	4.15	4.13	4.35	4.22	4.52	4.88
36133.5	3.28	3.49	3.67	3.84	3.83	3.99	3.95	4.14	4.11	4.34	4.21	4.51	4.86
36136.3	3.26	3.47	3.65	3.83	3.82	3.98	3.93	4.12	4.10	4.32	4.20	4.49	4.85
36139.2	3.25	3.46	3.64	3.81	3.80	3.96	3.92	4.11	4.08	4.31	4.18	4.48	4.83
36142.1	3.23	3.44	3.62	3.79	3.78	3.94	3.90	4.09	4.07	4.30	4.17	4.47	4.82
36144.9	3.21	3.42	3.60	3.78	3.76	3.93	3.88	4.08	4.05	4.28	4.15	4.45	4.80

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36147.8	3.20	3.40	3.58	3.76	3.75	3.91	3.87	4.06	4.04	4.27	4.14	4.44	4.79
36150.7	3.19	3.39	3.57	3.74	3.73	3.90	3.85	4.05	4.02	4.26	4.13	4.42	4.77
36153.6	3.17	3.37	3.55	3.73	3.72	3.88	3.84	4.04	4.01	4.24	4.11	4.41	4.75
36156.4	3.16	3.36	3.53	3.71	3.70	3.87	3.82	4.02	3.99	4.23	4.10	4.40	4.74
36159.3	3.15	3.34	3.52	3.70	3.69	3.85	3.81	4.01	3.98	4.22	4.08	4.38	4.72
36162.2	3.13	3.33	3.50	3.68	3.67	3.84	3.79	3.99	3.96	4.20	4.07	4.37	4.71
36165.0	3.12	3.31	3.49	3.67	3.66	3.82	3.78	3.98	3.95	4.19	4.06	4.36	4.69
36167.9	3.11	3.30	3.47	3.65	3.64	3.81	3.76	3.97	3.94	4.18	4.04	4.35	4.68
36170.8	3.10	3.29	3.46	3.64	3.63	3.80	3.75	3.95	3.92	4.17	4.03	4.33	4.66
36173.6	3.09	3.28	3.45	3.62	3.61	3.78	3.73	3.94	3.91	4.15	4.02	4.32	4.65
36176.5	3.08	3.26	3.43	3.61	3.60	3.77	3.72	3.92	3.89	4.14	4.00	4.31	4.63
36179.4	3.07	3.25	3.42	3.60	3.59	3.75	3.71	3.91	3.88	4.13	3.99	4.30	4.62
36182.2	3.06	3.24	3.41	3.59	3.57	3.74	3.70	3.90	3.87	4.12	3.98	4.29	4.60
36185.1	3.05	3.23	3.39	3.57	3.56	3.73	3.68	3.89	3.86	4.10	3.96	4.27	4.59
36188.0	3.04	3.22	3.38	3.56	3.55	3.72	3.67	3.87	3.84	4.09	3.95	4.26	4.57
36190.8	3.04	3.21	3.37	3.55	3.54	3.70	3.66	3.86	3.83	4.08	3.94	4.25	4.56
36193.7	3.03	3.20	3.36	3.54	3.52	3.69	3.65	3.85	3.82	4.07	3.93	4.24	4.55
36196.6	3.02	3.19	3.35	3.52	3.51	3.68	3.63	3.84	3.81	4.06	3.92	4.23	4.53
36199.4	3.02	3.19	3.34	3.51	3.50	3.67	3.62	3.82	3.79	4.05	3.90	4.22	4.52
36202.3	3.01	3.18	3.33	3.50	3.49	3.66	3.61	3.81	3.78	4.03	3.89	4.21	4.51
36205.2	3.00	3.17	3.32	3.49	3.48	3.65	3.60	3.80	3.77	4.02	3.88	4.20	4.49
36208.1	3.00	3.16	3.31	3.48	3.47	3.63	3.59	3.79	3.76	4.01	3.87	4.18	4.48
36210.9	2.99	3.16	3.30	3.47	3.46	3.62	3.58	3.78	3.75	4.00	3.86	4.17	4.47
36213.8	2.99	3.15	3.29	3.46	3.45	3.61	3.57	3.77	3.74	3.99	3.85	4.16	4.46
36216.7	2.98	3.14	3.29	3.45	3.44	3.60	3.56	3.76	3.73	3.98	3.84	4.15	4.44
36219.5	2.98	3.14	3.28	3.44	3.43	3.59	3.55	3.75	3.72	3.97	3.83	4.14	4.43
36222.4	2.98	3.13	3.27	3.43	3.42	3.58	3.54	3.73	3.71	3.96	3.81	4.13	4.42
36225.3	2.97	3.13	3.27	3.42	3.41	3.57	3.53	3.72	3.70	3.95	3.80	4.12	4.41
36228.1	2.97	3.12	3.26	3.41	3.40	3.56	3.52	3.71	3.69	3.94	3.79	4.11	4.40
36231.0	2.97	3.12	3.25	3.41	3.40	3.55	3.51	3.70	3.68	3.93	3.78	4.10	4.39
36233.9	2.97	3.12	3.25	3.41	3.40	3.55	3.51	3.70	3.67	3.92	3.78	4.10	4.39
36236.7	2.97	3.12	3.25	3.41	3.40	3.55	3.51	3.70	3.67	3.92	3.78	4.10	4.39
36239.6	2.97	3.12	3.26	3.41	3.40	3.55	3.51	3.70	3.67	3.92	3.78	4.10	4.38
36242.5	2.97	3.12	3.26	3.41	3.40	3.55	3.51	3.70	3.67	3.92	3.78	4.09	4.38
36245.3	2.98	3.12	3.26	3.41	3.40	3.55	3.50	3.70	3.67	3.92	3.77	4.09	4.38
36248.2	2.98	3.13	3.26	3.41	3.40	3.55	3.50	3.69	3.66	3.91	3.77	4.09	4.37
36251.1	2.98	3.13	3.26	3.41	3.40	3.54	3.50	3.69	3.66	3.91	3.77	4.09	4.37
36253.9	2.98	3.13	3.26	3.41	3.40	3.54	3.50	3.69	3.66	3.91	3.77	4.09	4.36
36256.8	2.98	3.13	3.26	3.41	3.40	3.54	3.50	3.69	3.66	3.91	3.77	4.08	4.36
36259.7	2.98	3.13	3.26	3.40	3.40	3.54	3.50	3.69	3.66	3.91	3.76	4.08	4.35
36262.6	2.99	3.13	3.26	3.40	3.40	3.54	3.50	3.68	3.66	3.91	3.76	4.08	4.35
36265.4	2.99	3.13	3.26	3.40	3.40	3.54	3.50	3.68	3.65	3.90	3.76	4.08	4.35
36268.3	2.99	3.13	3.26	3.40	3.39	3.54	3.50	3.68	3.65	3.90	3.76	4.08	4.35
36271.2	2.99	3.14	3.26	3.40	3.39	3.53	3.50	3.68	3.65	3.90	3.76	4.07	4.34
36274.0	2.99	3.14	3.26	3.40	3.39	3.53	3.49	3.68	3.65	3.90	3.75	4.07	4.34
36276.9	3.00	3.14	3.27	3.40	3.39	3.53	3.49	3.67	3.64	3.90	3.75	4.07	4.34

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36279.8	3.00	3.14	3.27	3.40	3.39	3.53	3.49	3.67	3.64	3.89	3.75	4.07	4.34
36282.6	3.00	3.14	3.27	3.40	3.39	3.53	3.49	3.67	3.64	3.89	3.75	4.07	4.33
36285.5	3.00	3.14	3.27	3.40	3.39	3.53	3.49	3.67	3.64	3.89	3.74	4.06	4.33
36288.4	3.00	3.14	3.27	3.40	3.39	3.53	3.49	3.66	3.64	3.88	3.74	4.06	4.32
36291.2	3.01	3.15	3.27	3.40	3.39	3.52	3.49	3.66	3.63	3.88	3.74	4.05	4.32
36294.1	3.01	3.15	3.27	3.40	3.39	3.52	3.49	3.66	3.63	3.88	3.73	4.05	4.31
36297.0	3.01	3.15	3.27	3.40	3.39	3.52	3.48	3.65	3.63	3.87	3.73	4.05	4.31
36299.8	3.01	3.15	3.27	3.40	3.39	3.52	3.48	3.65	3.62	3.87	3.73	4.04	4.30
36302.7	3.01	3.15	3.27	3.40	3.39	3.52	3.48	3.65	3.62	3.87	3.72	4.04	4.30
36305.6	3.01	3.15	3.27	3.40	3.39	3.52	3.48	3.64	3.62	3.86	3.72	4.03	4.29
36308.4	3.02	3.15	3.27	3.40	3.39	3.51	3.48	3.64	3.61	3.86	3.72	4.03	4.28
36311.3	3.02	3.15	3.27	3.40	3.39	3.51	3.48	3.64	3.61	3.85	3.71	4.02	4.28
36314.2	3.02	3.16	3.27	3.40	3.39	3.51	3.48	3.63	3.61	3.85	3.71	4.02	4.27
36317.1	3.02	3.16	3.27	3.40	3.39	3.51	3.47	3.63	3.60	3.84	3.71	4.01	4.26
36319.9	3.02	3.16	3.27	3.40	3.39	3.51	3.47	3.63	3.60	3.84	3.70	4.01	4.25
36322.8	3.03	3.16	3.27	3.40	3.39	3.50	3.47	3.62	3.60	3.84	3.70	4.00	4.25
36325.7	3.03	3.16	3.28	3.39	3.39	3.50	3.47	3.62	3.60	3.83	3.69	4.00	4.24
36328.5	3.03	3.16	3.28	3.39	3.39	3.50	3.47	3.62	3.59	3.82	3.69	3.99	4.23
36331.4	3.03	3.16	3.28	3.39	3.39	3.50	3.47	3.61	3.59	3.82	3.69	3.98	4.23
36334.3	3.03	3.16	3.28	3.39	3.39	3.49	3.46	3.61	3.58	3.82	3.68	3.98	4.22
36337.1	3.04	3.17	3.28	3.39	3.38	3.49	3.46	3.61	3.58	3.81	3.68	3.97	4.21
36340.0	3.04	3.17	3.28	3.39	3.38	3.49	3.46	3.60	3.58	3.81	3.67	3.97	4.21
36342.9	3.04	3.17	3.28	3.39	3.38	3.49	3.46	3.60	3.58	3.80	3.67	3.96	4.20
36345.9	3.04	3.17	3.28	3.39	3.38	3.49	3.46	3.60	3.57	3.80	3.67	3.96	4.20
36348.8	3.04	3.17	3.27	3.39	3.38	3.48	3.45	3.59	3.57	3.80	3.67	3.95	4.19
36351.8	3.04	3.17	3.27	3.38	3.38	3.48	3.45	3.59	3.57	3.79	3.66	3.95	4.19
36354.7	3.04	3.17	3.27	3.38	3.38	3.48	3.45	3.59	3.56	3.79	3.66	3.94	4.18
36357.7	3.04	3.17	3.27	3.38	3.37	3.48	3.45	3.58	3.56	3.78	3.65	3.94	4.18
36360.6	3.05	3.17	3.27	3.38	3.37	3.47	3.44	3.58	3.56	3.78	3.65	3.93	4.17
36363.6	3.05	3.17	3.27	3.38	3.37	3.47	3.44	3.58	3.56	3.78	3.65	3.93	4.17
36366.5	3.05	3.17	3.27	3.38	3.37	3.47	3.44	3.58	3.55	3.77	3.65	3.92	4.16
36369.5	3.05	3.17	3.27	3.37	3.37	3.47	3.44	3.57	3.55	3.77	3.64	3.92	4.15
36372.4	3.05	3.17	3.27	3.37	3.37	3.46	3.44	3.57	3.55	3.76	3.64	3.91	4.14
36375.4	3.05	3.17	3.27	3.37	3.36	3.46	3.43	3.57	3.55	3.76	3.64	3.91	4.14
36378.3	3.05	3.17	3.27	3.37	3.36	3.46	3.43	3.56	3.54	3.75	3.63	3.90	4.13
36381.3	3.06	3.17	3.27	3.37	3.36	3.46	3.43	3.56	3.54	3.75	3.63	3.90	4.12
36384.2	3.06	3.17	3.27	3.37	3.36	3.46	3.43	3.56	3.54	3.74	3.63	3.89	4.12
36387.2	3.06	3.17	3.27	3.37	3.36	3.45	3.43	3.56	3.54	3.74	3.62	3.89	4.11
36390.1	3.06	3.17	3.27	3.37	3.36	3.45	3.43	3.55	3.53	3.74	3.62	3.88	4.11
36393.1	3.07	3.18	3.27	3.36	3.36	3.45	3.42	3.55	3.53	3.73	3.62	3.88	4.10
36396.0	3.07	3.18	3.27	3.36	3.36	3.45	3.42	3.55	3.53	3.73	3.61	3.87	4.09
36398.9	3.07	3.18	3.27	3.36	3.36	3.45	3.42	3.54	3.53	3.72	3.61	3.86	4.08
36401.9	3.07	3.18	3.27	3.36	3.36	3.45	3.42	3.54	3.52	3.72	3.60	3.86	4.07
36404.8	3.07	3.18	3.27	3.36	3.35	3.44	3.42	3.54	3.52	3.71	3.60	3.85	4.07
36407.8	3.08	3.18	3.27	3.36	3.35	3.44	3.42	3.54	3.52	3.71	3.60	3.85	4.06
36410.7	3.08	3.18	3.27	3.36	3.35	3.44	3.42	3.53	3.51	3.70	3.60	3.84	4.05

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36413.7	3.08	3.18	3.27	3.36	3.35	3.44	3.41	3.53	3.51	3.70	3.59	3.83	4.05
36416.6	3.09	3.19	3.27	3.36	3.35	3.44	3.41	3.53	3.51	3.69	3.59	3.83	4.04
36419.6	3.09	3.19	3.27	3.36	3.35	3.44	3.41	3.52	3.51	3.69	3.58	3.82	4.03
36422.5	3.09	3.19	3.27	3.36	3.35	3.44	3.41	3.52	3.50	3.68	3.58	3.82	4.02
36425.5	3.10	3.19	3.27	3.36	3.35	3.43	3.41	3.52	3.50	3.68	3.58	3.81	4.01
36428.4	3.10	3.19	3.27	3.36	3.35	3.43	3.41	3.51	3.50	3.67	3.57	3.80	4.00
36431.4	3.10	3.19	3.27	3.36	3.35	3.43	3.41	3.51	3.49	3.66	3.57	3.79	4.00
36434.3	3.11	3.20	3.27	3.36	3.35	3.43	3.41	3.51	3.49	3.66	3.56	3.79	3.99
36437.3	3.11	3.20	3.28	3.36	3.35	3.43	3.40	3.50	3.49	3.65	3.56	3.78	3.98
36440.2	3.11	3.20	3.28	3.36	3.35	3.42	3.40	3.50	3.48	3.65	3.55	3.77	3.97
36443.2	3.12	3.20	3.28	3.36	3.35	3.42	3.40	3.49	3.48	3.64	3.55	3.77	3.97
36446.1	3.12	3.21	3.28	3.36	3.35	3.42	3.40	3.49	3.47	3.64	3.55	3.76	3.96
36449.1	3.13	3.21	3.28	3.36	3.35	3.42	3.40	3.49	3.47	3.63	3.54	3.75	3.95
36452.0	3.13	3.21	3.28	3.36	3.35	3.42	3.40	3.48	3.47	3.63	3.54	3.75	3.94
36454.9	3.13	3.21	3.28	3.35	3.35	3.41	3.39	3.48	3.46	3.62	3.53	3.74	3.94
36457.8	3.13	3.21	3.28	3.35	3.34	3.41	3.39	3.47	3.46	3.62	3.53	3.74	3.93
36460.6	3.13	3.20	3.27	3.34	3.34	3.40	3.39	3.47	3.45	3.61	3.52	3.73	3.93
36463.5	3.13	3.20	3.27	3.34	3.33	3.40	3.38	3.46	3.45	3.61	3.52	3.73	3.93
36466.4	3.12	3.20	3.26	3.33	3.33	3.40	3.38	3.46	3.45	3.60	3.51	3.72	3.92
36469.3	3.12	3.19	3.26	3.33	3.33	3.39	3.37	3.46	3.44	3.60	3.51	3.71	3.91
36472.1	3.12	3.19	3.26	3.33	3.32	3.39	3.37	3.45	3.43	3.59	3.50	3.71	3.90
36475.0	3.12	3.19	3.25	3.32	3.32	3.38	3.36	3.44	3.43	3.59	3.50	3.70	3.89
36477.9	3.12	3.18	3.25	3.32	3.31	3.38	3.36	3.44	3.42	3.58	3.49	3.70	3.88
36480.8	3.11	3.18	3.24	3.31	3.31	3.37	3.35	3.43	3.42	3.58	3.49	3.69	3.87
36483.6	3.11	3.18	3.24	3.31	3.30	3.36	3.35	3.43	3.41	3.57	3.48	3.68	3.86
36486.5	3.11	3.17	3.23	3.30	3.30	3.36	3.34	3.42	3.41	3.56	3.48	3.67	3.85
36489.4	3.11	3.17	3.23	3.30	3.29	3.35	3.34	3.42	3.40	3.56	3.47	3.66	3.84
36492.3	3.11	3.17	3.22	3.29	3.29	3.35	3.33	3.41	3.40	3.55	3.47	3.66	3.84
36495.1	3.10	3.16	3.22	3.29	3.28	3.34	3.32	3.41	3.39	3.55	3.46	3.65	3.83
36498.0	3.10	3.16	3.21	3.28	3.27	3.33	3.32	3.40	3.38	3.53	3.45	3.64	3.83
36500.9	3.10	3.15	3.21	3.27	3.27	3.32	3.31	3.39	3.37	3.52	3.43	3.62	3.81
36503.8	3.09	3.15	3.20	3.26	3.26	3.32	3.30	3.38	3.36	3.51	3.43	3.62	3.81
36506.6	3.09	3.14	3.20	3.26	3.25	3.31	3.29	3.37	3.36	3.50	3.42	3.61	3.80
36509.5	3.09	3.14	3.19	3.25	3.25	3.30	3.28	3.36	3.35	3.49	3.41	3.60	3.79
36512.4	3.09	3.14	3.19	3.24	3.24	3.29	3.28	3.35	3.34	3.48	3.41	3.59	3.78
36515.3	3.08	3.13	3.18	3.24	3.23	3.28	3.27	3.33	3.33	3.47	3.39	3.57	3.76
36518.1	3.08	3.13	3.17	3.23	3.22	3.27	3.26	3.32	3.31	3.45	3.38	3.56	3.75
36521.0	3.08	3.12	3.17	3.22	3.22	3.26	3.25	3.31	3.31	3.44	3.36	3.55	3.75
36523.9	3.07	3.12	3.16	3.21	3.21	3.26	3.24	3.30	3.30	3.43	3.35	3.54	3.74
36526.8	3.07	3.11	3.16	3.21	3.20	3.25	3.24	3.29	3.28	3.41	3.34	3.53	3.73
36529.6	3.06	3.11	3.15	3.20	3.19	3.24	3.23	3.28	3.28	3.40	3.32	3.52	3.72
36532.5	3.06	3.10	3.14	3.19	3.18	3.23	3.22	3.27	3.27	3.39	3.31	3.51	3.71
36535.4	3.06	3.09	3.13	3.18	3.17	3.22	3.21	3.26	3.26	3.38	3.30	3.50	3.70
36538.3	3.05	3.09	3.12	3.17	3.16	3.21	3.20	3.25	3.24	3.37	3.29	3.49	3.69
36541.1	3.05	3.08	3.12	3.16	3.16	3.21	3.19	3.24	3.23	3.36	3.28	3.48	3.68
36544.0	3.04	3.07	3.11	3.15	3.15	3.19	3.18	3.23	3.22	3.35	3.27	3.47	3.68

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36546.9	3.04	3.07	3.10	3.14	3.14	3.18	3.17	3.22	3.21	3.34	3.26	3.46	3.67
36549.8	3.03	3.06	3.09	3.13	3.13	3.16	3.15	3.21	3.19	3.34	3.25	3.46	3.66
36552.6	3.03	3.05	3.08	3.12	3.12	3.15	3.14	3.20	3.19	3.33	3.24	3.45	3.65
36555.5	3.02	3.05	3.07	3.11	3.10	3.14	3.13	3.20	3.18	3.33	3.24	3.45	3.65
36558.4	3.02	3.04	3.06	3.09	3.09	3.14	3.11	3.19	3.17	3.32	3.25	3.44	3.64
36561.3	3.01	3.03	3.05	3.09	3.08	3.13	3.11	3.19	3.18	3.33	3.24	3.45	3.65
36564.1	3.01	3.02	3.04	3.08	3.07	3.13	3.10	3.18	3.18	3.33	3.24	3.45	3.67
36567.0	3.00	3.02	3.03	3.08	3.07	3.12	3.10	3.19	3.18	3.33	3.24	3.46	3.67
36569.9	3.00	3.01	3.02	3.07	3.06	3.11	3.11	3.19	3.19	3.35	3.22	3.47	3.70
36572.9	2.99	3.00	3.01	3.05	3.05	3.10	3.09	3.16	3.16	3.31	3.22	3.43	3.65
36575.8	2.99	2.99	3.00	3.04	3.03	3.09	3.07	3.15	3.14	3.29	3.20	3.42	3.63
36578.7	2.98	2.99	2.99	3.02	3.02	3.08	3.06	3.13	3.13	3.28	3.19	3.40	3.62
36581.6	2.97	2.98	2.99	3.01	3.01	3.07	3.05	3.12	3.12	3.27	3.18	3.39	3.61
36584.6	2.97	2.98	2.98	3.00	3.00	3.06	3.04	3.12	3.11	3.26	3.17	3.38	3.60
36587.5	2.96	2.97	2.97	2.99	2.99	3.05	3.03	3.11	3.10	3.25	3.16	3.37	3.59
36590.4	2.95	2.96	2.97	2.98	2.98	3.04	3.02	3.10	3.09	3.24	3.15	3.36	3.58
36593.3	2.95	2.96	2.96	2.97	2.97	3.03	3.01	3.09	3.08	3.23	3.14	3.35	3.57
36596.3	2.94	2.95	2.96	2.97	2.96	3.01	3.00	3.08	3.07	3.22	3.13	3.34	3.57
36599.2	2.94	2.94	2.95	2.96	2.95	3.00	2.99	3.07	3.06	3.22	3.13	3.33	3.56
36602.1	2.93	2.94	2.94	2.95	2.95	2.99	2.97	3.06	3.05	3.21	3.12	3.33	3.55
36605.0	2.92	2.93	2.93	2.94	2.94	2.98	2.96	3.05	3.04	3.20	3.11	3.31	3.54
36607.9	2.92	2.92	2.93	2.93	2.93	2.97	2.95	3.05	3.04	3.19	3.10	3.31	3.54
36610.9	2.91	2.92	2.92	2.93	2.92	2.96	2.95	3.04	3.03	3.18	3.10	3.30	3.53
36613.8	2.90	2.91	2.91	2.92	2.92	2.95	2.94	3.03	3.02	3.17	3.08	3.29	3.52
36616.7	2.90	2.90	2.91	2.91	2.91	2.95	2.93	3.01	3.00	3.15	3.07	3.26	3.49
36619.6	2.89	2.90	2.90	2.90	2.90	2.94	2.92	3.01	2.99	3.15	3.06	3.26	3.49
36622.6	2.88	2.89	2.89	2.90	2.90	2.93	2.92	3.00	2.99	3.14	3.05	3.25	3.48
36625.5	2.88	2.88	2.89	2.89	2.89	2.92	2.91	2.99	2.98	3.13	3.05	3.25	3.48
36628.4	2.87	2.88	2.88	2.88	2.88	2.91	2.90	2.99	2.97	3.13	3.04	3.24	3.47
36631.4	2.86	2.87	2.87	2.88	2.88	2.91	2.89	2.98	2.97	3.12	3.03	3.23	3.46
36634.3	2.86	2.86	2.87	2.87	2.87	2.90	2.89	2.97	2.96	3.11	3.02	3.23	3.45
36637.2	2.85	2.85	2.86	2.86	2.86	2.89	2.88	2.96	2.95	3.10	3.01	3.22	3.44
36640.1	2.84	2.85	2.85	2.86	2.86	2.88	2.87	2.96	2.94	3.09	3.01	3.21	3.43
36643.1	2.84	2.84	2.84	2.85	2.85	2.88	2.87	2.95	2.94	3.09	3.00	3.20	3.42
36646.0	2.83	2.83	2.84	2.84	2.84	2.87	2.86	2.94	2.93	3.08	2.99	3.19	3.41
36648.9	2.82	2.83	2.83	2.84	2.84	2.86	2.85	2.94	2.92	3.07	2.98	3.18	3.41
36651.8	2.82	2.82	2.82	2.83	2.83	2.86	2.84	2.93	2.92	3.06	2.97	3.17	3.40
36654.8	2.81	2.81	2.82	2.82	2.82	2.85	2.84	2.92	2.91	3.05	2.97	3.16	3.39
36657.7	2.80	2.81	2.81	2.82	2.82	2.84	2.83	2.92	2.90	3.05	2.96	3.16	3.38
36660.6	2.79	2.80	2.80	2.81	2.81	2.84	2.82	2.91	2.90	3.04	2.96	3.15	3.37
36663.5	2.79	2.79	2.80	2.80	2.80	2.83	2.82	2.90	2.89	3.03	2.95	3.14	3.36
36666.4	2.78	2.79	2.79	2.80	2.80	2.82	2.81	2.90	2.89	3.03	2.95	3.14	3.36
36669.4	2.78	2.78	2.78	2.79	2.79	2.82	2.81	2.90	2.88	3.03	2.94	3.14	3.36
36672.3	2.77	2.77	2.78	2.78	2.78	2.81	2.80	2.89	2.87	3.02	2.93	3.13	3.35
36675.2	2.76	2.77	2.77	2.78	2.78	2.80	2.79	2.88	2.87	3.01	2.93	3.12	3.34
36678.1	2.76	2.76	2.76	2.77	2.77	2.80	2.79	2.87	2.86	3.00	2.92	3.11	3.33

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36681.1	2.75	2.75	2.76	2.76	2.76	2.79	2.78	2.87	2.86	3.00	2.91	3.10	3.32
36684.0	2.74	2.75	2.75	2.75	2.75	2.79	2.77	2.86	2.85	2.99	2.90	3.09	3.31
36686.9	2.75	2.75	2.76	2.76	2.76	2.81	2.79	2.88	2.87	3.01	2.92	3.11	3.33
36689.7	2.76	2.76	2.76	2.78	2.78	2.83	2.81	2.90	2.89	3.03	2.94	3.14	3.35
36692.6	2.76	2.77	2.78	2.80	2.80	2.85	2.83	2.92	2.91	3.05	2.97	3.16	3.38
36695.4	2.77	2.78	2.79	2.82	2.82	2.87	2.85	2.94	2.93	3.07	2.99	3.18	3.41
36698.3	2.78	2.79	2.81	2.84	2.83	2.88	2.87	2.97	2.95	3.10	3.01	3.21	3.43
36701.2	2.79	2.81	2.82	2.85	2.85	2.90	2.89	2.98	2.97	3.12	3.03	3.23	3.45
36704.0	2.80	2.82	2.84	2.87	2.87	2.92	2.91	3.01	2.99	3.14	3.05	3.25	3.48
36706.9	2.81	2.83	2.85	2.89	2.89	2.94	2.93	3.02	3.01	3.15	3.07	3.26	3.49
36709.8	2.82	2.85	2.87	2.91	2.90	2.96	2.95	3.05	3.03	3.17	3.08	3.28	3.51
36712.6	2.83	2.86	2.89	2.93	2.92	2.99	2.97	3.07	3.05	3.19	3.10	3.30	3.54
36715.5	2.84	2.87	2.90	2.94	2.94	3.01	2.99	3.09	3.08	3.21	3.13	3.32	3.56
36718.3	2.85	2.89	2.92	2.96	2.96	3.03	3.01	3.11	3.10	3.24	3.15	3.35	3.59
36721.2	2.85	2.90	2.93	2.98	2.98	3.05	3.03	3.13	3.12	3.26	3.17	3.37	3.62
36724.1	2.86	2.91	2.95	3.00	3.00	3.07	3.05	3.16	3.14	3.29	3.20	3.40	3.65
36726.9	2.87	2.92	2.96	3.02	3.01	3.09	3.07	3.18	3.17	3.31	3.22	3.43	3.68
36729.8	2.88	2.94	2.98	3.04	3.03	3.11	3.09	3.20	3.19	3.33	3.24	3.44	3.70
36732.6	2.89	2.95	3.00	3.06	3.05	3.13	3.11	3.23	3.21	3.35	3.26	3.46	3.72
36735.5	2.90	2.96	3.01	3.07	3.07	3.15	3.13	3.25	3.24	3.38	3.29	3.49	3.74
36738.4	2.91	2.97	3.03	3.09	3.09	3.18	3.15	3.28	3.26	3.40	3.31	3.51	3.76
36741.2	2.91	2.98	3.04	3.11	3.11	3.20	3.17	3.30	3.28	3.43	3.34	3.53	3.78
36744.1	2.92	3.00	3.06	3.13	3.13	3.22	3.20	3.32	3.31	3.45	3.36	3.55	3.80
36746.9	2.93	3.01	3.08	3.15	3.15	3.25	3.22	3.35	3.33	3.48	3.39	3.58	3.83
36749.8	2.93	3.02	3.09	3.17	3.17	3.27	3.24	3.37	3.36	3.50	3.42	3.61	3.85
36752.7	2.94	3.03	3.11	3.19	3.19	3.29	3.26	3.40	3.38	3.54	3.45	3.64	3.89
36755.5	2.95	3.04	3.13	3.22	3.21	3.32	3.29	3.43	3.41	3.57	3.48	3.67	3.93
36758.4	2.95	3.06	3.14	3.24	3.23	3.35	3.32	3.46	3.44	3.60	3.51	3.70	3.96
36761.3	2.96	3.07	3.16	3.26	3.26	3.38	3.35	3.49	3.47	3.64	3.54	3.73	3.99
36764.1	2.97	3.08	3.19	3.29	3.28	3.42	3.38	3.53	3.51	3.67	3.58	3.77	4.03
36767.0	2.97	3.10	3.21	3.32	3.32	3.46	3.42	3.58	3.56	3.70	3.62	3.80	4.06
36769.8	2.98	3.11	3.23	3.36	3.35	3.50	3.46	3.61	3.59	3.75	3.65	3.84	4.11
36772.7	2.98	3.12	3.25	3.39	3.38	3.54	3.50	3.65	3.64	3.79	3.69	3.88	4.15
36775.6	2.99	3.13	3.27	3.42	3.41	3.58	3.54	3.69	3.67	3.82	3.73	3.91	4.18
36778.4	2.99	3.14	3.29	3.46	3.45	3.61	3.58	3.75	3.73	3.88	3.77	3.94	4.25
36781.3	3.00	3.15	3.31	3.48	3.47	3.65	3.60	3.77	3.76	3.90	3.81	3.99	4.27
36784.1	3.00	3.16	3.32	3.51	3.49	3.68	3.64	3.81	3.80	3.94	3.86	4.03	4.31
36787.0	3.01	3.17	3.33	3.53	3.52	3.71	3.66	3.85	3.83	3.98	3.90	4.09	4.35
36789.9	3.03	3.19	3.35	3.55	3.54	3.76	3.69	3.88	3.86	4.00	3.92	4.16	4.37
36792.8	3.04	3.21	3.37	3.58	3.57	3.79	3.73	3.94	3.92	4.07	3.99	4.18	4.43
36795.7	3.06	3.23	3.40	3.61	3.59	3.83	3.76	3.98	3.96	4.11	4.03	4.22	4.46
36798.6	3.08	3.25	3.42	3.63	3.62	3.86	3.79	4.02	4.00	4.16	4.07	4.26	4.50
36801.4	3.10	3.27	3.44	3.65	3.64	3.88	3.81	4.05	4.03	4.19	4.11	4.29	4.53
36804.3	3.11	3.29	3.46	3.68	3.66	3.91	3.84	4.08	4.06	4.22	4.13	4.32	4.56
36807.2	3.13	3.31	3.48	3.70	3.69	3.93	3.86	4.11	4.08	4.25	4.16	4.35	4.59
36810.1	3.15	3.33	3.50	3.73	3.71	3.96	3.89	4.13	4.11	4.28	4.19	4.38	4.62

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36813.0	3.17	3.35	3.53	3.75	3.73	3.99	3.92	4.16	4.14	4.31	4.22	4.41	4.65
36815.9	3.19	3.37	3.55	3.78	3.76	4.01	3.94	4.19	4.17	4.33	4.24	4.44	4.68
36818.8	3.20	3.39	3.57	3.80	3.78	4.04	3.97	4.22	4.19	4.36	4.27	4.46	4.71
36821.7	3.22	3.41	3.60	3.83	3.81	4.06	3.99	4.24	4.22	4.39	4.30	4.49	4.74
36824.6	3.24	3.43	3.62	3.85	3.83	4.09	4.02	4.27	4.25	4.42	4.33	4.52	4.77
36827.4	3.26	3.45	3.64	3.88	3.86	4.12	4.05	4.30	4.27	4.45	4.35	4.55	4.80
36830.3	3.28	3.48	3.67	3.90	3.89	4.15	4.07	4.33	4.30	4.47	4.38	4.57	4.83
36833.2	3.30	3.50	3.69	3.93	3.91	4.17	4.10	4.35	4.33	4.50	4.41	4.60	4.85
36836.1	3.32	3.52	3.72	3.96	3.94	4.20	4.13	4.38	4.36	4.53	4.44	4.63	4.87
36839.0	3.34	3.54	3.74	3.98	3.97	4.23	4.16	4.41	4.39	4.56	4.47	4.65	4.90
36841.9	3.36	3.56	3.77	4.01	3.99	4.26	4.19	4.44	4.41	4.59	4.49	4.68	4.92
36844.8	3.38	3.59	3.79	4.04	4.02	4.29	4.22	4.47	4.44	4.62	4.52	4.71	4.94
36847.7	3.40	3.61	3.82	4.07	4.05	4.32	4.25	4.50	4.47	4.65	4.55	4.73	4.96
36850.6	3.42	3.63	3.84	4.09	4.08	4.35	4.28	4.53	4.50	4.68	4.58	4.76	4.99
36853.4	3.44	3.66	3.87	4.12	4.11	4.38	4.31	4.56	4.54	4.71	4.62	4.79	5.02
36856.3	3.46	3.68	3.89	4.15	4.13	4.41	4.34	4.59	4.57	4.74	4.65	4.83	5.05
36859.2	3.48	3.70	3.92	4.18	4.16	4.44	4.37	4.62	4.60	4.78	4.68	4.86	5.08
36862.1	3.50	3.73	3.95	4.21	4.19	4.47	4.40	4.66	4.63	4.81	4.71	4.89	5.11
36865.0	3.52	3.75	3.97	4.24	4.22	4.51	4.43	4.69	4.66	4.84	4.75	4.92	5.14
36867.9	3.55	3.78	4.00	4.27	4.25	4.54	4.46	4.72	4.69	4.88	4.78	4.96	5.17
36870.8	3.57	3.80	4.03	4.30	4.28	4.57	4.49	4.75	4.73	4.91	4.81	4.99	5.20
36873.7	3.59	3.83	4.06	4.33	4.31	4.60	4.53	4.79	4.76	4.94	4.85	5.02	5.23
36876.6	3.61	3.85	4.09	4.37	4.35	4.63	4.56	4.82	4.79	4.98	4.88	5.06	5.26
36879.4	3.64	3.88	4.12	4.40	4.38	4.67	4.59	4.86	4.83	5.01	4.92	5.09	5.30
36882.3	3.66	3.91	4.14	4.43	4.41	4.70	4.63	4.89	4.86	5.05	4.95	5.13	5.33
36885.2	3.68	3.93	4.17	4.46	4.44	4.74	4.66	4.93	4.90	5.09	4.99	5.17	5.37
36888.1	3.70	3.96	4.20	4.50	4.48	4.77	4.70	4.96	4.94	5.12	5.02	5.20	5.41
36891.0	3.73	3.99	4.23	4.53	4.51	4.81	4.73	5.00	4.97	5.16	5.06	5.24	5.45
36893.9	3.72	3.98	4.23	4.53	4.50	4.80	4.73	5.00	4.97	5.16	5.06	5.24	5.44
36896.8	3.72	3.97	4.22	4.52	4.50	4.80	4.72	4.99	4.96	5.16	5.05	5.23	5.43
36899.6	3.71	3.97	4.22	4.51	4.49	4.79	4.72	4.99	4.96	5.15	5.05	5.23	5.42
36902.5	3.70	3.96	4.21	4.51	4.49	4.79	4.71	4.98	4.95	5.15	5.05	5.22	5.41
36905.4	3.70	3.95	4.20	4.50	4.48	4.78	4.71	4.98	4.95	5.15	5.05	5.22	5.40
36908.3	3.69	3.95	4.20	4.50	4.47	4.78	4.70	4.98	4.94	5.14	5.04	5.21	5.40
36911.2	3.68	3.94	4.19	4.49	4.47	4.77	4.70	4.97	4.94	5.14	5.04	5.20	5.39
36914.1	3.68	3.94	4.18	4.49	4.46	4.77	4.69	4.96	4.93	5.13	5.03	5.20	5.38
36916.9	3.67	3.93	4.18	4.48	4.46	4.76	4.68	4.96	4.93	5.13	5.03	5.19	5.37
36919.8	3.66	3.92	4.17	4.47	4.45	4.76	4.68	4.95	4.92	5.12	5.02	5.18	5.36
36922.7	3.66	3.92	4.17	4.47	4.45	4.75	4.67	4.95	4.92	5.12	5.02	5.18	5.35
36925.6	3.65	3.91	4.16	4.46	4.44	4.75	4.67	4.95	4.92	5.11	5.01	5.17	5.35
36928.5	3.65	3.91	4.16	4.46	4.44	4.74	4.66	4.94	4.91	5.11	5.01	5.16	5.34
36931.4	3.64	3.90	4.15	4.45	4.43	4.74	4.66	4.94	4.91	5.11	5.01	5.16	5.33
36934.2	3.63	3.89	4.14	4.45	4.42	4.73	4.65	4.95	4.91	5.10	5.01	5.16	5.33
36937.1	3.63	3.89	4.14	4.44	4.42	4.73	4.65	4.95	4.92	5.11	5.02	5.16	5.32
36940.0	3.62	3.88	4.13	4.44	4.41	4.73	4.64	4.95	4.92	5.11	5.02	5.16	5.31
36942.9	3.62	3.88	4.13	4.43	4.41	4.72	4.64	4.95	4.92	5.11	5.02	5.16	5.31

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
36945.8	3.61	3.87	4.12	4.43	4.40	4.72	4.64	4.96	4.92	5.11	5.02	5.16	5.30
36948.6	3.60	3.87	4.12	4.42	4.40	4.72	4.63	4.96	4.93	5.12	5.02	5.16	5.29
36951.5	3.60	3.86	4.11	4.42	4.39	4.72	4.63	4.96	4.93	5.12	5.03	5.16	5.29
36954.4	3.59	3.85	4.11	4.41	4.39	4.72	4.62	4.96	4.93	5.12	5.03	5.16	5.28
36957.3	3.59	3.85	4.10	4.40	4.38	4.71	4.62	4.96	4.93	5.12	5.03	5.16	5.28
36960.2	3.58	3.84	4.10	4.40	4.38	4.71	4.61	4.96	4.93	5.12	5.03	5.16	5.28
36963.1	3.57	3.84	4.09	4.39	4.37	4.70	4.61	4.96	4.92	5.12	5.03	5.16	5.27
36965.9	3.57	3.83	4.08	4.39	4.37	4.70	4.60	4.96	4.92	5.12	5.03	5.16	5.27
36968.8	3.56	3.83	4.08	4.38	4.36	4.69	4.60	4.96	4.92	5.12	5.03	5.16	5.26
36971.7	3.56	3.82	4.07	4.38	4.36	4.69	4.60	4.95	4.92	5.11	5.03	5.15	5.26
36974.6	3.55	3.82	4.07	4.37	4.35	4.68	4.59	4.95	4.91	5.11	5.02	5.15	5.25
36977.5	3.55	3.81	4.06	4.37	4.35	4.68	4.59	4.95	4.91	5.11	5.02	5.15	5.24
36980.4	3.54	3.81	4.06	4.37	4.34	4.67	4.58	4.94	4.90	5.11	5.02	5.15	5.24
36983.2	3.54	3.80	4.05	4.36	4.34	4.67	4.58	4.94	4.90	5.10	5.02	5.14	5.23
36986.1	3.53	3.80	4.05	4.36	4.33	4.66	4.57	4.94	4.90	5.10	5.01	5.14	5.23
36989.0	3.53	3.79	4.04	4.35	4.33	4.66	4.57	4.93	4.89	5.10	5.01	5.14	5.22
36991.9	3.53	3.79	4.04	4.35	4.33	4.66	4.57	4.93	4.89	5.10	5.01	5.14	5.21
36994.8	3.53	3.79	4.05	4.35	4.33	4.66	4.56	4.93	4.89	5.09	5.00	5.13	5.21
36997.7	3.53	3.79	4.05	4.35	4.33	4.65	4.56	4.92	4.88	5.09	5.00	5.13	5.20
37000.6	3.53	3.79	4.05	4.35	4.33	4.65	4.56	4.92	4.88	5.08	5.00	5.12	5.19
37003.6	3.53	3.79	4.05	4.35	4.33	4.65	4.56	4.92	4.88	5.08	4.99	5.12	5.18
37006.5	3.53	3.80	4.05	4.35	4.33	4.65	4.56	4.91	4.87	5.08	4.99	5.11	5.17
37009.4	3.53	3.80	4.05	4.35	4.33	4.65	4.56	4.91	4.87	5.07	4.98	5.11	5.16
37012.3	3.54	3.80	4.05	4.35	4.33	4.65	4.56	4.91	4.87	5.07	4.98	5.10	5.16
37015.2	3.54	3.80	4.05	4.35	4.33	4.65	4.56	4.90	4.86	5.06	4.98	5.10	5.15
37018.1	3.54	3.80	4.05	4.35	4.33	4.64	4.56	4.90	4.86	5.06	4.97	5.09	5.14
37021.0	3.54	3.80	4.05	4.35	4.33	4.64	4.56	4.90	4.86	5.05	4.97	5.09	5.13
37023.9	3.54	3.80	4.05	4.35	4.33	4.64	4.55	4.89	4.86	5.05	4.97	5.09	5.13
37026.9	3.54	3.80	4.05	4.35	4.33	4.64	4.55	4.89	4.85	5.05	4.97	5.08	5.12
37029.8	3.54	3.80	4.05	4.35	4.32	4.64	4.55	4.89	4.85	5.05	4.96	5.08	5.11
37032.7	3.55	3.80	4.05	4.35	4.32	4.64	4.55	4.89	4.85	5.05	4.96	5.08	5.11
37035.6	3.55	3.81	4.05	4.35	4.32	4.64	4.55	4.89	4.85	5.05	4.96	5.08	5.11
37038.5	3.55	3.81	4.05	4.35	4.32	4.64	4.55	4.88	4.85	5.05	4.96	5.08	5.11
37041.4	3.55	3.81	4.05	4.35	4.32	4.64	4.55	4.88	4.84	5.05	4.96	5.08	5.11
37044.3	3.55	3.81	4.05	4.35	4.32	4.63	4.55	4.88	4.84	5.05	4.96	5.09	5.12
37047.2	3.55	3.81	4.05	4.35	4.32	4.63	4.55	4.88	4.84	5.06	4.96	5.09	5.12
37050.1	3.56	3.81	4.05	4.35	4.32	4.63	4.55	4.88	4.84	5.06	4.96	5.10	5.13
37053.1	3.56	3.81	4.05	4.35	4.32	4.63	4.55	4.88	4.84	5.06	4.96	5.10	5.13
37056.0	3.56	3.81	4.05	4.35	4.32	4.63	4.55	4.88	4.83	5.06	4.96	5.09	5.12
37058.9	3.56	3.82	4.05	4.35	4.33	4.63	4.55	4.87	4.83	5.06	4.96	5.09	5.12
37061.8	3.56	3.82	4.06	4.35	4.33	4.63	4.55	4.87	4.83	5.05	4.96	5.09	5.12
37064.7	3.56	3.82	4.06	4.35	4.33	4.63	4.55	4.87	4.83	5.05	4.95	5.09	5.13
37067.6	3.57	3.82	4.06	4.35	4.33	4.63	4.55	4.87	4.83	5.05	4.95	5.10	5.13
37070.5	3.57	3.82	4.06	4.35	4.33	4.63	4.55	4.86	4.83	5.05	4.95	5.10	5.13
37073.4	3.57	3.82	4.06	4.35	4.33	4.63	4.55	4.86	4.82	5.05	4.95	5.11	5.14
37076.4	3.57	3.82	4.06	4.35	4.33	4.63	4.55	4.86	4.82	5.05	4.95	5.11	5.14

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
37079.3	3.57	3.83	4.06	4.35	4.33	4.63	4.55	4.86	4.82	5.05	4.94	5.11	5.15
37082.2	3.58	3.83	4.06	4.35	4.33	4.63	4.55	4.86	4.82	5.04	4.94	5.11	5.15
37085.1	3.58	3.83	4.06	4.35	4.33	4.62	4.55	4.86	4.82	5.04	4.94	5.11	5.14
37088.0	3.58	3.83	4.06	4.35	4.33	4.62	4.55	4.85	4.82	5.04	4.94	5.10	5.15
37090.9	3.58	3.82	4.06	4.34	4.32	4.62	4.54	4.85	4.81	5.03	4.93	5.10	5.15
37093.9	3.57	3.82	4.05	4.34	4.32	4.61	4.53	4.84	4.80	5.03	4.93	5.10	5.15
37096.8	3.57	3.81	4.05	4.33	4.31	4.60	4.53	4.84	4.80	5.03	4.92	5.09	5.15
37099.8	3.56	3.81	4.04	4.32	4.30	4.60	4.52	4.83	4.79	5.02	4.92	5.09	5.15
37102.7	3.56	3.80	4.03	4.32	4.30	4.59	4.51	4.82	4.79	5.02	4.91	5.08	5.15
37105.6	3.55	3.80	4.03	4.31	4.29	4.59	4.51	4.82	4.78	5.01	4.90	5.08	5.15
37108.6	3.54	3.79	4.02	4.30	4.28	4.58	4.50	4.81	4.77	5.01	4.90	5.08	5.14
37111.5	3.54	3.79	4.02	4.30	4.28	4.57	4.49	4.81	4.77	5.00	4.89	5.07	5.14
37114.4	3.53	3.78	4.01	4.29	4.27	4.57	4.49	4.80	4.76	5.00	4.89	5.07	5.14
37117.4	3.53	3.78	4.01	4.29	4.27	4.56	4.48	4.80	4.76	4.99	4.88	5.06	5.14
37120.3	3.52	3.77	4.00	4.28	4.26	4.55	4.47	4.79	4.75	4.99	4.88	5.06	5.14
37123.3	3.52	3.76	3.99	4.27	4.25	4.55	4.47	4.78	4.74	4.98	4.87	5.05	5.13
37126.2	3.51	3.76	3.99	4.27	4.25	4.54	4.46	4.78	4.74	4.98	4.87	5.05	5.13
37129.1	3.51	3.75	3.98	4.26	4.24	4.53	4.45	4.77	4.73	4.97	4.86	5.04	5.13
37132.1	3.50	3.75	3.98	4.25	4.23	4.53	4.45	4.77	4.73	4.97	4.86	5.04	5.13
37135.0	3.50	3.74	3.97	4.25	4.23	4.52	4.44	4.76	4.72	4.96	4.85	5.04	5.12
37137.9	3.49	3.74	3.97	4.24	4.22	4.52	4.44	4.76	4.71	4.96	4.84	5.03	5.12
37140.9	3.49	3.73	3.96	4.24	4.22	4.51	4.43	4.75	4.71	4.95	4.84	5.03	5.12
37143.8	3.48	3.73	3.95	4.23	4.21	4.50	4.42	4.74	4.70	4.94	4.83	5.02	5.11
37146.8	3.48	3.72	3.95	4.22	4.20	4.50	4.42	4.74	4.70	4.94	4.83	5.02	5.11
37149.7	3.47	3.71	3.94	4.22	4.20	4.49	4.41	4.73	4.69	4.93	4.82	5.01	5.11
37152.6	3.47	3.71	3.94	4.21	4.19	4.48	4.40	4.73	4.68	4.93	4.82	5.01	5.11
37155.6	3.46	3.70	3.93	4.20	4.18	4.48	4.40	4.72	4.68	4.92	4.81	5.01	5.11
37158.5	3.46	3.70	3.92	4.20	4.18	4.47	4.39	4.71	4.67	4.92	4.81	5.00	5.11
37161.4	3.45	3.69	3.92	4.19	4.17	4.46	4.38	4.71	4.67	4.92	4.80	5.00	5.12
37164.4	3.45	3.69	3.91	4.19	4.17	4.46	4.38	4.70	4.66	4.91	4.80	4.99	5.12
37167.3	3.44	3.68	3.91	4.18	4.16	4.45	4.37	4.70	4.65	4.91	4.79	4.99	5.11
37170.3	3.44	3.68	3.90	4.17	4.15	4.44	4.36	4.69	4.65	4.90	4.78	4.99	5.11
37173.2	3.43	3.67	3.90	4.17	4.15	4.44	4.36	4.69	4.64	4.90	4.78	4.99	5.12
37176.1	3.43	3.66	3.89	4.16	4.14	4.43	4.35	4.68	4.64	4.89	4.77	4.99	5.13
37179.1	3.42	3.66	3.88	4.15	4.13	4.43	4.34	4.67	4.63	4.89	4.77	4.99	5.13
37182.0	3.41	3.65	3.88	4.15	4.13	4.42	4.34	4.67	4.62	4.88	4.76	4.98	5.14
37185.0	3.41	3.65	3.88	4.14	4.12	4.41	4.33	4.66	4.62	4.88	4.76	4.98	5.14
37187.9	3.41	3.65	3.87	4.14	4.12	4.41	4.33	4.66	4.61	4.87	4.75	4.97	5.15
37190.9	3.41	3.65	3.87	4.14	4.12	4.40	4.32	4.65	4.61	4.86	4.75	4.97	5.16
37193.9	3.40	3.64	3.87	4.13	4.11	4.40	4.32	4.65	4.60	4.86	4.74	4.96	5.16
37196.9	3.40	3.64	3.87	4.13	4.11	4.39	4.31	4.64	4.60	4.85	4.73	4.96	5.17
37199.8	3.40	3.64	3.86	4.12	4.10	4.39	4.31	4.63	4.59	4.85	4.73	4.96	5.18
37202.8	3.40	3.64	3.86	4.12	4.10	4.38	4.30	4.63	4.58	4.84	4.72	4.96	5.18
37205.8	3.39	3.63	3.86	4.12	4.10	4.38	4.30	4.62	4.58	4.83	4.71	4.95	5.18
37208.7	3.39	3.63	3.85	4.11	4.09	4.37	4.29	4.61	4.57	4.83	4.71	4.95	5.18
37211.7	3.39	3.63	3.85	4.11	4.09	4.37	4.29	4.61	4.56	4.82	4.70	4.94	5.18

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
37214.7	3.39	3.63	3.85	4.10	4.08	4.36	4.28	4.60	4.56	4.81	4.69	4.93	5.18
37217.6	3.38	3.62	3.84	4.10	4.08	4.35	4.28	4.59	4.55	4.80	4.69	4.92	5.17
37220.6	3.38	3.62	3.84	4.09	4.07	4.35	4.27	4.59	4.54	4.80	4.68	4.92	5.16
37223.6	3.38	3.62	3.84	4.09	4.07	4.34	4.27	4.58	4.54	4.79	4.67	4.91	5.15
37226.6	3.37	3.61	3.83	4.08	4.06	4.34	4.26	4.57	4.53	4.78	4.66	4.90	5.14
37229.5	3.37	3.61	3.83	4.08	4.06	4.33	4.25	4.56	4.52	4.77	4.66	4.89	5.14
37232.5	3.37	3.61	3.82	4.07	4.05	4.32	4.25	4.56	4.52	4.76	4.65	4.88	5.13
37235.5	3.37	3.61	3.82	4.07	4.05	4.32	4.24	4.55	4.51	4.76	4.64	4.87	5.12
37238.4	3.36	3.60	3.82	4.06	4.04	4.31	4.23	4.54	4.50	4.75	4.63	4.87	5.12
37241.4	3.36	3.60	3.81	4.05	4.04	4.30	4.23	4.53	4.49	4.74	4.63	4.86	5.11
37244.4	3.36	3.60	3.81	4.05	4.03	4.30	4.22	4.53	4.49	4.73	4.62	4.85	5.11
37247.4	3.36	3.59	3.80	4.04	4.02	4.29	4.21	4.52	4.48	4.72	4.61	4.84	5.10
37250.3	3.35	3.59	3.80	4.04	4.02	4.28	4.21	4.51	4.47	4.72	4.60	4.83	5.09
37253.3	3.35	3.58	3.79	4.03	4.01	4.27	4.20	4.50	4.46	4.71	4.59	4.82	5.08
37256.3	3.35	3.58	3.79	4.02	4.01	4.27	4.19	4.50	4.45	4.70	4.59	4.81	5.08
37259.2	3.34	3.58	3.78	4.02	4.00	4.26	4.19	4.49	4.45	4.69	4.58	4.80	5.07
37262.2	3.34	3.57	3.78	4.01	3.99	4.25	4.18	4.48	4.44	4.68	4.57	4.80	5.06
37265.2	3.34	3.57	3.77	4.00	3.99	4.24	4.17	4.47	4.43	4.67	4.56	4.79	5.05
37268.1	3.33	3.56	3.77	4.00	3.98	4.24	4.16	4.46	4.42	4.66	4.55	4.78	5.04
37271.1	3.33	3.56	3.76	3.99	3.97	4.23	4.16	4.45	4.41	4.65	4.54	4.77	5.04
37274.1	3.33	3.56	3.75	3.98	3.96	4.22	4.15	4.44	4.40	4.64	4.53	4.76	5.03
37277.1	3.32	3.55	3.75	3.97	3.96	4.21	4.14	4.44	4.40	4.63	4.52	4.75	5.02
37280.0	3.32	3.55	3.74	3.97	3.95	4.20	4.13	4.43	4.39	4.62	4.52	4.74	5.01
37283.0	3.32	3.54	3.74	3.96	3.94	4.19	4.12	4.42	4.38	4.61	4.51	4.73	5.00
37285.9	3.32	3.54	3.74	3.96	3.95	4.20	4.13	4.42	4.38	4.62	4.51	4.73	5.01
37288.9	3.32	3.55	3.74	3.97	3.95	4.20	4.13	4.42	4.38	4.62	4.51	4.74	5.01
37291.8	3.33	3.55	3.74	3.97	3.95	4.20	4.13	4.43	4.39	4.62	4.52	4.74	5.02
37294.8	3.33	3.56	3.75	3.97	3.95	4.21	4.14	4.43	4.39	4.62	4.52	4.74	5.02
37297.7	3.34	3.56	3.75	3.97	3.96	4.21	4.14	4.43	4.39	4.63	4.52	4.75	5.03
37300.6	3.34	3.56	3.75	3.98	3.96	4.21	4.14	4.43	4.40	4.63	4.52	4.75	5.03
37303.6	3.35	3.57	3.75	3.98	3.96	4.22	4.15	4.44	4.40	4.63	4.52	4.76	5.04
37306.5	3.35	3.57	3.76	3.98	3.97	4.22	4.15	4.44	4.40	4.63	4.53	4.76	5.05
37309.5	3.35	3.57	3.76	3.99	3.97	4.22	4.15	4.45	4.41	4.63	4.53	4.77	5.05
37312.4	3.36	3.58	3.76	3.99	3.97	4.23	4.16	4.45	4.41	4.64	4.53	4.77	5.06
37315.4	3.37	3.58	3.77	3.99	3.98	4.23	4.16	4.45	4.41	4.64	4.54	4.78	5.06
37318.3	3.37	3.59	3.77	4.00	3.98	4.24	4.17	4.46	4.42	4.65	4.54	4.78	5.07
37321.2	3.38	3.59	3.78	4.00	3.99	4.24	4.17	4.46	4.42	4.65	4.55	4.79	5.08
37324.2	3.38	3.59	3.78	4.01	3.99	4.25	4.17	4.47	4.43	4.65	4.55	4.79	5.08
37327.1	3.39	3.60	3.78	4.01	3.99	4.25	4.18	4.47	4.43	4.66	4.56	4.80	5.09
37330.1	3.39	3.60	3.79	4.02	4.00	4.26	4.18	4.48	4.44	4.66	4.56	4.80	5.10
37333.0	3.40	3.61	3.79	4.02	4.00	4.26	4.19	4.48	4.45	4.67	4.57	4.81	5.11
37335.9	3.41	3.61	3.80	4.03	4.01	4.27	4.20	4.49	4.45	4.67	4.57	4.82	5.11
37338.9	3.41	3.62	3.80	4.03	4.02	4.27	4.20	4.50	4.46	4.68	4.58	4.82	5.12
37341.8	3.42	3.62	3.81	4.04	4.02	4.28	4.21	4.50	4.46	4.69	4.59	4.83	5.13
37344.8	3.43	3.63	3.81	4.04	4.03	4.29	4.21	4.51	4.47	4.69	4.59	4.84	5.14
37347.7	3.43	3.63	3.82	4.05	4.03	4.29	4.22	4.52	4.48	4.70	4.60	4.85	5.15

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
37350.6	3.44	3.64	3.83	4.06	4.04	4.30	4.23	4.52	4.48	4.71	4.61	4.86	5.16
37353.6	3.44	3.64	3.83	4.06	4.05	4.31	4.23	4.53	4.49	4.72	4.62	4.86	5.17
37356.5	3.45	3.65	3.84	4.07	4.05	4.31	4.24	4.54	4.50	4.73	4.63	4.87	5.18
37359.5	3.46	3.65	3.84	4.08	4.06	4.32	4.25	4.55	4.51	4.74	4.63	4.88	5.19
37362.4	3.47	3.66	3.85	4.08	4.07	4.33	4.26	4.56	4.52	4.74	4.64	4.89	5.20
37365.4	3.47	3.67	3.86	4.09	4.07	4.34	4.26	4.57	4.52	4.75	4.65	4.90	5.21
37368.3	3.48	3.68	3.87	4.10	4.08	4.35	4.27	4.57	4.53	4.76	4.66	4.91	5.22
37371.2	3.49	3.68	3.87	4.11	4.09	4.35	4.28	4.58	4.54	4.77	4.67	4.92	5.23
37374.2	3.49	3.69	3.88	4.12	4.10	4.36	4.29	4.59	4.55	4.78	4.68	4.93	5.25
37377.1	3.50	3.70	3.89	4.13	4.11	4.37	4.30	4.60	4.56	4.79	4.69	4.94	5.26
37380.1	3.51	3.71	3.90	4.14	4.12	4.38	4.31	4.62	4.57	4.80	4.70	4.95	5.27
37383.0	3.52	3.72	3.91	4.15	4.13	4.39	4.32	4.63	4.58	4.82	4.71	4.97	5.29
37385.9	3.51	3.71	3.91	4.14	4.13	4.39	4.32	4.62	4.58	4.81	4.71	4.96	5.28
37388.8	3.51	3.71	3.91	4.14	4.12	4.39	4.31	4.62	4.58	4.81	4.71	4.96	5.28
37391.6	3.51	3.71	3.90	4.14	4.12	4.39	4.31	4.62	4.58	4.81	4.71	4.96	5.28
37394.5	3.50	3.71	3.90	4.14	4.12	4.38	4.31	4.62	4.58	4.80	4.71	4.95	5.27
37397.4	3.50	3.70	3.90	4.14	4.12	4.38	4.31	4.62	4.58	4.80	4.70	4.95	5.27
37400.3	3.49	3.70	3.90	4.13	4.12	4.38	4.31	4.61	4.57	4.80	4.70	4.95	5.27
37403.2	3.49	3.70	3.89	4.13	4.11	4.38	4.30	4.61	4.57	4.79	4.70	4.94	5.26
37406.1	3.49	3.70	3.89	4.13	4.11	4.37	4.30	4.61	4.57	4.79	4.69	4.94	5.26
37408.9	3.49	3.69	3.89	4.13	4.11	4.37	4.30	4.60	4.56	4.79	4.69	4.94	5.25
37411.8	3.48	3.69	3.89	4.13	4.11	4.37	4.29	4.60	4.56	4.78	4.69	4.93	5.25
37414.7	3.48	3.69	3.89	4.12	4.11	4.37	4.29	4.60	4.56	4.78	4.68	4.93	5.24
37417.6	3.48	3.69	3.89	4.12	4.10	4.36	4.29	4.59	4.55	4.77	4.68	4.92	5.24
37420.5	3.48	3.69	3.88	4.12	4.10	4.36	4.29	4.59	4.55	4.77	4.68	4.92	5.23
37423.4	3.48	3.69	3.88	4.11	4.10	4.36	4.28	4.59	4.55	4.77	4.67	4.91	5.23
37426.2	3.47	3.68	3.88	4.11	4.09	4.35	4.28	4.58	4.54	4.76	4.67	4.91	5.22
37429.1	3.47	3.68	3.88	4.11	4.09	4.35	4.28	4.58	4.54	4.76	4.66	4.90	5.21
37432.0	3.47	3.68	3.88	4.11	4.09	4.34	4.27	4.57	4.53	4.75	4.66	4.90	5.21
37434.9	3.47	3.68	3.88	4.10	4.08	4.34	4.27	4.57	4.53	4.75	4.65	4.89	5.20
37437.8	3.47	3.68	3.87	4.10	4.08	4.34	4.26	4.56	4.52	4.74	4.65	4.88	5.19
37440.6	3.47	3.68	3.87	4.09	4.08	4.33	4.26	4.56	4.52	4.73	4.64	4.88	5.19
37443.5	3.47	3.67	3.87	4.09	4.07	4.33	4.26	4.55	4.51	4.73	4.64	4.87	5.18
37446.4	3.46	3.67	3.87	4.09	4.07	4.32	4.25	4.55	4.51	4.72	4.63	4.87	5.17
37449.3	3.46	3.67	3.86	4.08	4.07	4.32	4.25	4.54	4.50	4.72	4.63	4.86	5.16
37452.2	3.46	3.67	3.86	4.08	4.06	4.31	4.24	4.54	4.50	4.71	4.62	4.85	5.15
37455.1	3.46	3.67	3.86	4.07	4.06	4.31	4.24	4.53	4.49	4.71	4.62	4.84	5.14
37457.9	3.46	3.67	3.85	4.07	4.05	4.30	4.23	4.53	4.49	4.70	4.61	4.84	5.13
37460.8	3.46	3.67	3.85	4.06	4.05	4.30	4.23	4.52	4.48	4.69	4.61	4.83	5.13
37463.7	3.46	3.66	3.85	4.06	4.04	4.29	4.22	4.51	4.47	4.68	4.60	4.82	5.12
37466.6	3.46	3.66	3.84	4.05	4.04	4.28	4.21	4.51	4.47	4.68	4.59	4.81	5.10
37469.5	3.46	3.66	3.84	4.05	4.03	4.28	4.21	4.50	4.46	4.67	4.58	4.80	5.09
37472.4	3.46	3.66	3.83	4.04	4.03	4.27	4.20	4.49	4.45	4.66	4.58	4.79	5.08
37475.2	3.45	3.66	3.83	4.04	4.02	4.26	4.19	4.48	4.45	4.65	4.57	4.78	5.07
37478.1	3.45	3.65	3.82	4.03	4.01	4.26	4.19	4.48	4.44	4.64	4.56	4.77	5.06
37481.0	3.45	3.65	3.82	4.02	4.01	4.25	4.18	4.47	4.43	4.63	4.55	4.76	5.05

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
37483.9	3.45	3.65	3.82	4.03	4.01	4.25	4.18	4.47	4.43	4.63	4.55	4.76	5.04
37486.7	3.46	3.66	3.83	4.03	4.02	4.25	4.19	4.47	4.43	4.63	4.55	4.76	5.04
37489.6	3.46	3.66	3.83	4.04	4.02	4.26	4.19	4.47	4.43	4.63	4.55	4.75	5.03
37492.4	3.46	3.66	3.84	4.04	4.03	4.26	4.20	4.47	4.44	4.63	4.55	4.75	5.03
37495.3	3.46	3.67	3.84	4.05	4.03	4.27	4.20	4.47	4.44	4.63	4.56	4.75	5.03
37498.2	3.46	3.67	3.84	4.05	4.04	4.27	4.21	4.48	4.44	4.63	4.56	4.75	5.02
37501.0	3.47	3.67	3.85	4.06	4.04	4.27	4.21	4.48	4.44	4.63	4.56	4.75	5.02
37503.9	3.47	3.68	3.85	4.06	4.05	4.28	4.21	4.48	4.44	4.63	4.56	4.75	5.01
37506.8	3.47	3.68	3.86	4.07	4.05	4.28	4.22	4.48	4.45	4.63	4.56	4.75	5.01
37509.6	3.47	3.68	3.86	4.07	4.06	4.29	4.23	4.49	4.45	4.64	4.56	4.75	5.00
37512.5	3.47	3.69	3.87	4.08	4.06	4.29	4.23	4.49	4.45	4.64	4.57	4.75	5.00
37515.3	3.48	3.69	3.87	4.08	4.07	4.30	4.24	4.49	4.46	4.64	4.57	4.75	5.00
37518.2	3.48	3.69	3.88	4.09	4.07	4.30	4.24	4.50	4.46	4.64	4.57	4.76	5.00
37521.1	3.48	3.69	3.88	4.09	4.08	4.31	4.25	4.50	4.47	4.65	4.58	4.76	4.99
37523.9	3.48	3.70	3.89	4.10	4.08	4.32	4.25	4.51	4.47	4.65	4.58	4.76	4.99
37526.8	3.49	3.70	3.89	4.10	4.09	4.32	4.26	4.51	4.48	4.65	4.59	4.76	4.99
37529.6	3.49	3.70	3.89	4.11	4.09	4.33	4.27	4.52	4.48	4.66	4.59	4.77	4.99
37532.5	3.49	3.71	3.90	4.12	4.10	4.34	4.27	4.52	4.49	4.66	4.60	4.77	4.99
37535.4	3.49	3.71	3.90	4.12	4.10	4.34	4.28	4.53	4.50	4.67	4.60	4.77	4.99
37538.2	3.49	3.71	3.91	4.13	4.11	4.35	4.29	4.54	4.50	4.67	4.61	4.77	4.99
37541.1	3.50	3.71	3.91	4.13	4.11	4.36	4.29	4.54	4.51	4.68	4.61	4.78	4.99
37543.9	3.50	3.72	3.92	4.14	4.12	4.36	4.30	4.55	4.52	4.68	4.62	4.78	4.99
37546.8	3.50	3.72	3.92	4.14	4.13	4.37	4.30	4.56	4.53	4.69	4.63	4.79	4.99
37549.7	3.50	3.72	3.92	4.15	4.13	4.38	4.31	4.57	4.53	4.70	4.63	4.79	4.98
37552.5	3.50	3.73	3.93	4.15	4.14	4.38	4.32	4.57	4.54	4.70	4.64	4.80	4.98
37555.4	3.51	3.73	3.93	4.16	4.14	4.39	4.32	4.58	4.55	4.71	4.65	4.80	4.97
37558.3	3.51	3.73	3.94	4.17	4.15	4.40	4.33	4.59	4.56	4.72	4.66	4.81	4.97
37561.1	3.51	3.74	3.94	4.17	4.15	4.40	4.34	4.60	4.57	4.72	4.67	4.81	4.97
37564.0	3.51	3.74	3.95	4.18	4.16	4.41	4.34	4.61	4.57	4.73	4.67	4.82	4.98
37566.8	3.52	3.74	3.95	4.18	4.16	4.42	4.35	4.61	4.58	4.74	4.68	4.82	4.98
37569.7	3.52	3.75	3.95	4.19	4.17	4.43	4.36	4.62	4.59	4.75	4.69	4.83	4.99
37572.6	3.52	3.75	3.96	4.19	4.17	4.43	4.36	4.63	4.60	4.76	4.70	4.84	4.99
37575.4	3.52	3.75	3.96	4.20	4.18	4.44	4.37	4.64	4.61	4.77	4.71	4.84	5.00
37578.3	3.52	3.76	3.97	4.20	4.19	4.45	4.37	4.65	4.62	4.78	4.72	4.85	5.00
37581.1	3.53	3.76	3.97	4.21	4.19	4.45	4.38	4.66	4.63	4.79	4.73	4.86	5.00
37584.0	3.53	3.76	3.98	4.22	4.20	4.46	4.39	4.67	4.63	4.80	4.74	4.88	5.01
37586.9	3.53	3.77	3.98	4.22	4.20	4.47	4.40	4.68	4.64	4.82	4.75	4.90	5.03
37589.8	3.53	3.77	3.99	4.23	4.21	4.48	4.41	4.69	4.66	4.83	4.77	4.92	5.04
37592.7	3.54	3.78	3.99	4.24	4.22	4.49	4.41	4.70	4.67	4.84	4.78	4.94	5.06
37595.6	3.54	3.78	4.00	4.25	4.23	4.50	4.42	4.71	4.68	4.86	4.79	4.95	5.08
37598.4	3.54	3.79	4.00	4.25	4.23	4.51	4.43	4.73	4.69	4.87	4.80	4.97	5.09
37601.3	3.55	3.79	4.01	4.26	4.24	4.52	4.44	4.74	4.70	4.89	4.82	4.99	5.11
37604.2	3.55	3.79	4.02	4.27	4.25	4.53	4.45	4.75	4.71	4.90	4.83	5.01	5.12
37607.1	3.55	3.80	4.02	4.28	4.26	4.54	4.46	4.76	4.72	4.91	4.84	5.02	5.14
37610.0	3.56	3.80	4.03	4.29	4.27	4.55	4.47	4.77	4.74	4.93	4.86	5.04	5.15
37612.9	3.56	3.81	4.03	4.29	4.27	4.56	4.48	4.79	4.75	4.94	4.87	5.05	5.17

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
37615.8	3.56	3.81	4.04	4.30	4.28	4.57	4.49	4.80	4.76	4.96	4.88	5.07	5.18
37618.7	3.57	3.82	4.05	4.31	4.29	4.58	4.50	4.81	4.77	4.97	4.90	5.09	5.20
37621.6	3.57	3.82	4.05	4.32	4.30	4.59	4.51	4.83	4.79	4.99	4.91	5.10	5.22
37624.4	3.58	3.83	4.06	4.33	4.31	4.60	4.52	4.84	4.80	5.00	4.93	5.12	5.23
37627.3	3.58	3.83	4.07	4.34	4.32	4.61	4.53	4.85	4.81	5.02	4.94	5.13	5.25
37630.2	3.58	3.84	4.07	4.35	4.32	4.62	4.54	4.87	4.82	5.03	4.95	5.15	5.26
37633.1	3.59	3.84	4.08	4.36	4.33	4.64	4.55	4.88	4.84	5.04	4.97	5.15	5.27
37636.0	3.59	3.85	4.09	4.36	4.34	4.64	4.56	4.88	4.84	5.05	4.97	5.16	5.27
37638.9	3.59	3.85	4.09	4.37	4.35	4.65	4.57	4.89	4.85	5.05	4.98	5.16	5.28
37641.8	3.60	3.86	4.10	4.38	4.36	4.66	4.58	4.89	4.86	5.06	4.98	5.17	5.29
37644.7	3.60	3.87	4.11	4.39	4.37	4.66	4.58	4.90	4.86	5.07	4.99	5.18	5.31
37647.6	3.61	3.87	4.12	4.40	4.38	4.67	4.59	4.92	4.88	5.08	5.00	5.19	5.32
37650.4	3.61	3.88	4.12	4.41	4.39	4.68	4.60	4.93	4.89	5.09	5.02	5.21	5.34
37653.3	3.62	3.88	4.13	4.42	4.40	4.70	4.61	4.94	4.90	5.11	5.03	5.23	5.36
37656.2	3.62	3.89	4.14	4.43	4.41	4.71	4.63	4.96	4.92	5.13	5.05	5.25	5.38
37659.1	3.62	3.89	4.15	4.44	4.42	4.72	4.64	4.97	4.93	5.14	5.06	5.27	5.40
37662.0	3.63	3.90	4.15	4.45	4.43	4.73	4.65	4.99	4.95	5.16	5.08	5.28	5.42
37664.9	3.63	3.91	4.16	4.46	4.44	4.75	4.66	5.00	4.96	5.17	5.10	5.30	5.44
37667.8	3.64	3.91	4.17	4.47	4.45	4.76	4.67	5.02	4.98	5.19	5.11	5.32	5.46
37670.7	3.64	3.92	4.18	4.48	4.46	4.77	4.69	5.03	4.99	5.20	5.13	5.34	5.48
37673.6	3.65	3.93	4.19	4.49	4.47	4.79	4.70	5.05	5.01	5.22	5.14	5.35	5.49
37676.4	3.65	3.93	4.20	4.50	4.48	4.80	4.71	5.06	5.02	5.23	5.16	5.37	5.52
37679.3	3.66	3.94	4.20	4.51	4.49	4.81	4.73	5.08	5.04	5.25	5.17	5.39	5.54
37682.2	3.66	3.95	4.21	4.53	4.50	4.83	4.74	5.09	5.05	5.27	5.19	5.41	5.56
37685.1	3.67	3.95	4.22	4.54	4.51	4.84	4.75	5.11	5.07	5.29	5.21	5.44	5.59
37688.0	3.67	3.96	4.23	4.55	4.52	4.86	4.77	5.13	5.08	5.31	5.23	5.46	5.61
37690.9	3.67	3.96	4.23	4.55	4.52	4.85	4.76	5.13	5.08	5.31	5.22	5.45	5.61
37693.7	3.67	3.96	4.23	4.55	4.52	4.85	4.76	5.12	5.08	5.30	5.22	5.45	5.60
37696.6	3.67	3.96	4.23	4.54	4.52	4.85	4.76	5.12	5.08	5.30	5.22	5.45	5.60
37699.4	3.67	3.96	4.23	4.54	4.52	4.85	4.76	5.12	5.08	5.30	5.21	5.45	5.60
37702.3	3.67	3.96	4.23	4.54	4.52	4.85	4.76	5.12	5.07	5.29	5.21	5.44	5.60
37705.2	3.67	3.96	4.23	4.54	4.52	4.84	4.76	5.11	5.07	5.29	5.21	5.44	5.60
37708.0	3.67	3.96	4.22	4.54	4.52	4.84	4.75	5.11	5.07	5.29	5.20	5.44	5.59
37710.9	3.67	3.96	4.22	4.54	4.51	4.84	4.75	5.11	5.07	5.29	5.20	5.43	5.59
37713.8	3.67	3.96	4.22	4.54	4.51	4.84	4.75	5.11	5.06	5.28	5.20	5.43	5.59
37716.6	3.67	3.95	4.22	4.53	4.51	4.84	4.75	5.10	5.06	5.28	5.20	5.43	5.59
37719.5	3.67	3.95	4.22	4.53	4.51	4.83	4.75	5.10	5.06	5.28	5.20	5.43	5.59
37722.3	3.67	3.95	4.22	4.53	4.51	4.83	4.75	5.10	5.06	5.28	5.19	5.43	5.59
37725.2	3.67	3.95	4.22	4.53	4.51	4.83	4.74	5.10	5.06	5.28	5.19	5.43	5.59
37728.1	3.67	3.95	4.22	4.53	4.50	4.83	4.74	5.10	5.05	5.28	5.19	5.43	5.59
37730.9	3.67	3.95	4.22	4.53	4.50	4.83	4.74	5.09	5.05	5.27	5.19	5.43	5.59
37733.8	3.67	3.95	4.21	4.52	4.50	4.82	4.74	5.09	5.05	5.27	5.18	5.43	5.59
37736.6	3.67	3.95	4.21	4.52	4.50	4.82	4.74	5.09	5.05	5.27	5.18	5.43	5.59
37739.5	3.67	3.95	4.21	4.52	4.50	4.82	4.74	5.09	5.04	5.27	5.18	5.42	5.59
37742.4	3.67	3.95	4.21	4.52	4.50	4.82	4.73	5.09	5.04	5.26	5.18	5.42	5.59
37745.2	3.67	3.95	4.21	4.52	4.50	4.82	4.73	5.08	5.04	5.26	5.18	5.42	5.59

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
37748.1	3.67	3.95	4.21	4.52	4.50	4.81	4.73	5.08	5.04	5.26	5.18	5.42	5.59
37750.9	3.67	3.95	4.21	4.52	4.50	4.81	4.73	5.08	5.04	5.26	5.18	5.42	5.59
37753.8	3.67	3.94	4.21	4.52	4.50	4.81	4.73	5.08	5.04	5.26	5.17	5.42	5.59
37756.7	3.67	3.94	4.20	4.52	4.49	4.81	4.72	5.08	5.03	5.26	5.17	5.42	5.59
37759.5	3.67	3.94	4.20	4.51	4.49	4.81	4.72	5.07	5.03	5.26	5.17	5.42	5.60
37762.4	3.67	3.94	4.20	4.51	4.49	4.80	4.72	5.07	5.03	5.26	5.17	5.42	5.60
37765.3	3.67	3.94	4.20	4.51	4.48	4.80	4.71	5.07	5.03	5.27	5.17	5.43	5.60
37768.1	3.66	3.94	4.19	4.50	4.48	4.80	4.71	5.07	5.03	5.27	5.17	5.43	5.60
37771.0	3.66	3.93	4.19	4.50	4.48	4.80	4.71	5.07	5.03	5.27	5.17	5.43	5.61
37773.8	3.66	3.93	4.19	4.50	4.47	4.79	4.71	5.07	5.03	5.27	5.17	5.44	5.61
37776.7	3.66	3.93	4.19	4.49	4.47	4.79	4.71	5.07	5.03	5.27	5.17	5.44	5.61
37779.6	3.66	3.93	4.19	4.49	4.47	4.79	4.70	5.07	5.03	5.27	5.17	5.44	5.61
37782.4	3.66	3.93	4.18	4.49	4.47	4.79	4.70	5.07	5.03	5.27	5.17	5.45	5.62
37785.3	3.66	3.93	4.18	4.49	4.47	4.79	4.70	5.07	5.03	5.28	5.17	5.45	5.62
37788.1	3.66	3.93	4.18	4.49	4.47	4.79	4.70	5.08	5.03	5.28	5.18	5.45	5.63
37791.0	3.66	3.92	4.18	4.49	4.46	4.79	4.70	5.08	5.03	5.28	5.18	5.46	5.63
37794.0	3.64	3.91	4.16	4.47	4.45	4.78	4.69	5.06	5.02	5.26	5.17	5.43	5.60
37796.9	3.63	3.90	4.15	4.46	4.43	4.76	4.67	5.05	5.01	5.26	5.16	5.43	5.60
37799.9	3.62	3.88	4.14	4.44	4.42	4.75	4.66	5.04	5.00	5.25	5.15	5.42	5.60
37802.9	3.60	3.87	4.12	4.43	4.41	4.73	4.64	5.03	4.98	5.24	5.14	5.41	5.57
37805.9	3.59	3.85	4.11	4.41	4.39	4.72	4.63	5.01	4.96	5.22	5.12	5.39	5.56
37808.8	3.57	3.84	4.09	4.40	4.38	4.70	4.61	5.00	4.95	5.21	5.10	5.38	5.54
37811.8	3.56	3.83	4.08	4.38	4.36	4.69	4.60	4.98	4.93	5.20	5.09	5.37	5.53
37814.8	3.55	3.81	4.06	4.37	4.35	4.67	4.58	4.97	4.92	5.18	5.08	5.35	5.52
37817.7	3.53	3.80	4.05	4.35	4.33	4.66	4.57	4.95	4.90	5.17	5.06	5.35	5.51
37820.7	3.52	3.78	4.03	4.34	4.32	4.65	4.56	4.94	4.89	5.16	5.05	5.33	5.50
37823.7	3.50	3.77	4.02	4.33	4.31	4.64	4.54	4.93	4.88	5.15	5.05	5.32	5.48
37826.6	3.49	3.75	4.01	4.31	4.29	4.62	4.53	4.92	4.87	5.13	5.03	5.31	5.47
37829.6	3.48	3.74	3.99	4.30	4.28	4.61	4.52	4.91	4.86	5.12	5.02	5.30	5.46
37832.6	3.46	3.72	3.98	4.29	4.26	4.60	4.50	4.90	4.85	5.11	5.01	5.29	5.45
37835.6	3.45	3.71	3.96	4.27	4.25	4.58	4.49	4.89	4.83	5.10	5.00	5.28	5.44
37838.5	3.43	3.70	3.95	4.26	4.23	4.57	4.48	4.87	4.82	5.08	4.98	5.27	5.43
37841.5	3.42	3.68	3.93	4.24	4.22	4.55	4.46	4.86	4.81	5.07	4.97	5.26	5.42
37844.5	3.41	3.67	3.92	4.23	4.20	4.54	4.44	4.84	4.79	5.06	4.96	5.24	5.41
37847.4	3.39	3.65	3.90	4.21	4.19	4.52	4.43	4.83	4.78	5.04	4.94	5.23	5.40
37850.4	3.38	3.64	3.89	4.20	4.17	4.51	4.41	4.81	4.76	5.03	4.92	5.21	5.39
37853.4	3.36	3.62	3.87	4.18	4.16	4.49	4.40	4.80	4.74	5.01	4.91	5.19	5.37
37856.4	3.35	3.61	3.86	4.17	4.14	4.48	4.38	4.78	4.73	5.00	4.89	5.18	5.35
37859.3	3.34	3.60	3.85	4.15	4.13	4.46	4.37	4.76	4.71	4.98	4.88	5.16	5.33
37862.3	3.32	3.58	3.83	4.14	4.11	4.45	4.35	4.75	4.70	4.97	4.86	5.14	5.31
37865.3	3.31	3.57	3.82	4.12	4.10	4.43	4.34	4.73	4.68	4.95	4.85	5.12	5.29
37868.2	3.30	3.55	3.80	4.11	4.08	4.41	4.32	4.72	4.67	4.93	4.83	5.11	5.27
37871.2	3.28	3.54	3.79	4.09	4.07	4.40	4.31	4.70	4.65	4.92	4.81	5.09	5.25
37874.2	3.27	3.53	3.77	4.08	4.05	4.38	4.29	4.69	4.63	4.90	4.80	5.07	5.23
37877.1	3.25	3.51	3.76	4.06	4.04	4.37	4.28	4.67	4.62	4.88	4.78	5.05	5.21
37880.1	3.24	3.50	3.74	4.05	4.03	4.35	4.26	4.65	4.60	4.87	4.77	5.03	5.19

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
37883.1	3.23	3.48	3.73	4.03	4.01	4.34	4.25	4.64	4.59	4.85	4.75	5.02	5.18
37886.1	3.21	3.47	3.72	4.02	4.00	4.32	4.23	4.62	4.57	4.83	4.73	5.00	5.16
37889.0	3.20	3.46	3.70	4.00	3.98	4.31	4.22	4.61	4.56	4.82	4.72	4.98	5.15
37892.0	3.19	3.44	3.69	3.99	3.97	4.29	4.20	4.59	4.54	4.80	4.70	4.96	5.13
37894.9	3.18	3.43	3.68	3.98	3.96	4.28	4.19	4.58	4.53	4.78	4.69	4.95	5.12
37897.9	3.17	3.42	3.67	3.97	3.95	4.27	4.18	4.56	4.51	4.77	4.68	4.93	5.11
37900.8	3.16	3.42	3.66	3.96	3.93	4.26	4.17	4.55	4.50	4.75	4.66	4.92	5.10
37903.8	3.15	3.41	3.65	3.94	3.92	4.24	4.15	4.54	4.49	4.74	4.65	4.90	5.09
37906.7	3.15	3.40	3.64	3.93	3.91	4.23	4.14	4.53	4.48	4.73	4.64	4.89	5.08
37909.6	3.14	3.39	3.63	3.92	3.90	4.22	4.13	4.51	4.46	4.71	4.62	4.87	5.06
37912.6	3.13	3.38	3.62	3.91	3.89	4.21	4.12	4.50	4.45	4.70	4.61	4.86	5.04
37915.5	3.12	3.37	3.61	3.90	3.88	4.20	4.11	4.49	4.44	4.68	4.60	4.84	5.03
37918.5	3.11	3.36	3.60	3.89	3.87	4.18	4.10	4.47	4.42	4.67	4.58	4.83	5.01
37921.4	3.11	3.35	3.59	3.88	3.86	4.17	4.08	4.46	4.41	4.65	4.57	4.81	5.00
37924.4	3.10	3.34	3.58	3.87	3.85	4.16	4.07	4.45	4.40	4.64	4.56	4.80	4.98
37927.3	3.09	3.34	3.57	3.86	3.84	4.15	4.06	4.43	4.38	4.63	4.54	4.78	4.96
37930.2	3.08	3.33	3.56	3.85	3.83	4.14	4.05	4.42	4.37	4.61	4.53	4.77	4.95
37933.2	3.07	3.32	3.55	3.84	3.81	4.12	4.04	4.41	4.36	4.60	4.52	4.76	4.93
37936.1	3.07	3.31	3.54	3.82	3.80	4.11	4.03	4.39	4.35	4.58	4.50	4.74	4.92
37939.1	3.06	3.30	3.53	3.81	3.79	4.10	4.01	4.38	4.33	4.57	4.49	4.73	4.90
37942.0	3.05	3.29	3.52	3.80	3.78	4.09	4.00	4.37	4.32	4.56	4.47	4.71	4.88
37944.9	3.04	3.28	3.51	3.79	3.77	4.07	3.99	4.35	4.31	4.54	4.46	4.69	4.87
37947.9	3.03	3.27	3.50	3.78	3.76	4.06	3.98	4.34	4.29	4.53	4.45	4.68	4.85
37950.8	3.02	3.26	3.49	3.77	3.75	4.05	3.97	4.33	4.28	4.51	4.43	4.66	4.83
37953.8	3.02	3.25	3.48	3.76	3.74	4.04	3.95	4.31	4.27	4.50	4.42	4.65	4.82
37956.7	3.01	3.24	3.47	3.75	3.73	4.03	3.94	4.30	4.25	4.48	4.40	4.63	4.80
37959.6	3.00	3.23	3.46	3.74	3.72	4.01	3.93	4.29	4.24	4.47	4.39	4.62	4.78
37962.6	2.99	3.23	3.45	3.73	3.71	4.00	3.92	4.27	4.23	4.45	4.38	4.60	4.77
37965.5	2.98	3.22	3.44	3.71	3.69	3.99	3.91	4.26	4.21	4.44	4.36	4.58	4.76
37968.5	2.98	3.21	3.43	3.70	3.68	3.98	3.90	4.25	4.20	4.43	4.35	4.58	4.74
37971.4	2.97	3.20	3.42	3.69	3.67	3.97	3.88	4.23	4.19	4.42	4.34	4.56	4.74
37974.4	2.96	3.19	3.41	3.68	3.66	3.95	3.87	4.22	4.18	4.41	4.32	4.56	4.72
37977.3	2.95	3.18	3.40	3.67	3.65	3.94	3.86	4.21	4.16	4.39	4.31	4.55	4.70
37980.2	2.94	3.17	3.39	3.66	3.64	3.93	3.85	4.19	4.15	4.38	4.29	4.53	4.69
37983.2	2.93	3.16	3.38	3.65	3.63	3.92	3.84	4.18	4.14	4.36	4.28	4.52	4.67
37986.1	2.93	3.15	3.37	3.64	3.62	3.91	3.83	4.17	4.12	4.35	4.26	4.50	4.65
37989.1	2.92	3.14	3.36	3.63	3.61	3.89	3.81	4.15	4.11	4.34	4.25	4.48	4.64
37992.0	2.91	3.13	3.35	3.62	3.60	3.88	3.80	4.14	4.10	4.32	4.24	4.47	4.62
37994.9	2.90	3.13	3.34	3.61	3.59	3.87	3.79	4.13	4.09	4.31	4.23	4.46	4.62
37997.8	2.90	3.12	3.34	3.60	3.58	3.86	3.79	4.12	4.08	4.30	4.22	4.45	4.60
38000.6	2.90	3.12	3.33	3.59	3.58	3.86	3.78	4.11	4.07	4.29	4.21	4.43	4.59
38003.5	2.89	3.11	3.33	3.59	3.57	3.85	3.77	4.10	4.06	4.28	4.20	4.43	4.58
38006.4	2.89	3.11	3.32	3.58	3.56	3.84	3.76	4.09	4.05	4.27	4.19	4.42	4.58
38009.3	2.88	3.10	3.32	3.57	3.56	3.83	3.76	4.08	4.04	4.26	4.18	4.42	4.57
38012.2	2.88	3.10	3.31	3.57	3.55	3.82	3.75	4.07	4.03	4.26	4.17	4.42	4.57
38015.1	2.88	3.10	3.30	3.56	3.54	3.82	3.74	4.07	4.02	4.27	4.16	4.42	4.57

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
38017.9	2.87	3.09	3.30	3.55	3.54	3.81	3.73	4.06	4.01	4.28	4.15	4.43	4.56
38020.8	2.87	3.09	3.29	3.55	3.53	3.80	3.73	4.05	4.01	4.27	4.14	4.41	4.56
38023.7	2.87	3.08	3.29	3.54	3.52	3.79	3.72	4.04	4.00	4.26	4.13	4.40	4.56
38026.6	2.86	3.08	3.28	3.54	3.52	3.79	3.71	4.03	3.99	4.25	4.13	4.39	4.55
38029.5	2.86	3.07	3.28	3.53	3.51	3.78	3.70	4.02	3.98	4.24	4.12	4.39	4.54
38032.4	2.86	3.07	3.27	3.52	3.51	3.77	3.70	4.01	3.97	4.23	4.11	4.38	4.53
38035.2	2.86	3.07	3.27	3.52	3.50	3.76	3.69	4.00	3.96	4.23	4.10	4.38	4.52
38038.1	2.85	3.06	3.27	3.51	3.49	3.76	3.68	4.00	3.95	4.22	4.09	4.37	4.51
38041.0	2.85	3.06	3.26	3.51	3.49	3.75	3.68	3.99	3.94	4.21	4.08	4.37	4.50
38043.9	2.85	3.06	3.26	3.50	3.48	3.74	3.67	3.98	3.94	4.20	4.07	4.36	4.49
38046.8	2.85	3.05	3.25	3.49	3.48	3.73	3.66	3.97	3.93	4.19	4.06	4.35	4.48
38049.6	2.84	3.05	3.25	3.49	3.47	3.72	3.65	3.96	3.92	4.18	4.05	4.34	4.47
38052.5	2.84	3.05	3.24	3.48	3.46	3.72	3.65	3.95	3.91	4.17	4.04	4.33	4.46
38055.4	2.84	3.04	3.24	3.47	3.46	3.71	3.64	3.94	3.90	4.16	4.03	4.32	4.45
38058.3	2.84	3.04	3.23	3.47	3.45	3.70	3.63	3.93	3.89	4.15	4.02	4.31	4.44
38061.2	2.83	3.04	3.23	3.46	3.45	3.69	3.63	3.92	3.88	4.14	4.02	4.30	4.44
38064.1	2.83	3.03	3.22	3.46	3.44	3.69	3.62	3.92	3.88	4.13	4.01	4.30	4.43
38066.9	2.83	3.03	3.22	3.45	3.44	3.68	3.61	3.91	3.87	4.12	4.00	4.29	4.42
38069.8	2.83	3.03	3.22	3.45	3.43	3.67	3.61	3.90	3.86	4.11	3.99	4.28	4.42
38072.7	2.83	3.02	3.21	3.44	3.43	3.67	3.60	3.89	3.85	4.11	3.99	4.27	4.41
38075.6	2.82	3.02	3.21	3.44	3.42	3.66	3.60	3.89	3.85	4.10	3.98	4.26	4.41
38078.5	2.82	3.02	3.20	3.43	3.42	3.66	3.59	3.88	3.84	4.09	3.97	4.25	4.40
38081.4	2.82	3.01	3.20	3.43	3.41	3.65	3.59	3.87	3.83	4.08	3.96	4.25	4.40
38084.2	2.82	3.01	3.20	3.42	3.41	3.65	3.58	3.87	3.83	4.08	3.96	4.24	4.40
38087.1	2.82	3.01	3.19	3.42	3.40	3.64	3.58	3.86	3.82	4.07	3.95	4.23	4.39
38090.0	2.82	3.01	3.19	3.42	3.40	3.64	3.57	3.86	3.82	4.06	3.95	4.23	4.40
38093.0	2.82	3.01	3.19	3.42	3.40	3.63	3.57	3.85	3.81	4.06	3.94	4.22	4.39
38096.0	2.82	3.01	3.19	3.42	3.40	3.63	3.57	3.85	3.81	4.05	3.94	4.21	4.39
38099.0	2.83	3.01	3.19	3.42	3.40	3.63	3.57	3.84	3.81	4.05	3.93	4.20	4.39
38102.0	2.83	3.02	3.20	3.41	3.40	3.63	3.57	3.84	3.80	4.04	3.93	4.20	4.37
38105.0	2.83	3.02	3.20	3.41	3.40	3.62	3.56	3.83	3.80	4.03	3.92	4.19	4.37
38108.0	2.84	3.02	3.20	3.41	3.40	3.62	3.56	3.83	3.79	4.03	3.92	4.18	4.37
38111.0	2.84	3.03	3.20	3.41	3.40	3.62	3.56	3.82	3.79	4.02	3.91	4.17	4.36
38114.0	2.85	3.03	3.20	3.41	3.40	3.61	3.56	3.82	3.78	4.01	3.90	4.17	4.36
38117.0	2.85	3.03	3.20	3.41	3.40	3.61	3.55	3.81	3.78	4.00	3.90	4.16	4.35
38120.0	2.85	3.03	3.20	3.41	3.40	3.61	3.55	3.81	3.77	4.00	3.89	4.15	4.35
38123.0	2.86	3.04	3.20	3.41	3.39	3.60	3.55	3.80	3.76	3.99	3.88	4.14	4.34
38126.0	2.86	3.04	3.21	3.41	3.39	3.60	3.54	3.79	3.76	3.98	3.88	4.14	4.34
38129.0	2.87	3.04	3.21	3.41	3.39	3.59	3.54	3.79	3.75	3.98	3.87	4.14	4.33
38132.0	2.87	3.04	3.21	3.40	3.39	3.59	3.54	3.78	3.75	3.98	3.86	4.14	4.33
38135.0	2.87	3.05	3.21	3.40	3.39	3.59	3.53	3.77	3.74	3.98	3.86	4.14	4.32
38138.0	2.88	3.05	3.21	3.40	3.39	3.58	3.53	3.77	3.73	3.98	3.85	4.14	4.32
38141.0	2.88	3.05	3.21	3.40	3.39	3.58	3.53	3.76	3.73	3.98	3.84	4.13	4.31
38144.0	2.88	3.05	3.21	3.40	3.39	3.57	3.52	3.75	3.72	3.97	3.84	4.13	4.31
38147.0	2.89	3.05	3.21	3.40	3.38	3.57	3.52	3.75	3.71	3.97	3.83	4.12	4.31
38150.0	2.89	3.05	3.21	3.39	3.38	3.56	3.51	3.74	3.71	3.96	3.82	4.12	4.30

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
38153.0	2.89	3.05	3.21	3.39	3.38	3.56	3.51	3.73	3.70	3.95	3.81	4.10	4.29
38156.0	2.90	3.05	3.20	3.38	3.37	3.55	3.50	3.72	3.69	3.94	3.80	4.10	4.28
38159.0	2.90	3.05	3.20	3.38	3.37	3.54	3.50	3.71	3.68	3.93	3.80	4.09	4.28
38162.0	2.90	3.05	3.20	3.37	3.36	3.54	3.49	3.71	3.68	3.93	3.79	4.08	4.28
38165.0	2.91	3.05	3.20	3.37	3.36	3.53	3.48	3.70	3.67	3.92	3.79	4.07	4.27
38168.0	2.91	3.05	3.20	3.36	3.35	3.53	3.48	3.69	3.66	3.91	3.78	4.06	4.26
38171.0	2.91	3.05	3.19	3.36	3.35	3.52	3.47	3.68	3.65	3.90	3.77	4.05	4.25
38174.0	2.91	3.05	3.19	3.35	3.34	3.51	3.46	3.67	3.64	3.89	3.75	4.03	4.24
38177.0	2.92	3.05	3.19	3.34	3.33	3.50	3.45	3.66	3.63	3.87	3.74	4.02	4.22
38180.0	2.92	3.05	3.18	3.34	3.33	3.49	3.44	3.65	3.62	3.86	3.73	4.01	4.21
38183.0	2.92	3.05	3.18	3.33	3.32	3.48	3.43	3.64	3.61	3.86	3.72	4.00	4.20
38186.0	2.92	3.05	3.17	3.32	3.31	3.47	3.42	3.63	3.60	3.84	3.71	3.99	4.19
38189.0	2.92	3.05	3.17	3.31	3.30	3.46	3.41	3.61	3.58	3.83	3.70	3.97	4.17
38192.0	2.92	3.05	3.16	3.31	3.30	3.45	3.40	3.60	3.57	3.81	3.68	3.96	4.15
38194.9	2.91	3.03	3.15	3.29	3.28	3.43	3.39	3.58	3.55	3.79	3.66	3.93	4.13
38197.9	2.90	3.02	3.13	3.27	3.26	3.41	3.37	3.56	3.53	3.77	3.64	3.91	4.10
38200.8	2.88	3.00	3.12	3.26	3.25	3.39	3.35	3.54	3.51	3.75	3.62	3.89	4.08
38203.8	2.87	2.99	3.10	3.24	3.23	3.38	3.33	3.52	3.49	3.73	3.60	3.87	4.06
38206.7	2.86	2.98	3.09	3.23	3.22	3.36	3.32	3.50	3.48	3.71	3.58	3.86	4.05
38209.6	2.85	2.97	3.08	3.22	3.21	3.35	3.31	3.49	3.46	3.70	3.57	3.84	4.02
38212.6	2.84	2.96	3.07	3.20	3.19	3.33	3.30	3.47	3.45	3.68	3.55	3.82	4.01
38215.5	2.83	2.95	3.06	3.19	3.18	3.32	3.28	3.46	3.43	3.66	3.54	3.80	3.99
38218.5	2.82	2.94	3.05	3.18	3.17	3.31	3.27	3.45	3.42	3.65	3.53	3.79	3.97
38221.4	2.82	2.93	3.04	3.17	3.16	3.30	3.26	3.44	3.41	3.64	3.51	3.77	3.96
38224.4	2.81	2.92	3.03	3.16	3.15	3.29	3.25	3.43	3.40	3.62	3.50	3.76	3.94
38227.3	2.81	2.92	3.02	3.16	3.15	3.28	3.24	3.42	3.39	3.61	3.49	3.74	3.93
38230.2	2.80	2.91	3.02	3.15	3.14	3.27	3.24	3.41	3.38	3.60	3.48	3.73	3.92
38233.2	2.80	2.91	3.01	3.14	3.13	3.27	3.23	3.40	3.37	3.59	3.47	3.72	3.90
38236.1	2.79	2.90	3.01	3.13	3.13	3.26	3.22	3.39	3.36	3.58	3.47	3.71	3.89
38239.1	2.79	2.90	3.00	3.13	3.12	3.25	3.21	3.38	3.36	3.57	3.46	3.70	3.88
38242.0	2.79	2.90	3.00	3.12	3.11	3.24	3.21	3.38	3.35	3.57	3.45	3.69	3.86
38244.9	2.79	2.89	3.00	3.12	3.11	3.24	3.20	3.37	3.34	3.56	3.44	3.68	3.85
38247.9	2.78	2.89	2.99	3.12	3.11	3.23	3.20	3.36	3.34	3.55	3.44	3.68	3.84
38250.8	2.78	2.89	2.99	3.11	3.10	3.23	3.19	3.36	3.33	3.55	3.43	3.67	3.83
38253.8	2.78	2.89	2.99	3.11	3.10	3.22	3.19	3.35	3.33	3.54	3.43	3.66	3.82
38256.7	2.78	2.89	2.99	3.11	3.10	3.22	3.18	3.35	3.32	3.53	3.42	3.66	3.81
38259.6	2.78	2.89	2.99	3.11	3.10	3.22	3.18	3.34	3.32	3.53	3.42	3.65	3.81
38262.6	2.78	2.89	2.99	3.10	3.10	3.21	3.18	3.34	3.31	3.53	3.41	3.65	3.80
38265.5	2.79	2.89	2.99	3.10	3.10	3.21	3.18	3.34	3.31	3.52	3.41	3.64	3.79
38268.5	2.79	2.89	2.99	3.10	3.10	3.21	3.18	3.33	3.31	3.52	3.41	3.64	3.79
38271.4	2.79	2.89	2.99	3.10	3.10	3.21	3.18	3.33	3.31	3.51	3.40	3.64	3.78
38274.4	2.79	2.89	2.99	3.10	3.10	3.21	3.18	3.33	3.30	3.51	3.40	3.63	3.78
38277.3	2.80	2.90	2.99	3.10	3.10	3.21	3.18	3.33	3.30	3.51	3.40	3.63	3.78
38280.2	2.80	2.90	2.99	3.10	3.10	3.21	3.18	3.32	3.30	3.51	3.40	3.63	3.78
38283.2	2.80	2.90	2.99	3.11	3.10	3.21	3.18	3.32	3.30	3.51	3.40	3.63	3.78
38286.1	2.81	2.90	3.00	3.11	3.10	3.21	3.18	3.32	3.30	3.51	3.40	3.64	3.79

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
38289.1	2.81	2.91	3.00	3.11	3.10	3.21	3.18	3.32	3.30	3.52	3.40	3.65	3.80
38292.0	2.82	2.91	3.00	3.11	3.10	3.21	3.18	3.33	3.30	3.52	3.40	3.65	3.81
38294.9	2.82	2.92	3.01	3.12	3.11	3.22	3.19	3.34	3.31	3.54	3.42	3.67	3.83
38297.8	2.83	2.93	3.02	3.13	3.12	3.23	3.20	3.35	3.32	3.55	3.43	3.68	3.84
38300.6	2.84	2.94	3.03	3.14	3.13	3.25	3.22	3.36	3.34	3.56	3.44	3.69	3.85
38303.5	2.84	2.94	3.04	3.15	3.15	3.26	3.23	3.37	3.35	3.57	3.45	3.70	3.86
38306.4	2.85	2.95	3.05	3.16	3.16	3.27	3.24	3.38	3.36	3.58	3.46	3.72	3.87
38309.3	2.86	2.96	3.06	3.17	3.17	3.28	3.25	3.39	3.37	3.60	3.47	3.73	3.89
38312.2	2.86	2.97	3.07	3.19	3.18	3.29	3.26	3.41	3.38	3.61	3.49	3.74	3.90
38315.1	2.87	2.98	3.08	3.20	3.19	3.30	3.27	3.42	3.39	3.62	3.50	3.75	3.91
38317.9	2.88	2.99	3.09	3.21	3.20	3.31	3.28	3.43	3.41	3.63	3.51	3.77	3.92
38320.8	2.89	2.99	3.10	3.22	3.21	3.33	3.29	3.44	3.42	3.65	3.52	3.78	3.93
38323.7	2.89	3.00	3.10	3.23	3.22	3.34	3.30	3.45	3.43	3.66	3.54	3.79	3.94
38326.6	2.90	3.01	3.11	3.24	3.23	3.35	3.32	3.47	3.44	3.67	3.55	3.80	3.95
38329.5	2.91	3.02	3.12	3.25	3.24	3.36	3.33	3.48	3.45	3.68	3.56	3.82	3.96
38332.4	2.91	3.03	3.13	3.26	3.25	3.37	3.34	3.49	3.47	3.70	3.57	3.83	3.97
38335.2	2.92	3.03	3.14	3.27	3.26	3.38	3.35	3.50	3.48	3.71	3.59	3.84	3.99
38338.1	2.93	3.04	3.15	3.28	3.27	3.39	3.36	3.52	3.49	3.72	3.60	3.86	4.00
38341.0	2.93	3.05	3.16	3.29	3.28	3.41	3.37	3.53	3.50	3.73	3.61	3.87	4.01
38343.9	2.94	3.06	3.17	3.30	3.29	3.42	3.38	3.54	3.52	3.75	3.62	3.88	4.02
38346.8	2.94	3.06	3.18	3.31	3.30	3.43	3.40	3.55	3.53	3.76	3.64	3.89	4.03
38349.6	2.95	3.07	3.19	3.32	3.31	3.44	3.41	3.57	3.54	3.77	3.65	3.91	4.04
38352.5	2.95	3.08	3.20	3.33	3.32	3.45	3.42	3.58	3.56	3.79	3.66	3.92	4.05
38355.4	2.96	3.09	3.21	3.34	3.33	3.47	3.43	3.59	3.57	3.80	3.68	3.93	4.06
38358.3	2.97	3.09	3.21	3.36	3.35	3.48	3.44	3.61	3.58	3.81	3.69	3.94	4.08
38361.2	2.97	3.10	3.22	3.37	3.36	3.49	3.45	3.62	3.59	3.83	3.71	3.96	4.09
38364.1	2.98	3.11	3.23	3.38	3.37	3.50	3.46	3.63	3.61	3.84	3.72	3.97	4.10
38366.9	2.98	3.11	3.24	3.39	3.38	3.51	3.48	3.65	3.62	3.85	3.73	3.98	4.11
38369.8	2.99	3.12	3.25	3.40	3.39	3.52	3.49	3.66	3.63	3.87	3.75	4.00	4.12
38372.7	3.00	3.13	3.26	3.41	3.40	3.54	3.50	3.68	3.65	3.88	3.76	4.01	4.13
38375.6	3.00	3.14	3.27	3.42	3.41	3.55	3.51	3.69	3.66	3.90	3.78	4.03	4.15
38378.5	3.01	3.14	3.28	3.43	3.42	3.56	3.52	3.70	3.67	3.91	3.79	4.04	4.16
38381.4	3.01	3.15	3.28	3.44	3.43	3.57	3.53	3.72	3.69	3.92	3.81	4.06	4.17
38384.2	3.02	3.16	3.29	3.45	3.44	3.59	3.55	3.73	3.70	3.94	3.82	4.07	4.19
38387.1	3.02	3.16	3.30	3.46	3.45	3.60	3.56	3.74	3.71	3.96	3.84	4.09	4.20
38390.0	3.03	3.17	3.31	3.47	3.46	3.61	3.57	3.76	3.73	3.97	3.85	4.10	4.21
38393.0	3.02	3.16	3.30	3.46	3.45	3.60	3.56	3.74	3.71	3.96	3.84	4.09	4.20
38396.0	3.01	3.15	3.29	3.45	3.44	3.59	3.55	3.73	3.70	3.94	3.82	4.08	4.19
38399.0	3.01	3.15	3.29	3.45	3.43	3.58	3.54	3.72	3.69	3.93	3.81	4.07	4.18
38402.0	3.00	3.14	3.28	3.44	3.42	3.57	3.53	3.70	3.67	3.92	3.79	4.05	4.17
38405.0	2.99	3.13	3.27	3.43	3.42	3.56	3.52	3.69	3.66	3.90	3.78	4.04	4.16
38408.0	2.99	3.12	3.26	3.42	3.41	3.55	3.51	3.67	3.64	3.89	3.76	4.03	4.15
38411.0	2.98	3.12	3.25	3.41	3.40	3.54	3.50	3.66	3.63	3.88	3.75	4.02	4.15
38414.0	2.97	3.11	3.25	3.40	3.39	3.53	3.49	3.64	3.62	3.87	3.74	4.01	4.14
38417.0	2.97	3.10	3.24	3.39	3.38	3.51	3.48	3.63	3.60	3.86	3.73	4.00	4.13
38420.0	2.96	3.10	3.23	3.38	3.37	3.50	3.47	3.62	3.59	3.85	3.71	3.99	4.12

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
38423.0	2.95	3.09	3.22	3.37	3.36	3.49	3.46	3.61	3.58	3.84	3.70	3.98	4.11
38426.0	2.95	3.08	3.21	3.36	3.35	3.47	3.45	3.60	3.57	3.83	3.69	3.97	4.10
38429.0	2.94	3.07	3.20	3.35	3.34	3.46	3.43	3.59	3.56	3.82	3.68	3.97	4.09
38432.0	2.93	3.07	3.20	3.35	3.33	3.45	3.42	3.58	3.55	3.81	3.67	3.96	4.07
38435.0	2.93	3.06	3.19	3.34	3.33	3.44	3.41	3.57	3.54	3.80	3.67	3.95	4.06
38438.0	2.92	3.05	3.18	3.33	3.32	3.43	3.40	3.56	3.53	3.79	3.66	3.94	4.05
38441.0	2.91	3.04	3.17	3.32	3.31	3.42	3.39	3.55	3.52	3.79	3.65	3.93	4.04
38444.0	2.91	3.04	3.16	3.30	3.30	3.41	3.38	3.54	3.51	3.78	3.64	3.92	4.03
38447.0	2.90	3.03	3.16	3.29	3.28	3.40	3.37	3.53	3.50	3.77	3.63	3.91	4.02
38450.0	2.89	3.02	3.15	3.28	3.27	3.39	3.36	3.53	3.50	3.76	3.62	3.90	4.00
38453.0	2.89	3.02	3.14	3.27	3.26	3.38	3.35	3.52	3.49	3.75	3.62	3.89	3.99
38456.0	2.88	3.01	3.13	3.26	3.25	3.38	3.34	3.51	3.48	3.74	3.61	3.88	3.98
38459.0	2.88	3.00	3.13	3.26	3.25	3.37	3.33	3.50	3.47	3.73	3.60	3.87	3.97
38462.0	2.87	3.00	3.12	3.25	3.24	3.36	3.33	3.49	3.47	3.72	3.59	3.86	3.96
38465.0	2.87	2.99	3.11	3.24	3.23	3.36	3.32	3.49	3.46	3.71	3.58	3.84	3.95
38468.0	2.86	2.98	3.10	3.23	3.22	3.35	3.32	3.48	3.45	3.70	3.57	3.83	3.94
38471.0	2.88	2.98	3.09	3.23	3.22	3.34	3.31	3.47	3.44	3.68	3.56	3.82	3.92
38474.0	3.05	3.05	3.09	3.22	3.21	3.34	3.30	3.46	3.43	3.67	3.55	3.80	3.91
38477.0	3.28	3.28	3.28	3.28	3.28	3.33	3.30	3.44	3.42	3.65	3.53	3.79	3.90
38480.0	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.64	3.54	3.78	3.88
38483.0	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91
38486.0	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35
38489.0	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89
38492.0	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59
38492.0	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.59
38499.7	2.79	2.94	3.09	3.25	3.24	3.35	3.33	3.44	3.42	3.66	3.54	3.81	3.93
38507.4	2.75	2.94	3.12	3.31	3.30	3.43	3.39	3.52	3.50	3.75	3.62	3.90	4.03
38515.1	2.82	3.01	3.19	3.37	3.36	3.51	3.47	3.61	3.58	3.85	3.71	4.01	4.14
38522.8	2.88	3.08	3.27	3.44	3.43	3.59	3.54	3.69	3.66	3.94	3.80	4.11	4.26
38530.4	2.98	3.17	3.35	3.53	3.52	3.67	3.63	3.78	3.75	4.04	3.89	4.22	4.38
38538.1	3.08	3.27	3.45	3.62	3.61	3.76	3.71	3.88	3.85	4.15	3.99	4.34	4.51
38545.8	3.21	3.39	3.56	3.72	3.71	3.85	3.81	3.98	3.95	4.26	4.10	4.46	4.65
38553.5	3.34	3.51	3.68	3.83	3.82	3.95	3.91	4.09	4.06	4.38	4.21	4.58	4.78
38561.0	4.23	4.50	4.95	4.96	4.96	5.06	4.99	5.87	5.80	6.03	6.03	6.03	6.03
38568.5	3.95	4.14	4.31	4.53	4.51	4.69	4.64	4.84	4.82	5.02	4.90	5.15	5.46
38577.9	3.80	3.98	4.16	4.37	4.36	4.53	4.48	4.69	4.67	4.88	4.75	5.00	5.31
38587.3	3.66	3.84	4.01	4.23	4.21	4.38	4.32	4.55	4.52	4.74	4.61	4.86	5.16
38596.8	3.53	3.71	3.87	4.08	4.06	4.23	4.18	4.40	4.38	4.60	4.47	4.72	5.01
38606.2	3.40	3.58	3.74	3.94	3.93	4.10	4.05	4.27	4.24	4.47	4.34	4.59	4.88
38615.6	3.30	3.47	3.61	3.80	3.79	3.97	3.92	4.14	4.11	4.33	4.21	4.46	4.74
38625.0	3.20	3.37	3.50	3.67	3.66	3.85	3.80	4.02	4.00	4.21	4.09	4.33	4.59
38625.0	3.20	3.37	3.50	3.67	3.66	3.85	3.80	4.02	4.00	4.21	4.09	4.33	4.59
38628.0	3.20	3.37	3.49	3.67	3.66	3.85	3.79	4.02	3.99	4.20	4.08	4.32	4.59
38631.0	3.20	3.36	3.49	3.66	3.65	3.85	3.79	4.01	3.99	4.19	4.08	4.31	4.58
38634.0	3.19	3.36	3.49	3.66	3.65	3.84	3.79	4.01	3.98	4.19	4.07	4.31	4.58
38637.0	3.19	3.36	3.48	3.66	3.64	3.84	3.78	4.00	3.98	4.18	4.07	4.30	4.58

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
38640.0	3.19	3.35	3.48	3.65	3.64	3.84	3.78	4.00	3.97	4.17	4.06	4.30	4.58
38643.0	3.18	3.35	3.47	3.65	3.64	3.83	3.78	4.00	3.97	4.17	4.06	4.30	4.58
38646.0	3.18	3.34	3.47	3.65	3.63	3.83	3.77	3.99	3.97	4.17	4.05	4.29	4.58
38649.0	3.18	3.34	3.47	3.64	3.63	3.82	3.77	3.99	3.96	4.16	4.05	4.29	4.58
38652.0	3.17	3.33	3.46	3.64	3.63	3.82	3.77	3.98	3.96	4.16	4.04	4.29	4.58
38655.0	3.17	3.33	3.46	3.63	3.62	3.82	3.76	3.98	3.95	4.15	4.04	4.29	4.58
38658.0	3.16	3.33	3.45	3.63	3.62	3.81	3.76	3.98	3.95	4.15	4.03	4.29	4.59
38661.0	3.16	3.32	3.45	3.63	3.61	3.81	3.75	3.97	3.95	4.15	4.03	4.29	4.59
38664.0	3.15	3.32	3.45	3.62	3.61	3.81	3.75	3.97	3.94	4.15	4.03	4.29	4.59
38667.0	3.15	3.31	3.44	3.62	3.61	3.80	3.75	3.96	3.94	4.15	4.02	4.29	4.60
38670.0	3.14	3.31	3.44	3.62	3.60	3.80	3.74	3.96	3.93	4.15	4.02	4.29	4.60
38673.0	3.14	3.30	3.43	3.61	3.60	3.80	3.74	3.95	3.93	4.15	4.02	4.29	4.60
38676.0	3.13	3.30	3.43	3.61	3.60	3.79	3.74	3.95	3.93	4.15	4.02	4.29	4.61
38679.0	3.13	3.29	3.42	3.61	3.59	3.79	3.73	3.95	3.92	4.15	4.02	4.30	4.62
38682.0	3.12	3.29	3.42	3.60	3.59	3.79	3.73	3.95	3.92	4.15	4.02	4.30	4.62
38685.0	3.12	3.28	3.42	3.60	3.59	3.78	3.73	3.95	3.92	4.15	4.02	4.30	4.63
38688.0	3.11	3.28	3.41	3.60	3.58	3.78	3.72	3.95	3.92	4.15	4.02	4.31	4.63
38691.0	3.11	3.27	3.41	3.59	3.58	3.78	3.72	3.95	3.92	4.16	4.02	4.31	4.64
38694.0	3.10	3.27	3.40	3.59	3.58	3.78	3.72	3.95	3.92	4.16	4.02	4.31	4.65
38697.0	3.10	3.26	3.40	3.59	3.57	3.77	3.72	3.95	3.92	4.16	4.02	4.32	4.66
38700.0	3.09	3.26	3.40	3.58	3.57	3.77	3.71	3.95	3.92	4.17	4.02	4.32	4.66
38703.0	3.08	3.25	3.39	3.58	3.57	3.77	3.71	3.95	3.92	4.17	4.03	4.33	4.67
38706.0	3.08	3.25	3.39	3.58	3.57	3.77	3.71	3.96	3.93	4.18	4.03	4.34	4.68
38709.0	3.07	3.24	3.38	3.58	3.56	3.77	3.71	3.96	3.93	4.18	4.03	4.34	4.68
38712.0	3.07	3.24	3.38	3.57	3.56	3.77	3.71	3.96	3.93	4.18	4.04	4.35	4.67
38715.0	3.06	3.23	3.38	3.57	3.56	3.77	3.71	3.96	3.93	4.19	4.04	4.35	4.68
38718.0	3.05	3.23	3.37	3.57	3.56	3.77	3.71	3.97	3.93	4.19	4.04	4.36	4.69
38721.0	3.05	3.22	3.37	3.57	3.56	3.78	3.71	3.97	3.94	4.20	4.05	4.37	4.71
38724.0	3.05	3.22	3.38	3.58	3.56	3.78	3.72	3.97	3.94	4.20	4.05	4.37	4.71
38726.9	3.06	3.23	3.38	3.58	3.57	3.78	3.72	3.98	3.94	4.21	4.05	4.37	4.71
38729.9	3.06	3.23	3.39	3.58	3.57	3.79	3.72	3.98	3.95	4.21	4.06	4.37	4.72
38732.9	3.07	3.24	3.39	3.59	3.57	3.79	3.73	3.98	3.95	4.21	4.06	4.38	4.72
38735.9	3.07	3.24	3.39	3.59	3.58	3.79	3.73	3.98	3.95	4.21	4.06	4.38	4.72
38738.8	3.08	3.25	3.40	3.60	3.58	3.80	3.74	3.99	3.96	4.22	4.06	4.38	4.72
38741.8	3.08	3.25	3.40	3.60	3.59	3.80	3.74	3.99	3.96	4.22	4.07	4.38	4.74
38744.8	3.09	3.26	3.41	3.60	3.59	3.80	3.74	3.99	3.96	4.22	4.07	4.39	4.73
38747.7	3.09	3.27	3.41	3.61	3.60	3.81	3.75	4.00	3.97	4.22	4.07	4.39	4.74
38750.7	3.10	3.27	3.42	3.61	3.60	3.81	3.75	4.00	3.97	4.23	4.08	4.39	4.74
38753.7	3.11	3.28	3.42	3.62	3.60	3.82	3.75	4.00	3.97	4.23	4.08	4.39	4.75
38756.6	3.11	3.28	3.43	3.62	3.61	3.82	3.76	4.01	3.98	4.23	4.08	4.40	4.75
38759.6	3.12	3.29	3.43	3.63	3.61	3.82	3.76	4.01	3.98	4.23	4.09	4.40	4.75
38762.6	3.12	3.29	3.44	3.63	3.62	3.83	3.77	4.01	3.98	4.24	4.09	4.40	4.76
38765.6	3.13	3.30	3.45	3.64	3.62	3.83	3.77	4.02	3.99	4.24	4.09	4.40	4.76
38768.5	3.14	3.31	3.45	3.64	3.63	3.84	3.77	4.02	3.99	4.24	4.10	4.41	4.76
38771.5	3.14	3.31	3.46	3.65	3.63	3.84	3.78	4.02	3.99	4.25	4.10	4.41	4.76
38774.5	3.15	3.32	3.46	3.65	3.64	3.85	3.78	4.03	4.00	4.25	4.10	4.41	4.77

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
38777.4	3.16	3.33	3.47	3.66	3.64	3.85	3.79	4.03	4.00	4.25	4.11	4.42	4.77
38780.4	3.16	3.33	3.47	3.66	3.65	3.86	3.80	4.04	4.01	4.26	4.11	4.42	4.77
38783.4	3.17	3.34	3.48	3.67	3.65	3.86	3.80	4.04	4.01	4.26	4.11	4.42	4.77
38786.4	3.18	3.35	3.49	3.67	3.66	3.87	3.81	4.05	4.02	4.27	4.12	4.43	4.78
38789.3	3.19	3.36	3.49	3.68	3.66	3.87	3.81	4.05	4.02	4.27	4.12	4.43	4.78
38792.3	3.20	3.36	3.50	3.68	3.67	3.88	3.82	4.06	4.03	4.28	4.13	4.44	4.78
38795.3	3.20	3.37	3.50	3.69	3.67	3.88	3.82	4.06	4.03	4.28	4.13	4.44	4.79
38798.2	3.21	3.38	3.51	3.69	3.68	3.88	3.83	4.06	4.03	4.28	4.14	4.45	4.79
38801.2	3.22	3.39	3.52	3.70	3.68	3.89	3.83	4.07	4.04	4.29	4.14	4.45	4.80
38804.2	3.23	3.39	3.52	3.70	3.69	3.89	3.83	4.07	4.04	4.29	4.15	4.46	4.81
38807.1	3.24	3.40	3.53	3.71	3.69	3.90	3.84	4.08	4.05	4.30	4.15	4.46	4.81
38810.1	3.25	3.41	3.54	3.71	3.70	3.90	3.84	4.08	4.05	4.30	4.16	4.47	4.82
38813.1	3.26	3.42	3.54	3.72	3.70	3.91	3.85	4.09	4.06	4.31	4.16	4.47	4.83
38816.1	3.27	3.43	3.55	3.72	3.71	3.91	3.85	4.09	4.06	4.31	4.17	4.48	4.83
38819.0	3.28	3.44	3.56	3.73	3.72	3.91	3.86	4.10	4.07	4.32	4.17	4.49	4.84
38822.0	3.30	3.45	3.57	3.73	3.72	3.92	3.86	4.10	4.07	4.33	4.18	4.49	4.84
38825.0	3.30	3.45	3.57	3.74	3.73	3.93	3.88	4.12	4.09	4.34	4.20	4.51	4.86
38828.0	3.31	3.46	3.58	3.76	3.74	3.94	3.89	4.13	4.10	4.36	4.21	4.53	4.88
38831.0	3.31	3.47	3.59	3.77	3.75	3.96	3.90	4.15	4.11	4.38	4.23	4.55	4.91
38834.0	3.32	3.48	3.60	3.78	3.76	3.97	3.91	4.16	4.13	4.39	4.24	4.57	4.93
38837.0	3.32	3.48	3.61	3.79	3.78	3.98	3.92	4.18	4.14	4.41	4.26	4.59	4.95
38840.0	3.33	3.49	3.62	3.80	3.79	4.00	3.94	4.19	4.16	4.43	4.27	4.61	4.97
38843.0	3.33	3.50	3.63	3.81	3.80	4.01	3.95	4.21	4.17	4.45	4.29	4.62	4.99
38846.0	3.34	3.51	3.64	3.82	3.81	4.02	3.96	4.22	4.19	4.46	4.31	4.64	5.02
38849.0	3.34	3.51	3.65	3.83	3.82	4.04	3.98	4.24	4.21	4.48	4.32	4.66	5.04
38852.0	3.35	3.52	3.66	3.85	3.83	4.05	3.99	4.25	4.22	4.50	4.34	4.68	5.06
38855.0	3.35	3.53	3.67	3.86	3.84	4.07	4.00	4.27	4.24	4.52	4.36	4.70	5.09
38858.0	3.36	3.54	3.68	3.87	3.86	4.08	4.02	4.29	4.25	4.54	4.37	4.72	5.11
38861.0	3.37	3.54	3.69	3.88	3.87	4.10	4.03	4.30	4.27	4.56	4.39	4.75	5.14
38864.0	3.37	3.55	3.70	3.90	3.88	4.11	4.05	4.32	4.29	4.58	4.41	4.77	5.16
38867.0	3.38	3.56	3.71	3.91	3.89	4.13	4.06	4.34	4.30	4.60	4.43	4.79	5.19
38870.0	3.38	3.57	3.72	3.92	3.91	4.14	4.07	4.36	4.32	4.62	4.45	4.81	5.21
38873.0	3.39	3.58	3.73	3.93	3.92	4.16	4.09	4.37	4.34	4.64	4.47	4.83	5.24
38876.0	3.40	3.59	3.74	3.95	3.93	4.17	4.10	4.39	4.36	4.66	4.48	4.86	5.27
38879.0	3.40	3.59	3.76	3.96	3.95	4.19	4.12	4.41	4.37	4.68	4.50	4.88	5.29
38882.0	3.41	3.60	3.77	3.97	3.96	4.20	4.13	4.43	4.39	4.70	4.52	4.90	5.32
38885.0	3.41	3.61	3.78	3.99	3.97	4.22	4.15	4.45	4.41	4.73	4.54	4.93	5.35
38888.0	3.42	3.62	3.79	4.00	3.99	4.24	4.17	4.47	4.43	4.75	4.56	4.95	5.38
38891.0	3.43	3.63	3.80	4.02	4.00	4.25	4.18	4.49	4.45	4.77	4.58	4.98	5.41
38894.0	3.43	3.64	3.81	4.03	4.01	4.27	4.20	4.51	4.47	4.79	4.60	5.00	5.43
38897.0	3.44	3.65	3.82	4.04	4.03	4.29	4.21	4.53	4.49	4.82	4.63	5.02	5.46
38900.0	3.45	3.66	3.84	4.06	4.04	4.30	4.23	4.55	4.50	4.84	4.65	5.05	5.49
38903.0	3.45	3.67	3.85	4.07	4.06	4.32	4.25	4.57	4.52	4.86	4.67	5.08	5.52
38906.0	3.46	3.67	3.86	4.09	4.07	4.34	4.26	4.59	4.54	4.89	4.69	5.11	5.56
38909.0	3.47	3.68	3.87	4.10	4.09	4.36	4.28	4.61	4.56	4.91	4.71	5.13	5.59
38912.0	3.47	3.69	3.88	4.12	4.10	4.38	4.30	4.63	4.59	4.94	4.74	5.16	5.62

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
38915.0	3.48	3.70	3.90	4.13	4.12	4.39	4.32	4.65	4.61	4.97	4.76	5.19	5.66
38918.0	3.49	3.71	3.91	4.15	4.13	4.41	4.33	4.67	4.63	4.99	4.78	5.22	5.69
38921.0	3.49	3.72	3.92	4.17	4.15	4.43	4.35	4.69	4.65	5.02	4.81	5.25	5.73
38924.0	3.50	3.73	3.93	4.18	4.16	4.45	4.37	4.72	4.67	5.05	4.83	5.29	5.78
38927.0	3.44	3.67	3.87	4.11	4.09	4.37	4.29	4.63	4.59	4.96	4.74	5.20	5.68
38930.0	3.38	3.61	3.81	4.04	4.02	4.30	4.22	4.55	4.51	4.87	4.66	5.11	5.59
38933.0	3.34	3.56	3.76	3.99	3.97	4.24	4.16	4.48	4.44	4.80	4.59	5.03	5.51
38936.0	3.30	3.52	3.72	3.94	3.93	4.18	4.10	4.42	4.38	4.73	4.52	4.95	5.43
38939.0	3.26	3.48	3.68	3.91	3.89	4.13	4.06	4.37	4.33	4.67	4.47	4.89	5.36
38942.0	3.23	3.45	3.64	3.87	3.85	4.08	4.02	4.31	4.28	4.61	4.41	4.83	5.29
38945.0	3.21	3.42	3.62	3.84	3.83	4.06	4.00	4.27	4.23	4.56	4.37	4.77	5.23
38948.0	3.18	3.40	3.59	3.81	3.80	4.03	3.97	4.23	4.20	4.51	4.33	4.72	5.17
38951.0	3.17	3.38	3.57	3.79	3.78	4.01	3.95	4.21	4.17	4.48	4.30	4.68	5.12
38954.0	3.15	3.36	3.55	3.77	3.76	3.99	3.93	4.18	4.15	4.44	4.26	4.64	5.07
38957.0	3.14	3.35	3.54	3.76	3.74	3.98	3.91	4.17	4.14	4.41	4.25	4.61	5.03
38960.0	3.13	3.33	3.52	3.74	3.73	3.96	3.90	4.16	4.12	4.39	4.24	4.58	4.99
38963.0	3.12	3.33	3.51	3.73	3.72	3.95	3.89	4.15	4.11	4.38	4.23	4.56	4.96
38966.0	3.12	3.32	3.50	3.72	3.71	3.94	3.88	4.14	4.10	4.37	4.22	4.54	4.93
38969.0	3.12	3.31	3.50	3.72	3.70	3.93	3.87	4.13	4.10	4.36	4.21	4.53	4.91
38972.0	3.11	3.31	3.49	3.71	3.69	3.93	3.86	4.12	4.09	4.36	4.20	4.52	4.88
38975.0	3.12	3.31	3.49	3.71	3.69	3.92	3.86	4.12	4.08	4.35	4.20	4.52	4.86
38978.0	3.12	3.31	3.49	3.70	3.69	3.92	3.85	4.11	4.08	4.35	4.19	4.51	4.84
38981.0	3.12	3.31	3.49	3.70	3.69	3.92	3.85	4.11	4.08	4.35	4.19	4.50	4.82
38984.0	3.13	3.31	3.49	3.70	3.69	3.91	3.85	4.11	4.07	4.34	4.19	4.49	4.82
38987.0	3.13	3.32	3.49	3.70	3.69	3.91	3.85	4.11	4.08	4.34	4.19	4.48	4.83
38990.0	3.14	3.32	3.50	3.71	3.69	3.92	3.86	4.11	4.08	4.34	4.19	4.49	4.84
38993.0	3.15	3.33	3.50	3.71	3.70	3.92	3.86	4.11	4.08	4.34	4.19	4.50	4.85
38996.0	3.16	3.34	3.51	3.72	3.70	3.93	3.87	4.12	4.09	4.35	4.20	4.50	4.85
38999.0	3.17	3.35	3.52	3.72	3.71	3.93	3.87	4.12	4.09	4.36	4.20	4.51	4.85
39002.0	3.18	3.36	3.53	3.73	3.72	3.94	3.88	4.13	4.10	4.36	4.21	4.52	4.86
39005.0	3.20	3.37	3.54	3.74	3.73	3.95	3.89	4.14	4.11	4.37	4.22	4.52	4.87
39008.0	3.21	3.39	3.55	3.75	3.74	3.96	3.90	4.15	4.12	4.38	4.23	4.54	4.90
39011.0	3.22	3.40	3.56	3.76	3.75	3.97	3.91	4.16	4.13	4.39	4.24	4.57	4.92
39014.0	3.24	3.42	3.58	3.78	3.77	3.98	3.92	4.17	4.14	4.41	4.25	4.59	4.95
39017.0	3.26	3.44	3.60	3.80	3.78	4.00	3.94	4.19	4.16	4.43	4.27	4.62	4.98
39020.0	3.27	3.45	3.62	3.81	3.80	4.01	3.95	4.21	4.17	4.45	4.29	4.63	4.99
39023.0	3.29	3.47	3.63	3.83	3.82	4.03	3.97	4.22	4.19	4.47	4.31	4.65	5.01
39026.0	3.30	3.49	3.65	3.85	3.83	4.05	3.98	4.24	4.21	4.49	4.33	4.66	5.03
39029.0	3.32	3.50	3.67	3.86	3.85	4.06	4.00	4.26	4.23	4.51	4.35	4.68	5.04
39032.0	3.34	3.52	3.69	3.88	3.87	4.08	4.02	4.28	4.24	4.52	4.36	4.69	5.06
39034.9	3.31	3.49	3.65	3.84	3.83	4.04	3.98	4.23	4.20	4.48	4.32	4.65	5.01
39037.8	3.28	3.46	3.62	3.80	3.79	4.00	3.94	4.19	4.16	4.43	4.27	4.60	4.97
39040.7	3.25	3.42	3.58	3.76	3.75	3.96	3.90	4.15	4.11	4.39	4.23	4.56	4.94
39043.6	3.22	3.39	3.54	3.73	3.71	3.92	3.86	4.11	4.07	4.35	4.19	4.51	4.89
39046.5	3.19	3.36	3.51	3.69	3.67	3.87	3.82	4.06	4.03	4.30	4.15	4.46	4.85
39049.4	3.16	3.32	3.47	3.65	3.64	3.84	3.78	4.02	3.99	4.26	4.10	4.43	4.80

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39052.3	3.13	3.29	3.44	3.61	3.60	3.80	3.74	3.98	3.95	4.22	4.06	4.38	4.76
39055.2	3.10	3.26	3.40	3.57	3.56	3.76	3.70	3.94	3.91	4.18	4.02	4.34	4.71
39058.1	3.07	3.22	3.36	3.54	3.52	3.72	3.66	3.90	3.87	4.13	3.98	4.30	4.67
39060.9	3.04	3.19	3.33	3.50	3.49	3.68	3.62	3.86	3.83	4.09	3.94	4.26	4.63
39063.8	3.00	3.16	3.29	3.46	3.45	3.64	3.58	3.82	3.79	4.05	3.90	4.22	4.59
39066.7	2.97	3.12	3.26	3.43	3.41	3.60	3.55	3.78	3.75	4.01	3.86	4.18	4.54
39069.6	2.94	3.09	3.22	3.39	3.38	3.56	3.51	3.74	3.71	3.97	3.82	4.14	4.50
39072.5	2.91	3.06	3.19	3.35	3.34	3.53	3.47	3.71	3.68	3.93	3.78	4.10	4.46
39075.4	2.88	3.02	3.15	3.32	3.31	3.49	3.44	3.67	3.64	3.90	3.75	4.06	4.42
39078.3	2.85	2.99	3.12	3.28	3.27	3.46	3.40	3.63	3.60	3.86	3.71	4.02	4.38
39081.2	2.82	2.96	3.09	3.25	3.24	3.42	3.37	3.59	3.56	3.82	3.67	3.98	4.34
39084.1	2.79	2.92	3.05	3.21	3.20	3.38	3.33	3.56	3.53	3.78	3.63	3.95	4.30
39087.0	2.75	2.89	3.02	3.18	3.17	3.35	3.30	3.52	3.49	3.75	3.60	3.91	4.27
39089.9	2.72	2.86	2.99	3.14	3.13	3.31	3.26	3.49	3.46	3.71	3.56	3.87	4.23
39092.8	2.69	2.83	2.95	3.11	3.10	3.28	3.23	3.45	3.42	3.68	3.53	3.84	4.19
39095.7	2.66	2.80	2.92	3.08	3.07	3.25	3.19	3.42	3.39	3.64	3.49	3.80	4.15
39098.6	2.63	2.77	2.89	3.05	3.03	3.21	3.16	3.39	3.36	3.61	3.46	3.76	4.12
39101.5	2.60	2.74	2.86	3.01	3.00	3.18	3.13	3.35	3.32	3.57	3.43	3.73	4.08
39104.4	2.57	2.70	2.83	2.98	2.97	3.15	3.10	3.32	3.29	3.54	3.39	3.70	4.05
39107.3	2.54	2.67	2.80	2.95	2.94	3.12	3.07	3.29	3.26	3.51	3.36	3.66	4.01
39110.2	2.51	2.64	2.77	2.92	2.91	3.09	3.03	3.26	3.23	3.47	3.33	3.63	3.98
39113.1	2.49	2.62	2.74	2.89	2.88	3.06	3.00	3.22	3.20	3.44	3.30	3.60	3.94
39115.9	2.46	2.59	2.71	2.86	2.85	3.02	2.97	3.19	3.16	3.41	3.27	3.56	3.91
39118.8	2.43	2.56	2.68	2.83	2.82	2.99	2.94	3.16	3.13	3.38	3.24	3.53	3.88
39121.7	2.40	2.53	2.65	2.80	2.79	2.97	2.91	3.13	3.10	3.35	3.20	3.50	3.84
39124.6	2.37	2.50	2.62	2.77	2.76	2.94	2.89	3.10	3.07	3.32	3.17	3.47	3.81
39127.5	2.35	2.47	2.59	2.74	2.73	2.91	2.86	3.07	3.05	3.29	3.15	3.44	3.77
39130.4	2.32	2.44	2.56	2.72	2.70	2.88	2.83	3.04	3.02	3.25	3.12	3.41	3.73
39133.3	2.29	2.42	2.54	2.69	2.68	2.85	2.80	3.02	2.99	3.22	3.09	3.38	3.70
39136.2	2.27	2.39	2.51	2.66	2.65	2.82	2.77	2.99	2.96	3.19	3.06	3.34	3.66
39139.1	2.24	2.36	2.48	2.63	2.62	2.80	2.75	2.96	2.93	3.17	3.03	3.31	3.62
39142.0	2.21	2.34	2.46	2.61	2.60	2.77	2.72	2.93	2.90	3.14	3.00	3.28	3.58
39144.9	2.22	2.35	2.47	2.62	2.61	2.78	2.73	2.95	2.92	3.15	3.02	3.30	3.60
39147.7	2.24	2.36	2.48	2.64	2.62	2.80	2.75	2.96	2.94	3.17	3.03	3.31	3.62
39150.6	2.25	2.37	2.50	2.65	2.64	2.82	2.77	2.98	2.95	3.19	3.05	3.33	3.63
39153.5	2.26	2.39	2.51	2.67	2.65	2.83	2.78	3.00	2.97	3.20	3.07	3.35	3.65
39156.3	2.27	2.40	2.52	2.68	2.67	2.85	2.80	3.01	2.99	3.22	3.08	3.37	3.67
39159.2	2.28	2.41	2.54	2.69	2.68	2.86	2.81	3.03	3.00	3.24	3.10	3.39	3.69
39162.1	2.29	2.42	2.55	2.71	2.70	2.88	2.83	3.05	3.02	3.25	3.12	3.40	3.72
39164.9	2.31	2.44	2.56	2.73	2.71	2.90	2.84	3.06	3.04	3.27	3.13	3.42	3.73
39167.8	2.32	2.45	2.58	2.74	2.73	2.91	2.86	3.08	3.05	3.29	3.15	3.43	3.75
39170.7	2.33	2.47	2.59	2.76	2.75	2.93	2.88	3.10	3.07	3.31	3.17	3.45	3.76
39173.6	2.34	2.48	2.61	2.77	2.76	2.95	2.89	3.12	3.09	3.32	3.19	3.47	3.78
39176.4	2.36	2.49	2.62	2.79	2.78	2.96	2.91	3.14	3.11	3.34	3.21	3.49	3.79
39179.3	2.37	2.51	2.64	2.81	2.79	2.98	2.93	3.15	3.13	3.36	3.23	3.50	3.81
39182.2	2.38	2.52	2.66	2.82	2.81	3.00	2.94	3.17	3.14	3.38	3.24	3.52	3.82

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39185.0	2.40	2.54	2.67	2.84	2.82	3.01	2.96	3.19	3.16	3.40	3.26	3.53	3.83
39187.9	2.41	2.55	2.69	2.85	2.84	3.03	2.98	3.21	3.18	3.41	3.27	3.54	3.85
39190.8	2.43	2.57	2.70	2.87	2.86	3.05	2.99	3.23	3.20	3.43	3.29	3.56	3.87
39193.6	2.44	2.59	2.72	2.89	2.87	3.07	3.01	3.25	3.22	3.45	3.31	3.58	3.89
39196.5	2.46	2.60	2.74	2.90	2.89	3.08	3.03	3.27	3.24	3.47	3.33	3.60	3.92
39199.4	2.47	2.62	2.75	2.92	2.91	3.10	3.04	3.28	3.25	3.49	3.35	3.62	3.94
39202.2	2.49	2.63	2.77	2.94	2.93	3.12	3.06	3.30	3.27	3.51	3.37	3.64	3.97
39205.1	2.50	2.65	2.79	2.96	2.95	3.13	3.08	3.31	3.29	3.53	3.39	3.67	3.99
39208.0	2.52	2.67	2.81	2.98	2.97	3.15	3.10	3.33	3.30	3.56	3.41	3.70	4.02
39210.8	2.54	2.69	2.83	3.00	2.99	3.18	3.12	3.35	3.32	3.57	3.43	3.72	4.05
39213.7	2.56	2.71	2.85	3.02	3.01	3.20	3.14	3.37	3.35	3.60	3.45	3.74	4.07
39216.6	2.57	2.73	2.87	3.04	3.03	3.22	3.16	3.40	3.37	3.62	3.48	3.77	4.09
39219.4	2.59	2.74	2.89	3.06	3.05	3.24	3.19	3.42	3.39	3.65	3.50	3.79	4.10
39222.3	2.61	2.76	2.91	3.09	3.07	3.27	3.21	3.45	3.42	3.67	3.53	3.82	4.13
39225.2	2.63	2.78	2.93	3.11	3.10	3.29	3.23	3.47	3.44	3.70	3.56	3.84	4.16
39228.1	2.65	2.81	2.95	3.13	3.12	3.32	3.26	3.50	3.47	3.73	3.58	3.87	4.19
39230.9	2.67	2.83	2.98	3.16	3.14	3.34	3.28	3.52	3.49	3.75	3.60	3.90	4.22
39233.8	2.69	2.85	3.00	3.18	3.17	3.36	3.31	3.55	3.52	3.78	3.63	3.93	4.25
39236.7	2.71	2.87	3.02	3.21	3.19	3.39	3.33	3.57	3.54	3.80	3.65	3.96	4.28
39239.5	2.73	2.89	3.05	3.23	3.22	3.42	3.36	3.60	3.57	3.83	3.68	3.99	4.31
39242.4	2.75	2.92	3.07	3.26	3.24	3.44	3.39	3.63	3.60	3.86	3.71	4.02	4.34
39245.3	2.78	2.94	3.10	3.28	3.27	3.47	3.41	3.66	3.63	3.89	3.74	4.05	4.37
39248.1	2.80	2.97	3.12	3.31	3.30	3.50	3.44	3.69	3.66	3.92	3.77	4.08	4.41
39251.0	2.82	2.99	3.15	3.34	3.32	3.53	3.47	3.72	3.69	3.95	3.80	4.11	4.44
39253.9	2.84	3.01	3.16	3.36	3.34	3.55	3.49	3.74	3.71	3.97	3.82	4.13	4.46
39256.8	2.85	3.02	3.18	3.37	3.36	3.57	3.51	3.76	3.72	3.99	3.84	4.15	4.48
39259.7	2.87	3.04	3.20	3.39	3.38	3.59	3.53	3.78	3.74	4.01	3.86	4.17	4.50
39262.6	2.88	3.05	3.22	3.41	3.39	3.61	3.55	3.80	3.76	4.03	3.88	4.19	4.52
39265.5	2.90	3.07	3.23	3.43	3.41	3.63	3.56	3.82	3.78	4.05	3.90	4.21	4.54
39268.4	2.91	3.09	3.25	3.45	3.43	3.65	3.58	3.84	3.81	4.07	3.92	4.23	4.56
39271.3	2.93	3.10	3.27	3.47	3.45	3.67	3.60	3.86	3.83	4.10	3.94	4.25	4.59
39274.2	2.95	3.12	3.29	3.49	3.47	3.69	3.63	3.88	3.85	4.12	3.96	4.28	4.61
39277.1	2.96	3.14	3.31	3.51	3.49	3.71	3.65	3.90	3.87	4.14	3.99	4.30	4.63
39279.9	2.98	3.16	3.33	3.53	3.51	3.73	3.67	3.92	3.89	4.16	4.01	4.32	4.66
39282.8	3.00	3.18	3.35	3.55	3.54	3.75	3.69	3.95	3.91	4.19	4.03	4.35	4.68
39285.7	3.02	3.20	3.37	3.57	3.56	3.77	3.71	3.97	3.94	4.21	4.06	4.37	4.71
39288.6	3.04	3.22	3.39	3.60	3.58	3.80	3.74	3.99	3.96	4.24	4.08	4.40	4.74
39291.5	3.05	3.24	3.41	3.62	3.60	3.82	3.76	4.02	3.99	4.26	4.11	4.42	4.77
39294.4	3.08	3.26	3.44	3.64	3.63	3.85	3.79	4.05	4.01	4.29	4.13	4.45	4.80
39297.3	3.10	3.29	3.46	3.67	3.65	3.87	3.81	4.07	4.04	4.32	4.16	4.48	4.82
39300.2	3.12	3.31	3.49	3.69	3.68	3.90	3.84	4.10	4.07	4.35	4.19	4.51	4.85
39303.1	3.14	3.33	3.51	3.72	3.70	3.93	3.86	4.13	4.09	4.38	4.21	4.54	4.87
39306.0	3.16	3.36	3.54	3.75	3.73	3.95	3.89	4.16	4.12	4.41	4.24	4.57	4.90
39308.9	3.19	3.38	3.56	3.78	3.76	3.99	3.92	4.19	4.16	4.44	4.28	4.61	4.94
39311.8	3.21	3.41	3.59	3.81	3.79	4.02	3.96	4.23	4.19	4.49	4.32	4.65	4.97
39314.7	3.24	3.44	3.62	3.84	3.83	4.06	4.00	4.27	4.24	4.53	4.36	4.69	5.01

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39317.6	3.26	3.46	3.65	3.88	3.86	4.10	4.03	4.31	4.28	4.57	4.40	4.73	5.05
39320.5	3.29	3.49	3.68	3.91	3.89	4.13	4.07	4.34	4.31	4.60	4.43	4.77	5.09
39323.4	3.32	3.52	3.71	3.94	3.93	4.17	4.10	4.38	4.34	4.63	4.46	4.80	5.12
39326.3	3.35	3.55	3.75	3.98	3.96	4.20	4.13	4.41	4.37	4.66	4.50	4.83	5.16
39329.2	3.38	3.59	3.78	4.01	3.99	4.23	4.17	4.44	4.41	4.70	4.53	4.87	5.20
39332.1	3.41	3.62	3.81	4.04	4.03	4.27	4.20	4.48	4.44	4.74	4.57	4.90	5.24
39334.9	3.44	3.65	3.85	4.08	4.06	4.31	4.24	4.52	4.48	4.77	4.61	4.94	5.28
39337.8	3.47	3.69	3.88	4.12	4.10	4.34	4.28	4.55	4.52	4.81	4.64	4.98	5.31
39340.7	3.51	3.72	3.92	4.16	4.14	4.38	4.31	4.59	4.56	4.85	4.68	5.02	5.35
39343.6	3.54	3.76	3.96	4.19	4.18	4.42	4.35	4.63	4.59	4.88	4.72	5.05	5.39
39346.5	3.58	3.80	4.00	4.23	4.22	4.46	4.39	4.67	4.63	4.93	4.76	5.10	5.43
39349.4	3.62	3.84	4.04	4.28	4.26	4.50	4.44	4.71	4.68	4.97	4.80	5.14	5.48
39352.3	3.66	3.88	4.08	4.32	4.30	4.55	4.48	4.76	4.73	5.02	4.85	5.20	5.53
39355.2	3.70	3.92	4.12	4.37	4.35	4.60	4.53	4.81	4.78	5.08	4.91	5.25	5.58
39358.1	3.74	3.97	4.17	4.41	4.40	4.65	4.58	4.87	4.83	5.13	4.96	5.31	5.65
39361.0	3.79	4.02	4.22	4.46	4.44	4.69	4.63	4.92	4.88	5.18	5.01	5.36	5.69
39364.0	3.78	4.00	4.20	4.45	4.43	4.68	4.61	4.90	4.87	5.17	5.00	5.34	5.68
39367.0	3.76	3.99	4.19	4.44	4.42	4.67	4.60	4.90	4.86	5.16	4.99	5.34	5.67
39370.0	3.75	3.97	4.18	4.43	4.41	4.67	4.60	4.89	4.85	5.16	4.98	5.33	5.68
39373.0	3.74	3.96	4.17	4.42	4.40	4.67	4.59	4.90	4.86	5.17	4.99	5.35	5.69
39376.0	3.72	3.94	4.15	4.41	4.39	4.66	4.59	4.90	4.87	5.18	5.00	5.36	5.70
39379.0	3.71	3.93	4.14	4.40	4.38	4.66	4.58	4.90	4.86	5.18	5.00	5.35	5.70
39382.0	3.70	3.92	4.13	4.39	4.37	4.65	4.57	4.89	4.85	5.16	4.99	5.34	5.69
39385.0	3.68	3.90	4.11	4.38	4.36	4.64	4.56	4.88	4.84	5.16	4.98	5.34	5.68
39388.0	3.67	3.89	4.10	4.37	4.35	4.64	4.55	4.88	4.84	5.16	4.98	5.34	5.69
39391.0	3.65	3.87	4.09	4.36	4.34	4.63	4.55	4.89	4.85	5.17	4.99	5.35	5.70
39394.0	3.64	3.86	4.07	4.35	4.33	4.63	4.54	4.89	4.85	5.18	4.99	5.36	5.72
39397.0	3.62	3.84	4.06	4.33	4.31	4.62	4.53	4.88	4.84	5.17	4.99	5.36	5.71
39400.0	3.61	3.83	4.05	4.32	4.30	4.61	4.52	4.87	4.83	5.16	4.98	5.35	5.70
39403.0	3.59	3.81	4.03	4.31	4.29	4.60	4.51	4.87	4.82	5.16	4.97	5.34	5.70
39406.0	3.57	3.80	4.02	4.30	4.28	4.59	4.50	4.86	4.81	5.15	4.96	5.34	5.70
39409.0	3.56	3.78	4.01	4.28	4.26	4.58	4.49	4.85	4.80	5.15	4.96	5.33	5.70
39412.0	3.54	3.77	3.99	4.27	4.25	4.56	4.47	4.84	4.79	5.14	4.95	5.33	5.69
39415.0	3.53	3.75	3.98	4.26	4.24	4.55	4.46	4.83	4.78	5.13	4.94	5.32	5.67
39418.0	3.51	3.74	3.96	4.25	4.22	4.54	4.45	4.81	4.77	5.11	4.92	5.30	5.65
39421.0	3.49	3.72	3.95	4.23	4.21	4.52	4.43	4.80	4.75	5.10	4.91	5.29	5.63
39424.0	3.48	3.71	3.94	4.22	4.20	4.51	4.42	4.78	4.74	5.09	4.89	5.27	5.61
39427.0	3.46	3.69	3.92	4.20	4.18	4.49	4.40	4.77	4.72	5.07	4.88	5.25	5.59
39430.0	3.44	3.68	3.91	4.19	4.17	4.48	4.39	4.75	4.70	5.06	4.86	5.23	5.56
39433.0	3.43	3.66	3.89	4.17	4.15	4.46	4.37	4.73	4.69	5.04	4.84	5.22	5.54
39436.0	3.41	3.65	3.88	4.16	4.14	4.44	4.35	4.71	4.67	5.02	4.82	5.20	5.52
39439.0	3.40	3.63	3.86	4.14	4.12	4.42	4.34	4.69	4.65	5.01	4.81	5.18	5.51
39442.0	3.38	3.62	3.85	4.12	4.10	4.40	4.32	4.67	4.63	4.99	4.79	5.17	5.49
39445.0	3.36	3.60	3.83	4.11	4.09	4.38	4.30	4.65	4.61	4.97	4.77	5.16	5.48
39448.0	3.35	3.59	3.82	4.09	4.07	4.36	4.28	4.63	4.58	4.95	4.74	5.14	5.46
39451.0	3.33	3.57	3.80	4.07	4.05	4.34	4.26	4.60	4.56	4.92	4.72	5.11	5.43

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39454.0	3.32	3.56	3.78	4.05	4.03	4.31	4.23	4.57	4.53	4.89	4.68	5.07	5.39
39457.0	3.30	3.54	3.76	4.03	4.01	4.29	4.21	4.54	4.50	4.85	4.65	5.04	5.35
39460.0	3.28	3.52	3.74	4.00	3.98	4.26	4.18	4.51	4.47	4.82	4.62	5.00	5.33
39463.0	3.27	3.51	3.72	3.98	3.96	4.23	4.16	4.48	4.44	4.78	4.59	4.97	5.31
39466.0	3.25	3.49	3.70	3.95	3.93	4.20	4.13	4.44	4.40	4.74	4.55	4.93	5.28
39469.0	3.23	3.47	3.68	3.93	3.91	4.17	4.10	4.41	4.37	4.70	4.51	4.89	5.24
39472.0	3.22	3.45	3.66	3.90	3.88	4.13	4.06	4.37	4.33	4.66	4.47	4.84	5.19
39475.0	3.20	3.43	3.63	3.87	3.85	4.10	4.03	4.33	4.29	4.61	4.43	4.80	5.14
39478.0	3.20	3.43	3.63	3.87	3.85	4.10	4.03	4.33	4.29	4.61	4.43	4.80	5.14
39481.0	3.20	3.43	3.63	3.87	3.85	4.10	4.03	4.33	4.29	4.61	4.43	4.80	5.15
39484.0	3.20	3.43	3.63	3.87	3.85	4.10	4.03	4.33	4.29	4.61	4.43	4.80	5.16
39487.0	3.20	3.43	3.64	3.87	3.85	4.10	4.03	4.33	4.29	4.61	4.42	4.80	5.18
39490.0	3.20	3.43	3.64	3.87	3.85	4.10	4.03	4.32	4.29	4.61	4.42	4.80	5.19
39493.0	3.21	3.44	3.64	3.87	3.85	4.10	4.03	4.32	4.29	4.61	4.42	4.80	5.19
39496.0	3.21	3.44	3.64	3.87	3.85	4.10	4.03	4.32	4.29	4.61	4.42	4.80	5.19
39499.0	3.21	3.44	3.64	3.87	3.85	4.10	4.03	4.32	4.28	4.61	4.42	4.80	5.18
39502.0	3.21	3.44	3.64	3.87	3.85	4.10	4.03	4.32	4.28	4.61	4.42	4.80	5.18
39505.0	3.21	3.44	3.64	3.87	3.85	4.10	4.03	4.32	4.28	4.61	4.42	4.80	5.20
39508.0	3.21	3.44	3.64	3.87	3.85	4.10	4.03	4.32	4.28	4.61	4.42	4.81	5.21
39511.0	3.21	3.44	3.64	3.87	3.86	4.10	4.03	4.32	4.28	4.61	4.42	4.81	5.21
39514.0	3.21	3.44	3.64	3.87	3.86	4.10	4.03	4.32	4.28	4.60	4.42	4.80	5.21
39517.0	3.21	3.45	3.64	3.87	3.86	4.10	4.03	4.32	4.28	4.60	4.41	4.80	5.20
39520.0	3.22	3.45	3.65	3.87	3.86	4.10	4.03	4.32	4.28	4.60	4.41	4.80	5.18
39523.0	3.22	3.45	3.65	3.87	3.86	4.10	4.03	4.32	4.28	4.60	4.41	4.79	5.18
39526.0	3.22	3.45	3.65	3.87	3.86	4.10	4.03	4.31	4.28	4.60	4.41	4.79	5.17
39529.0	3.22	3.45	3.65	3.87	3.86	4.10	4.03	4.31	4.28	4.59	4.41	4.79	5.16
39532.0	3.22	3.45	3.65	3.87	3.86	4.09	4.03	4.31	4.27	4.59	4.41	4.78	5.16
39535.0	3.22	3.45	3.65	3.88	3.86	4.09	4.03	4.31	4.27	4.59	4.41	4.78	5.16
39538.0	3.22	3.46	3.65	3.88	3.86	4.09	4.03	4.31	4.27	4.59	4.41	4.78	5.17
39541.0	3.23	3.46	3.65	3.88	3.86	4.09	4.03	4.31	4.27	4.59	4.40	4.78	5.17
39544.0	3.23	3.46	3.65	3.88	3.86	4.09	4.03	4.31	4.27	4.59	4.40	4.78	5.17
39547.0	3.23	3.46	3.65	3.88	3.86	4.09	4.03	4.31	4.27	4.58	4.40	4.78	5.17
39550.0	3.23	3.46	3.66	3.88	3.86	4.09	4.03	4.30	4.27	4.58	4.40	4.77	5.16
39553.0	3.23	3.46	3.66	3.88	3.86	4.09	4.03	4.30	4.27	4.58	4.40	4.77	5.16
39556.0	3.23	3.46	3.66	3.88	3.86	4.09	4.03	4.30	4.26	4.58	4.40	4.77	5.16
39559.0	3.24	3.47	3.66	3.88	3.86	4.09	4.03	4.30	4.26	4.57	4.39	4.77	5.15
39562.0	3.24	3.47	3.66	3.88	3.86	4.09	4.03	4.30	4.26	4.57	4.39	4.76	5.15
39565.0	3.24	3.47	3.66	3.88	3.86	4.09	4.03	4.30	4.26	4.57	4.39	4.76	5.15
39568.0	3.24	3.47	3.66	3.88	3.86	4.09	4.03	4.29	4.26	4.57	4.39	4.76	5.15
39571.0	3.25	3.47	3.66	3.88	3.87	4.09	4.03	4.29	4.26	4.57	4.39	4.76	5.15
39574.0	3.25	3.47	3.66	3.88	3.87	4.09	4.03	4.29	4.26	4.57	4.38	4.76	5.16
39577.0	3.25	3.48	3.67	3.88	3.87	4.09	4.02	4.29	4.25	4.56	4.38	4.76	5.15
39580.0	3.25	3.48	3.67	3.88	3.87	4.09	4.02	4.29	4.25	4.56	4.38	4.75	5.15
39583.0	3.26	3.48	3.67	3.88	3.87	4.09	4.02	4.29	4.25	4.56	4.38	4.75	5.15
39586.0	3.26	3.48	3.67	3.88	3.87	4.08	4.02	4.28	4.25	4.56	4.38	4.75	5.14
39589.0	3.26	3.48	3.67	3.88	3.87	4.08	4.02	4.28	4.25	4.56	4.37	4.75	5.14

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39591.9	3.25	3.47	3.66	3.87	3.86	4.07	4.01	4.27	4.24	4.54	4.36	4.73	5.12
39594.8	3.24	3.46	3.65	3.86	3.85	4.06	4.00	4.26	4.22	4.53	4.35	4.72	5.11
39597.7	3.23	3.45	3.64	3.85	3.84	4.05	3.99	4.25	4.21	4.51	4.34	4.70	5.09
39600.6	3.22	3.45	3.63	3.84	3.83	4.04	3.98	4.24	4.20	4.50	4.33	4.69	5.07
39603.5	3.21	3.44	3.62	3.83	3.82	4.03	3.97	4.23	4.19	4.49	4.31	4.67	5.06
39606.4	3.21	3.43	3.61	3.82	3.81	4.02	3.96	4.21	4.18	4.47	4.30	4.66	5.04
39609.3	3.20	3.42	3.61	3.82	3.80	4.02	3.95	4.20	4.17	4.46	4.29	4.64	5.02
39612.2	3.19	3.41	3.60	3.81	3.79	4.01	3.95	4.19	4.16	4.45	4.28	4.63	5.01
39615.1	3.18	3.40	3.59	3.80	3.78	4.00	3.94	4.18	4.15	4.44	4.27	4.62	4.99
39618.0	3.18	3.40	3.58	3.79	3.77	3.99	3.93	4.17	4.14	4.43	4.26	4.60	4.98
39620.9	3.17	3.39	3.57	3.78	3.77	3.98	3.92	4.16	4.13	4.41	4.25	4.59	4.96
39623.8	3.16	3.38	3.56	3.77	3.76	3.97	3.91	4.15	4.12	4.40	4.24	4.58	4.95
39626.7	3.16	3.38	3.56	3.76	3.75	3.96	3.90	4.15	4.12	4.39	4.23	4.57	4.93
39629.6	3.15	3.37	3.55	3.76	3.74	3.95	3.89	4.14	4.11	4.38	4.22	4.56	4.92
39632.5	3.14	3.36	3.54	3.75	3.73	3.95	3.89	4.13	4.10	4.37	4.21	4.54	4.91
39635.4	3.14	3.36	3.54	3.74	3.73	3.94	3.88	4.12	4.09	4.36	4.20	4.53	4.89
39638.3	3.13	3.35	3.53	3.73	3.72	3.93	3.87	4.11	4.08	4.35	4.19	4.52	4.88
39641.2	3.13	3.34	3.52	3.72	3.71	3.92	3.86	4.10	4.07	4.34	4.18	4.51	4.86
39644.1	3.12	3.34	3.52	3.72	3.70	3.92	3.86	4.10	4.07	4.33	4.17	4.50	4.85
39647.0	3.12	3.33	3.51	3.71	3.70	3.91	3.85	4.09	4.06	4.32	4.17	4.49	4.84
39649.9	3.11	3.33	3.50	3.70	3.69	3.90	3.84	4.08	4.05	4.31	4.16	4.48	4.83
39652.8	3.11	3.32	3.50	3.70	3.68	3.89	3.83	4.07	4.04	4.30	4.15	4.47	4.82
39655.7	3.11	3.32	3.49	3.69	3.68	3.89	3.83	4.07	4.04	4.29	4.14	4.46	4.80
39658.6	3.10	3.31	3.49	3.68	3.67	3.88	3.82	4.06	4.03	4.29	4.14	4.45	4.79
39661.5	3.10	3.31	3.48	3.68	3.66	3.87	3.81	4.05	4.02	4.28	4.13	4.44	4.78
39664.4	3.10	3.30	3.48	3.67	3.66	3.87	3.81	4.05	4.02	4.27	4.12	4.43	4.77
39667.3	3.10	3.30	3.47	3.67	3.65	3.86	3.80	4.04	4.01	4.26	4.11	4.43	4.76
39670.2	3.09	3.29	3.47	3.66	3.65	3.85	3.80	4.03	4.00	4.25	4.11	4.42	4.75
39673.1	3.09	3.29	3.46	3.66	3.64	3.85	3.79	4.03	4.00	4.25	4.10	4.41	4.74
39676.0	3.09	3.29	3.46	3.65	3.64	3.84	3.78	4.02	3.99	4.24	4.09	4.40	4.73
39678.9	3.09	3.28	3.46	3.65	3.63	3.84	3.78	4.01	3.99	4.23	4.09	4.39	4.71
39681.8	3.09	3.28	3.45	3.64	3.63	3.83	3.77	4.01	3.98	4.23	4.08	4.38	4.70
39684.7	3.09	3.28	3.45	3.64	3.62	3.83	3.77	4.00	3.97	4.22	4.08	4.37	4.69
39687.6	3.08	3.28	3.45	3.63	3.62	3.82	3.76	4.00	3.97	4.21	4.07	4.37	4.68
39690.5	3.08	3.28	3.44	3.63	3.62	3.81	3.76	3.99	3.96	4.21	4.07	4.36	4.68
39693.4	3.08	3.27	3.44	3.62	3.61	3.81	3.75	3.99	3.96	4.20	4.06	4.35	4.67
39696.3	3.08	3.27	3.44	3.62	3.61	3.81	3.75	3.98	3.95	4.20	4.06	4.35	4.65
39699.2	3.08	3.27	3.43	3.62	3.60	3.80	3.74	3.98	3.95	4.19	4.05	4.34	4.64
39702.1	3.08	3.27	3.43	3.61	3.60	3.80	3.74	3.97	3.94	4.18	4.05	4.33	4.63
39705.0	3.08	3.27	3.43	3.61	3.60	3.79	3.74	3.97	3.94	4.18	4.04	4.32	4.62
39707.9	3.08	3.27	3.43	3.61	3.59	3.79	3.73	3.96	3.93	4.17	4.04	4.31	4.61
39710.8	3.08	3.26	3.42	3.60	3.59	3.78	3.73	3.96	3.93	4.16	4.03	4.31	4.61
39713.7	3.07	3.26	3.42	3.60	3.59	3.78	3.73	3.95	3.92	4.16	4.02	4.30	4.60
39716.6	3.07	3.25	3.42	3.60	3.58	3.78	3.72	3.95	3.92	4.15	4.02	4.29	4.60
39719.5	3.07	3.25	3.41	3.59	3.58	3.77	3.72	3.94	3.91	4.15	4.01	4.29	4.59
39722.4	3.06	3.25	3.41	3.59	3.58	3.77	3.72	3.94	3.91	4.14	4.01	4.28	4.58

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39725.3	3.06	3.24	3.40	3.59	3.57	3.77	3.71	3.93	3.90	4.13	4.00	4.27	4.57
39728.2	3.06	3.24	3.40	3.58	3.57	3.76	3.71	3.93	3.90	4.13	4.00	4.27	4.56
39731.1	3.05	3.24	3.40	3.58	3.57	3.76	3.71	3.92	3.89	4.12	3.99	4.26	4.55
39734.0	3.05	3.23	3.39	3.58	3.56	3.76	3.70	3.92	3.89	4.11	3.99	4.25	4.54
39736.9	3.05	3.23	3.39	3.57	3.56	3.75	3.70	3.91	3.89	4.11	3.98	4.25	4.54
39739.8	3.05	3.23	3.39	3.57	3.56	3.75	3.70	3.91	3.88	4.10	3.98	4.24	4.53
39742.7	3.04	3.22	3.38	3.57	3.55	3.75	3.69	3.90	3.88	4.10	3.97	4.24	4.53
39745.6	3.04	3.22	3.38	3.56	3.55	3.74	3.69	3.90	3.87	4.09	3.97	4.23	4.52
39748.5	3.04	3.22	3.38	3.56	3.55	3.74	3.69	3.90	3.87	4.09	3.96	4.22	4.52
39751.4	3.03	3.21	3.37	3.56	3.54	3.74	3.68	3.89	3.87	4.08	3.96	4.22	4.51
39754.3	3.03	3.21	3.37	3.55	3.54	3.73	3.68	3.89	3.86	4.08	3.95	4.22	4.51
39757.2	3.03	3.21	3.37	3.55	3.54	3.73	3.68	3.89	3.86	4.08	3.95	4.21	4.50
39760.1	3.02	3.20	3.36	3.55	3.53	3.73	3.67	3.88	3.86	4.07	3.95	4.21	4.50
39763.0	3.02	3.20	3.36	3.55	3.53	3.72	3.67	3.88	3.85	4.07	3.94	4.21	4.50
39765.9	3.02	3.20	3.36	3.54	3.53	3.72	3.67	3.88	3.85	4.06	3.94	4.20	4.49
39768.8	3.01	3.19	3.35	3.54	3.53	3.72	3.66	3.87	3.85	4.06	3.94	4.20	4.49
39771.7	3.01	3.19	3.35	3.54	3.52	3.71	3.66	3.87	3.84	4.06	3.93	4.19	4.48
39774.6	3.01	3.19	3.35	3.53	3.52	3.71	3.66	3.87	3.84	4.05	3.93	4.19	4.48
39777.5	3.00	3.18	3.34	3.53	3.52	3.71	3.66	3.86	3.84	4.05	3.93	4.18	4.47
39780.4	3.00	3.18	3.34	3.53	3.51	3.71	3.65	3.86	3.83	4.04	3.92	4.18	4.47
39783.3	3.00	3.18	3.34	3.52	3.51	3.70	3.65	3.86	3.83	4.04	3.92	4.18	4.47
39786.2	2.99	3.17	3.34	3.52	3.51	3.70	3.65	3.85	3.83	4.04	3.92	4.17	4.47
39789.1	2.99	3.17	3.33	3.52	3.51	3.70	3.64	3.85	3.82	4.03	3.91	4.17	4.47
39792.0	2.99	3.17	3.33	3.52	3.50	3.69	3.64	3.84	3.82	4.03	3.91	4.17	4.46
39794.9	2.98	3.16	3.33	3.51	3.50	3.69	3.64	3.84	3.82	4.03	3.91	4.16	4.46
39797.8	2.98	3.16	3.32	3.51	3.50	3.69	3.63	3.84	3.81	4.02	3.90	4.16	4.46
39800.7	2.98	3.16	3.32	3.51	3.49	3.68	3.63	3.83	3.81	4.02	3.90	4.16	4.46
39803.6	2.97	3.16	3.32	3.50	3.49	3.68	3.63	3.83	3.81	4.02	3.89	4.15	4.45
39806.5	2.97	3.15	3.32	3.50	3.49	3.68	3.63	3.83	3.80	4.01	3.89	4.15	4.45
39809.4	2.97	3.15	3.31	3.50	3.49	3.68	3.62	3.82	3.80	4.01	3.89	4.15	4.45
39812.3	2.97	3.15	3.31	3.50	3.48	3.67	3.62	3.82	3.80	4.01	3.88	4.14	4.45
39815.2	2.96	3.14	3.31	3.49	3.48	3.67	3.62	3.82	3.79	4.00	3.88	4.14	4.44
39818.1	2.96	3.14	3.30	3.49	3.48	3.67	3.61	3.81	3.79	4.00	3.88	4.14	4.44
39821.0	2.96	3.14	3.30	3.49	3.47	3.66	3.61	3.81	3.79	4.00	3.87	4.14	4.44
39823.9	2.96	3.14	3.30	3.49	3.48	3.67	3.61	3.81	3.79	4.00	3.88	4.14	4.44
39826.8	2.96	3.14	3.30	3.49	3.48	3.67	3.62	3.82	3.79	4.00	3.88	4.14	4.44
39829.7	2.95	3.14	3.30	3.49	3.48	3.67	3.62	3.82	3.80	4.00	3.88	4.14	4.44
39832.6	2.95	3.14	3.31	3.50	3.48	3.68	3.62	3.83	3.80	4.01	3.89	4.14	4.44
39835.5	2.95	3.14	3.31	3.50	3.49	3.68	3.63	3.83	3.81	4.01	3.89	4.14	4.44
39838.4	2.95	3.14	3.31	3.50	3.49	3.68	3.63	3.84	3.81	4.01	3.89	4.15	4.44
39841.3	2.95	3.14	3.31	3.50	3.49	3.68	3.63	3.84	3.82	4.01	3.90	4.15	4.45
39844.2	2.95	3.14	3.31	3.50	3.49	3.69	3.63	3.84	3.82	4.02	3.90	4.15	4.45
39847.1	2.95	3.14	3.31	3.51	3.49	3.69	3.64	3.85	3.82	4.02	3.91	4.15	4.45
39850.0	2.95	3.14	3.31	3.51	3.49	3.70	3.64	3.85	3.83	4.02	3.91	4.16	4.46
39852.9	2.95	3.14	3.31	3.51	3.50	3.70	3.64	3.86	3.83	4.03	3.91	4.16	4.46
39855.8	2.95	3.14	3.31	3.51	3.50	3.70	3.65	3.86	3.83	4.03	3.92	4.16	4.46

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39858.7	2.95	3.14	3.31	3.51	3.50	3.71	3.65	3.86	3.84	4.04	3.92	4.17	4.47
39861.6	2.95	3.14	3.31	3.52	3.50	3.71	3.65	3.87	3.84	4.04	3.93	4.17	4.47
39864.5	2.95	3.14	3.31	3.52	3.50	3.71	3.66	3.87	3.85	4.04	3.93	4.17	4.47
39867.4	2.96	3.14	3.31	3.52	3.50	3.72	3.66	3.88	3.85	4.05	3.94	4.18	4.48
39870.3	2.96	3.14	3.32	3.52	3.51	3.72	3.66	3.88	3.85	4.05	3.94	4.18	4.48
39873.2	2.96	3.14	3.32	3.52	3.51	3.72	3.66	3.88	3.86	4.06	3.94	4.18	4.48
39876.1	2.96	3.14	3.32	3.52	3.51	3.73	3.67	3.89	3.86	4.06	3.95	4.19	4.49
39879.0	2.96	3.14	3.32	3.53	3.51	3.73	3.67	3.90	3.87	4.07	3.96	4.20	4.50
39881.9	2.96	3.14	3.32	3.53	3.51	3.73	3.67	3.91	3.88	4.08	3.97	4.21	4.51
39884.8	2.96	3.14	3.32	3.53	3.51	3.74	3.67	3.91	3.89	4.09	3.98	4.22	4.52
39887.7	2.96	3.15	3.32	3.53	3.52	3.74	3.68	3.92	3.90	4.11	3.99	4.24	4.54
39890.6	2.96	3.15	3.32	3.53	3.52	3.74	3.68	3.93	3.90	4.12	4.00	4.25	4.57
39893.5	2.96	3.15	3.32	3.53	3.52	3.74	3.68	3.94	3.91	4.14	4.01	4.27	4.59
39896.4	2.96	3.15	3.32	3.53	3.52	3.75	3.68	3.94	3.91	4.14	4.01	4.28	4.59
39899.3	2.96	3.15	3.32	3.54	3.52	3.75	3.69	3.95	3.92	4.15	4.02	4.28	4.58
39902.2	2.96	3.15	3.33	3.54	3.52	3.75	3.69	3.95	3.92	4.16	4.03	4.29	4.59
39905.1	2.97	3.15	3.33	3.54	3.52	3.75	3.69	3.96	3.92	4.16	4.03	4.30	4.59
39908.0	2.97	3.15	3.33	3.54	3.53	3.76	3.69	3.96	3.93	4.17	4.04	4.31	4.60
39910.9	2.97	3.15	3.33	3.54	3.53	3.76	3.69	3.96	3.93	4.18	4.04	4.31	4.61
39913.8	2.97	3.15	3.33	3.54	3.53	3.76	3.70	3.97	3.93	4.18	4.05	4.32	4.61
39916.7	2.97	3.16	3.33	3.55	3.53	3.76	3.70	3.97	3.94	4.19	4.05	4.33	4.62
39919.6	2.97	3.16	3.33	3.55	3.53	3.77	3.70	3.97	3.94	4.20	4.06	4.34	4.63
39922.5	2.98	3.16	3.33	3.55	3.53	3.77	3.70	3.98	3.94	4.21	4.06	4.35	4.64
39925.4	2.98	3.16	3.34	3.55	3.54	3.77	3.70	3.98	3.95	4.21	4.07	4.35	4.64
39928.3	2.98	3.16	3.34	3.55	3.54	3.77	3.71	3.98	3.95	4.22	4.07	4.36	4.65
39931.2	2.98	3.16	3.34	3.55	3.54	3.78	3.71	3.99	3.95	4.23	4.07	4.37	4.66
39934.1	2.98	3.17	3.34	3.56	3.54	3.78	3.71	3.99	3.96	4.23	4.08	4.38	4.67
39937.0	2.98	3.17	3.34	3.56	3.54	3.78	3.71	4.00	3.96	4.24	4.08	4.38	4.67
39939.9	2.98	3.16	3.34	3.55	3.54	3.78	3.71	3.99	3.95	4.24	4.08	4.38	4.67
39942.8	2.98	3.16	3.33	3.55	3.53	3.77	3.70	3.98	3.95	4.23	4.07	4.38	4.67
39945.7	2.97	3.15	3.33	3.54	3.53	3.76	3.69	3.98	3.94	4.23	4.06	4.37	4.66
39948.6	2.97	3.15	3.32	3.54	3.52	3.76	3.69	3.97	3.94	4.22	4.06	4.37	4.66
39951.5	2.96	3.14	3.32	3.53	3.51	3.75	3.68	3.97	3.93	4.22	4.05	4.37	4.66
39954.4	2.96	3.14	3.31	3.52	3.51	3.75	3.68	3.96	3.93	4.21	4.05	4.36	4.66
39957.3	2.96	3.13	3.31	3.52	3.50	3.74	3.67	3.96	3.92	4.21	4.04	4.36	4.65
39960.2	2.95	3.13	3.30	3.51	3.50	3.74	3.67	3.95	3.92	4.20	4.04	4.36	4.65
39963.1	2.95	3.13	3.30	3.51	3.49	3.73	3.66	3.95	3.91	4.20	4.03	4.35	4.65
39966.0	2.95	3.12	3.29	3.50	3.49	3.73	3.66	3.94	3.91	4.19	4.03	4.35	4.65
39968.9	2.94	3.12	3.29	3.50	3.48	3.72	3.65	3.94	3.90	4.19	4.02	4.34	4.64
39971.8	2.94	3.11	3.28	3.49	3.48	3.71	3.65	3.93	3.90	4.18	4.02	4.34	4.64
39974.7	2.94	3.11	3.28	3.49	3.47	3.71	3.64	3.93	3.89	4.18	4.01	4.34	4.64
39977.6	2.93	3.10	3.27	3.48	3.47	3.70	3.64	3.92	3.89	4.17	4.01	4.33	4.63
39980.5	2.93	3.10	3.27	3.48	3.46	3.70	3.63	3.92	3.88	4.17	4.00	4.33	4.63
39983.4	2.93	3.10	3.26	3.47	3.46	3.69	3.63	3.91	3.88	4.16	4.00	4.32	4.63
39986.3	2.92	3.09	3.26	3.47	3.45	3.69	3.62	3.91	3.87	4.16	3.99	4.32	4.62
39989.2	2.92	3.09	3.26	3.46	3.45	3.68	3.62	3.90	3.87	4.15	3.99	4.31	4.62

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
39992.1	2.92	3.09	3.25	3.46	3.44	3.68	3.61	3.90	3.86	4.15	3.98	4.31	4.62
39995.0	2.92	3.08	3.25	3.45	3.44	3.67	3.61	3.89	3.86	4.14	3.98	4.31	4.62
39997.9	2.91	3.08	3.24	3.45	3.43	3.67	3.60	3.89	3.85	4.14	3.97	4.30	4.61
40000.8	2.91	3.08	3.24	3.45	3.43	3.66	3.60	3.88	3.85	4.13	3.97	4.30	4.61
40003.7	2.91	3.07	3.23	3.44	3.43	3.66	3.59	3.88	3.84	4.13	3.96	4.29	4.61
40006.6	2.91	3.07	3.23	3.44	3.42	3.66	3.59	3.87	3.84	4.13	3.96	4.29	4.60
40009.5	2.90	3.07	3.23	3.43	3.42	3.65	3.58	3.87	3.83	4.12	3.96	4.29	4.60
40012.4	2.90	3.06	3.22	3.43	3.41	3.65	3.58	3.86	3.83	4.12	3.95	4.28	4.60
40015.3	2.90	3.06	3.22	3.42	3.41	3.64	3.57	3.86	3.82	4.11	3.95	4.28	4.59
40018.2	2.90	3.06	3.22	3.42	3.40	3.64	3.57	3.85	3.82	4.11	3.94	4.27	4.59
40021.1	2.90	3.05	3.21	3.42	3.40	3.63	3.56	3.85	3.81	4.10	3.94	4.27	4.59
40024.0	2.89	3.05	3.21	3.41	3.40	3.63	3.56	3.84	3.81	4.10	3.93	4.26	4.59
40026.9	2.89	3.05	3.21	3.41	3.39	3.62	3.56	3.84	3.80	4.10	3.93	4.26	4.58
40029.8	2.89	3.05	3.20	3.40	3.39	3.62	3.55	3.84	3.80	4.09	3.93	4.26	4.58
40032.7	2.89	3.04	3.20	3.40	3.38	3.62	3.55	3.83	3.80	4.09	3.92	4.25	4.58
40035.6	2.89	3.04	3.20	3.40	3.38	3.61	3.54	3.83	3.79	4.08	3.92	4.25	4.57
40038.5	2.89	3.04	3.19	3.39	3.38	3.61	3.54	3.82	3.79	4.08	3.91	4.24	4.57
40041.4	2.89	3.04	3.19	3.39	3.37	3.60	3.54	3.82	3.78	4.07	3.91	4.24	4.57
40044.3	2.89	3.03	3.19	3.38	3.37	3.60	3.53	3.81	3.78	4.07	3.90	4.24	4.57
40047.2	2.89	3.03	3.18	3.38	3.37	3.60	3.53	3.81	3.77	4.07	3.90	4.23	4.56
40050.1	2.88	3.03	3.18	3.38	3.36	3.59	3.52	3.81	3.77	4.06	3.90	4.23	4.56
40053.0	2.88	3.03	3.18	3.37	3.36	3.59	3.52	3.80	3.77	4.06	3.89	4.23	4.56
40055.9	2.88	3.02	3.17	3.37	3.36	3.58	3.52	3.80	3.76	4.05	3.89	4.22	4.55
40058.9	2.87	3.02	3.17	3.37	3.35	3.58	3.51	3.79	3.76	4.05	3.88	4.21	4.54
40061.9	2.86	3.01	3.16	3.36	3.35	3.57	3.51	3.79	3.75	4.04	3.88	4.21	4.53
40064.8	2.86	3.01	3.16	3.36	3.34	3.57	3.50	3.79	3.75	4.04	3.87	4.20	4.53
40067.8	2.85	3.00	3.15	3.35	3.34	3.57	3.50	3.78	3.75	4.03	3.87	4.19	4.52
40070.7	2.84	2.99	3.15	3.35	3.33	3.56	3.49	3.78	3.74	4.03	3.86	4.19	4.51
40073.6	2.84	2.99	3.14	3.34	3.33	3.56	3.49	3.77	3.74	4.02	3.86	4.18	4.51
40076.6	2.83	2.98	3.14	3.34	3.32	3.55	3.49	3.77	3.73	4.01	3.85	4.17	4.50
40079.6	2.82	2.98	3.13	3.33	3.32	3.55	3.48	3.76	3.73	4.01	3.85	4.17	4.49
40082.5	2.82	2.97	3.13	3.33	3.31	3.54	3.48	3.76	3.72	4.00	3.84	4.16	4.48
40085.4	2.81	2.97	3.12	3.32	3.31	3.54	3.47	3.75	3.72	3.99	3.84	4.15	4.47
40088.4	2.81	2.96	3.12	3.32	3.30	3.53	3.47	3.75	3.71	3.99	3.83	4.15	4.47
40091.4	2.80	2.96	3.11	3.31	3.30	3.53	3.46	3.74	3.71	3.98	3.82	4.14	4.46
40094.3	2.80	2.95	3.11	3.31	3.29	3.53	3.46	3.73	3.70	3.97	3.82	4.13	4.45
40097.3	2.79	2.95	3.10	3.30	3.29	3.52	3.45	3.73	3.69	3.97	3.81	4.13	4.44
40100.2	2.78	2.94	3.10	3.30	3.28	3.52	3.45	3.72	3.69	3.96	3.80	4.12	4.43
40103.1	2.78	2.94	3.09	3.29	3.28	3.51	3.44	3.71	3.68	3.95	3.80	4.11	4.42
40106.1	2.77	2.93	3.09	3.29	3.27	3.50	3.44	3.71	3.67	3.95	3.79	4.10	4.41
40109.1	2.77	2.93	3.08	3.28	3.27	3.50	3.43	3.70	3.67	3.94	3.78	4.10	4.40
40112.0	2.76	2.92	3.08	3.28	3.26	3.49	3.43	3.69	3.66	3.93	3.78	4.09	4.39
40114.9	2.76	2.92	3.07	3.27	3.26	3.49	3.42	3.69	3.65	3.92	3.77	4.08	4.38
40117.9	2.75	2.91	3.07	3.27	3.25	3.48	3.41	3.68	3.65	3.92	3.76	4.07	4.37
40120.9	2.75	2.90	3.06	3.26	3.25	3.47	3.41	3.67	3.64	3.91	3.75	4.06	4.36
40123.8	2.74	2.90	3.05	3.26	3.24	3.47	3.40	3.67	3.63	3.90	3.75	4.05	4.35

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
40126.8	2.74	2.89	3.05	3.25	3.24	3.46	3.40	3.66	3.63	3.89	3.74	4.04	4.34
40129.7	2.73	2.89	3.04	3.24	3.23	3.45	3.39	3.65	3.62	3.88	3.73	4.03	4.33
40132.6	2.73	2.88	3.04	3.24	3.22	3.45	3.38	3.64	3.61	3.87	3.72	4.02	4.32
40135.6	2.72	2.88	3.03	3.23	3.22	3.44	3.38	3.63	3.60	3.87	3.71	4.01	4.31
40138.6	2.72	2.87	3.03	3.23	3.21	3.43	3.37	3.63	3.59	3.86	3.71	4.00	4.30
40141.5	2.71	2.86	3.02	3.22	3.21	3.42	3.36	3.62	3.59	3.85	3.70	3.99	4.29
40144.4	2.71	2.86	3.01	3.21	3.20	3.42	3.35	3.61	3.58	3.84	3.69	3.98	4.28
40147.4	2.70	2.85	3.01	3.21	3.19	3.41	3.35	3.60	3.57	3.83	3.68	3.97	4.27
40150.4	2.69	2.84	3.00	3.20	3.19	3.40	3.34	3.59	3.56	3.82	3.67	3.96	4.25
40153.3	2.69	2.84	3.00	3.19	3.18	3.39	3.33	3.59	3.55	3.81	3.66	3.95	4.24
40156.3	2.68	2.83	2.99	3.19	3.17	3.39	3.32	3.58	3.55	3.80	3.66	3.94	4.23
40159.2	2.67	2.83	2.98	3.18	3.16	3.38	3.32	3.57	3.54	3.78	3.65	3.93	4.22
40162.1	2.67	2.82	2.98	3.17	3.16	3.37	3.31	3.56	3.53	3.77	3.64	3.91	4.21
40165.1	2.66	2.81	2.97	3.16	3.15	3.36	3.30	3.55	3.52	3.76	3.63	3.90	4.20
40168.1	2.65	2.81	2.96	3.16	3.14	3.35	3.29	3.54	3.51	3.75	3.62	3.89	4.19
40171.0	2.65	2.80	2.96	3.15	3.14	3.35	3.29	3.53	3.50	3.74	3.60	3.88	4.18
40173.9	2.65	2.81	2.96	3.16	3.14	3.35	3.29	3.54	3.51	3.74	3.61	3.89	4.19
40176.8	2.66	2.81	2.97	3.16	3.15	3.36	3.30	3.55	3.52	3.75	3.62	3.90	4.20
40179.7	2.66	2.82	2.98	3.17	3.16	3.37	3.31	3.56	3.53	3.76	3.63	3.90	4.21
40182.6	2.67	2.82	2.98	3.18	3.16	3.38	3.31	3.56	3.53	3.77	3.63	3.91	4.22
40185.5	2.67	2.83	2.99	3.18	3.17	3.38	3.32	3.57	3.54	3.78	3.64	3.92	4.23
40188.4	2.68	2.84	3.00	3.19	3.18	3.39	3.33	3.58	3.55	3.79	3.65	3.93	4.24
40191.3	2.68	2.84	3.00	3.20	3.18	3.40	3.34	3.59	3.56	3.80	3.66	3.94	4.25
40194.2	2.69	2.85	3.01	3.21	3.19	3.41	3.35	3.60	3.57	3.80	3.67	3.95	4.26
40197.1	2.69	2.86	3.02	3.21	3.20	3.42	3.35	3.60	3.57	3.81	3.68	3.96	4.27
40200.0	2.70	2.86	3.02	3.22	3.21	3.42	3.36	3.61	3.58	3.82	3.68	3.97	4.28
40202.9	2.71	2.87	3.03	3.23	3.21	3.43	3.37	3.62	3.59	3.83	3.69	3.98	4.29
40205.8	2.71	2.88	3.04	3.24	3.22	3.44	3.38	3.63	3.60	3.84	3.70	3.99	4.30
40208.7	2.72	2.88	3.05	3.25	3.23	3.45	3.39	3.64	3.61	3.85	3.71	4.00	4.31
40211.6	2.73	2.89	3.05	3.25	3.24	3.46	3.40	3.65	3.62	3.86	3.72	4.01	4.32
40214.5	2.73	2.90	3.06	3.26	3.25	3.47	3.40	3.66	3.63	3.87	3.73	4.02	4.33
40217.4	2.74	2.91	3.07	3.27	3.26	3.48	3.41	3.67	3.64	3.88	3.74	4.03	4.35
40220.3	2.75	2.91	3.08	3.28	3.27	3.49	3.42	3.68	3.65	3.89	3.75	4.05	4.36
40223.2	2.75	2.92	3.09	3.29	3.27	3.50	3.43	3.69	3.66	3.90	3.76	4.06	4.37
40226.1	2.76	2.93	3.10	3.30	3.28	3.51	3.44	3.70	3.66	3.91	3.77	4.07	4.39
40229.0	2.77	2.94	3.10	3.31	3.29	3.52	3.45	3.71	3.67	3.93	3.78	4.08	4.40
40231.9	2.78	2.95	3.11	3.32	3.30	3.53	3.46	3.72	3.68	3.94	3.79	4.09	4.41
40234.8	2.78	2.95	3.12	3.33	3.31	3.54	3.47	3.73	3.70	3.95	3.80	4.10	4.42
40237.7	2.79	2.96	3.13	3.34	3.32	3.55	3.48	3.74	3.71	3.96	3.81	4.12	4.44
40240.6	2.80	2.97	3.14	3.35	3.33	3.56	3.49	3.75	3.72	3.98	3.82	4.13	4.46
40243.5	2.81	2.98	3.15	3.36	3.34	3.57	3.50	3.76	3.73	3.99	3.84	4.15	4.47
40246.4	2.82	2.99	3.16	3.37	3.35	3.58	3.51	3.77	3.74	4.00	3.85	4.16	4.49
40249.3	2.82	3.00	3.17	3.38	3.36	3.59	3.53	3.78	3.75	4.02	3.86	4.18	4.51
40252.2	2.83	3.01	3.18	3.39	3.37	3.60	3.54	3.79	3.76	4.03	3.87	4.19	4.52
40255.1	2.84	3.02	3.19	3.40	3.38	3.61	3.55	3.80	3.77	4.04	3.88	4.20	4.54
40258.0	2.85	3.03	3.20	3.41	3.40	3.63	3.56	3.82	3.78	4.05	3.89	4.21	4.55

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
40260.9	2.86	3.04	3.21	3.42	3.41	3.64	3.57	3.83	3.80	4.06	3.91	4.22	4.56
40263.8	2.87	3.05	3.22	3.43	3.42	3.65	3.58	3.84	3.81	4.07	3.92	4.23	4.57
40266.7	2.88	3.06	3.23	3.45	3.43	3.66	3.60	3.85	3.82	4.09	3.93	4.25	4.59
40269.6	2.89	3.07	3.24	3.46	3.44	3.67	3.61	3.87	3.83	4.10	3.94	4.26	4.60
40272.5	2.90	3.08	3.26	3.47	3.46	3.69	3.62	3.88	3.85	4.11	3.95	4.27	4.61
40275.4	2.91	3.09	3.27	3.48	3.47	3.70	3.64	3.89	3.86	4.12	3.97	4.28	4.62
40278.3	2.92	3.10	3.28	3.50	3.48	3.71	3.65	3.90	3.87	4.13	3.98	4.29	4.64
40281.2	2.93	3.12	3.29	3.51	3.49	3.73	3.66	3.91	3.88	4.14	3.99	4.30	4.65
40284.1	2.95	3.13	3.30	3.52	3.51	3.74	3.67	3.93	3.89	4.15	4.00	4.31	4.66
40287.0	2.96	3.14	3.32	3.54	3.52	3.75	3.69	3.94	3.91	4.17	4.01	4.33	4.67
40289.9	2.96	3.14	3.32	3.54	3.52	3.75	3.68	3.93	3.90	4.16	4.01	4.32	4.67
40292.8	2.95	3.14	3.32	3.53	3.52	3.74	3.68	3.93	3.90	4.16	4.01	4.32	4.67
40295.6	2.95	3.14	3.32	3.53	3.52	3.74	3.68	3.93	3.90	4.16	4.00	4.32	4.68
40298.5	2.95	3.14	3.31	3.53	3.52	3.74	3.67	3.93	3.89	4.16	4.00	4.32	4.68
40301.4	2.95	3.14	3.31	3.53	3.52	3.73	3.67	3.92	3.89	4.15	4.00	4.32	4.67
40304.3	2.95	3.13	3.31	3.53	3.51	3.73	3.67	3.92	3.89	4.15	4.00	4.32	4.67
40307.1	2.95	3.13	3.31	3.53	3.51	3.72	3.66	3.91	3.88	4.15	3.99	4.32	4.67
40310.0	2.95	3.13	3.31	3.53	3.51	3.72	3.66	3.91	3.88	4.15	3.99	4.32	4.66
40312.9	2.95	3.13	3.31	3.52	3.51	3.72	3.66	3.91	3.88	4.15	3.99	4.32	4.66
40315.8	2.95	3.13	3.31	3.52	3.51	3.72	3.66	3.91	3.88	4.14	3.99	4.31	4.66
40318.6	2.95	3.14	3.32	3.52	3.51	3.72	3.65	3.91	3.88	4.14	3.99	4.31	4.66
40321.5	2.95	3.14	3.32	3.52	3.51	3.71	3.65	3.91	3.87	4.14	3.99	4.31	4.65
40324.4	2.95	3.14	3.32	3.52	3.51	3.72	3.65	3.91	3.88	4.14	3.99	4.30	4.66
40327.3	2.96	3.14	3.32	3.52	3.51	3.72	3.65	3.91	3.88	4.14	3.99	4.31	4.66
40330.1	2.96	3.14	3.32	3.52	3.51	3.72	3.65	3.91	3.88	4.15	3.99	4.31	4.67
40333.0	2.96	3.14	3.32	3.52	3.51	3.72	3.66	3.92	3.88	4.16	4.00	4.32	4.67
40335.9	2.96	3.15	3.33	3.52	3.51	3.72	3.66	3.92	3.89	4.16	4.00	4.32	4.68
40338.8	2.96	3.15	3.33	3.52	3.51	3.73	3.66	3.93	3.89	4.17	4.01	4.33	4.68
40341.6	2.96	3.15	3.33	3.53	3.51	3.73	3.67	3.93	3.90	4.18	4.01	4.34	4.69
40344.5	2.97	3.15	3.33	3.53	3.51	3.74	3.67	3.94	3.90	4.19	4.02	4.35	4.70
40347.4	2.97	3.16	3.33	3.53	3.52	3.74	3.67	3.95	3.91	4.19	4.03	4.36	4.71
40350.3	2.97	3.16	3.34	3.54	3.52	3.75	3.68	3.95	3.92	4.20	4.04	4.37	4.73
40353.1	2.98	3.16	3.34	3.54	3.53	3.75	3.69	3.96	3.93	4.21	4.05	4.38	4.75
40356.0	2.98	3.17	3.34	3.55	3.53	3.76	3.69	3.97	3.93	4.22	4.05	4.39	4.75
40358.9	2.99	3.17	3.34	3.55	3.54	3.77	3.70	3.98	3.94	4.23	4.06	4.40	4.77
40361.8	2.99	3.18	3.35	3.55	3.54	3.77	3.70	3.98	3.95	4.24	4.07	4.41	4.78
40364.6	2.99	3.18	3.35	3.56	3.54	3.77	3.71	3.99	3.95	4.24	4.07	4.42	4.79
40367.5	3.00	3.19	3.35	3.56	3.55	3.78	3.71	4.00	3.96	4.25	4.08	4.43	4.80
40370.4	3.01	3.19	3.36	3.57	3.55	3.79	3.72	4.01	3.97	4.26	4.10	4.44	4.81
40373.3	3.01	3.20	3.36	3.58	3.56	3.80	3.73	4.02	3.98	4.28	4.11	4.45	4.83
40376.1	3.02	3.20	3.37	3.58	3.57	3.81	3.74	4.03	3.99	4.29	4.12	4.47	4.84
40379.0	3.03	3.21	3.37	3.59	3.58	3.82	3.75	4.04	4.00	4.30	4.13	4.48	4.87
40381.9	3.03	3.21	3.38	3.60	3.58	3.83	3.76	4.05	4.01	4.31	4.14	4.49	4.89
40384.8	3.04	3.22	3.39	3.61	3.59	3.84	3.77	4.07	4.03	4.33	4.16	4.51	4.90
40387.6	3.05	3.22	3.40	3.62	3.60	3.85	3.78	4.08	4.04	4.34	4.17	4.53	4.92
40390.5	3.06	3.23	3.40	3.63	3.61	3.86	3.79	4.09	4.05	4.36	4.19	4.54	4.94

Notes

1. Velocities are provided for Hutt River branches only.
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Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
40393.4	3.07	3.24	3.41	3.64	3.62	3.88	3.80	4.11	4.07	4.38	4.20	4.56	4.96
40396.3	3.08	3.25	3.42	3.65	3.63	3.89	3.81	4.12	4.08	4.39	4.22	4.58	4.98
40399.1	3.09	3.26	3.43	3.66	3.65	3.90	3.83	4.14	4.10	4.41	4.23	4.59	5.01
40402.0	3.10	3.27	3.44	3.67	3.66	3.92	3.84	4.16	4.11	4.43	4.25	4.61	5.03
40405.0	3.10	3.27	3.44	3.68	3.66	3.92	3.84	4.16	4.12	4.43	4.26	4.61	5.05
40408.0	3.10	3.27	3.44	3.68	3.66	3.92	3.84	4.16	4.12	4.43	4.26	4.62	5.06
40411.0	3.10	3.27	3.44	3.68	3.66	3.92	3.84	4.16	4.12	4.44	4.26	4.63	5.06
40414.0	3.10	3.27	3.45	3.68	3.66	3.93	3.85	4.17	4.13	4.45	4.27	4.64	5.08
40417.0	3.10	3.27	3.45	3.68	3.67	3.93	3.85	4.18	4.14	4.46	4.27	4.65	5.08
40420.0	3.10	3.27	3.45	3.69	3.67	3.94	3.86	4.18	4.14	4.46	4.28	4.65	5.09
40423.0	3.10	3.27	3.45	3.69	3.67	3.94	3.86	4.19	4.15	4.47	4.28	4.66	5.10
40426.0	3.10	3.27	3.45	3.69	3.67	3.94	3.86	4.19	4.15	4.47	4.29	4.66	5.11
40429.0	3.10	3.27	3.45	3.69	3.67	3.95	3.86	4.20	4.15	4.48	4.30	4.66	5.12
40432.0	3.10	3.27	3.45	3.69	3.68	3.95	3.87	4.20	4.16	4.48	4.29	4.67	5.11
40435.0	3.10	3.27	3.46	3.69	3.68	3.95	3.87	4.20	4.16	4.49	4.30	4.67	5.13
40438.0	3.11	3.28	3.46	3.70	3.68	3.95	3.87	4.20	4.16	4.49	4.30	4.68	5.12
40441.0	3.11	3.28	3.46	3.70	3.68	3.95	3.87	4.20	4.16	4.49	4.30	4.69	5.13
40444.0	3.11	3.28	3.46	3.70	3.68	3.96	3.87	4.21	4.16	4.50	4.31	4.69	5.14
40447.0	3.11	3.28	3.46	3.70	3.68	3.96	3.88	4.20	4.16	4.50	4.31	4.70	5.14
40450.0	3.11	3.28	3.46	3.70	3.68	3.96	3.88	4.21	4.17	4.51	4.31	4.71	5.15
40453.0	3.11	3.28	3.46	3.70	3.69	3.96	3.88	4.21	4.17	4.51	4.31	4.71	5.15
40456.0	3.11	3.28	3.46	3.70	3.69	3.96	3.88	4.21	4.17	4.51	4.32	4.72	5.16
40459.0	3.11	3.28	3.47	3.70	3.69	3.97	3.88	4.22	4.17	4.52	4.32	4.73	5.16
40462.0	3.11	3.28	3.47	3.71	3.69	3.97	3.88	4.22	4.18	4.52	4.32	4.73	5.17
40465.0	3.11	3.28	3.47	3.71	3.69	3.97	3.89	4.22	4.18	4.53	4.33	4.74	5.18
40468.0	3.11	3.29	3.47	3.71	3.69	3.97	3.89	4.23	4.18	4.53	4.33	4.74	5.19
40471.0	3.11	3.29	3.47	3.71	3.69	3.97	3.89	4.23	4.18	4.53	4.33	4.74	5.20
40474.0	3.11	3.29	3.47	3.71	3.70	3.98	3.89	4.23	4.18	4.53	4.33	4.74	5.19
40477.0	3.11	3.29	3.48	3.71	3.70	3.98	3.89	4.23	4.18	4.53	4.33	4.74	5.20
40480.0	3.11	3.29	3.48	3.71	3.70	3.98	3.89	4.23	4.19	4.53	4.33	4.74	5.20
40483.0	3.11	3.29	3.48	3.72	3.70	3.98	3.89	4.23	4.19	4.53	4.33	4.74	5.20
40486.0	3.11	3.29	3.48	3.72	3.70	3.98	3.89	4.23	4.19	4.53	4.33	4.74	5.20
40489.0	3.11	3.29	3.48	3.72	3.70	3.98	3.89	4.23	4.19	4.53	4.33	4.74	5.20
40492.0	3.12	3.30	3.48	3.72	3.70	3.98	3.89	4.23	4.19	4.54	4.33	4.74	5.20
40495.0	3.12	3.30	3.48	3.72	3.70	3.98	3.89	4.23	4.19	4.54	4.33	4.75	5.20
40498.0	3.12	3.30	3.48	3.72	3.70	3.98	3.89	4.23	4.19	4.54	4.34	4.75	5.20
40501.0	3.12	3.30	3.48	3.72	3.71	3.98	3.90	4.23	4.19	4.54	4.34	4.75	5.20
40504.0	3.12	3.30	3.49	3.73	3.71	3.98	3.90	4.24	4.19	4.54	4.34	4.75	5.21
40507.0	3.12	3.30	3.49	3.73	3.71	3.99	3.90	4.24	4.19	4.54	4.34	4.76	5.21
40510.0	3.12	3.30	3.49	3.73	3.71	3.99	3.90	4.24	4.20	4.55	4.35	4.76	5.22
40513.0	3.12	3.31	3.49	3.73	3.72	3.99	3.91	4.25	4.20	4.55	4.35	4.77	5.22
40516.0	3.12	3.31	3.50	3.74	3.72	4.00	3.91	4.25	4.21	4.56	4.35	4.77	5.23
40519.0	3.11	3.31	3.50	3.73	3.71	3.99	3.90	4.24	4.20	4.55	4.34	4.76	5.21
40521.9	3.11	3.30	3.49	3.72	3.71	3.98	3.89	4.23	4.19	4.54	4.33	4.75	5.20
40524.9	3.10	3.30	3.49	3.72	3.70	3.97	3.89	4.23	4.18	4.53	4.33	4.74	5.19
40527.9	3.10	3.30	3.48	3.71	3.70	3.97	3.88	4.22	4.18	4.52	4.32	4.73	5.17

Notes

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Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
40530.9	3.09	3.29	3.48	3.71	3.69	3.96	3.88	4.21	4.17	4.52	4.31	4.73	5.16
40533.8	3.09	3.29	3.48	3.71	3.69	3.96	3.88	4.21	4.16	4.51	4.31	4.72	5.16
40536.8	3.09	3.29	3.47	3.71	3.69	3.95	3.89	4.20	4.16	4.51	4.30	4.72	5.16
40539.8	3.08	3.28	3.47	3.71	3.69	3.95	3.88	4.20	4.15	4.50	4.29	4.71	5.15
40542.8	3.08	3.28	3.46	3.70	3.68	3.94	3.87	4.19	4.15	4.49	4.28	4.69	5.14
40545.7	3.08	3.28	3.46	3.69	3.67	3.93	3.86	4.17	4.13	4.47	4.27	4.68	5.12
40548.7	3.07	3.27	3.45	3.68	3.67	3.92	3.86	4.16	4.12	4.45	4.26	4.66	5.11
40551.7	3.07	3.27	3.45	3.68	3.66	3.92	3.85	4.15	4.11	4.44	4.25	4.65	5.10
40554.7	3.07	3.27	3.45	3.68	3.66	3.91	3.84	4.15	4.11	4.43	4.24	4.64	5.09
40557.6	3.06	3.27	3.45	3.67	3.66	3.91	3.84	4.14	4.10	4.42	4.23	4.63	5.08
40560.6	3.06	3.26	3.45	3.67	3.65	3.90	3.83	4.13	4.10	4.41	4.22	4.62	5.07
40563.6	3.06	3.26	3.45	3.67	3.65	3.90	3.83	4.13	4.09	4.41	4.22	4.61	5.06
40566.6	3.06	3.26	3.45	3.66	3.65	3.90	3.83	4.12	4.09	4.40	4.21	4.60	5.05
40569.5	3.06	3.26	3.44	3.66	3.65	3.89	3.82	4.12	4.09	4.39	4.21	4.59	5.04
40572.5	3.06	3.26	3.44	3.66	3.65	3.89	3.82	4.11	4.08	4.39	4.20	4.59	5.03
40575.5	3.06	3.26	3.44	3.66	3.65	3.89	3.82	4.11	4.08	4.38	4.20	4.58	5.03
40578.4	3.06	3.26	3.44	3.66	3.65	3.88	3.82	4.10	4.07	4.38	4.20	4.57	5.02
40581.4	3.06	3.26	3.44	3.66	3.65	3.88	3.81	4.10	4.07	4.38	4.19	4.57	5.01
40584.4	3.06	3.26	3.44	3.66	3.65	3.88	3.81	4.10	4.07	4.38	4.19	4.56	5.00
40587.4	3.06	3.26	3.44	3.66	3.65	3.88	3.81	4.10	4.06	4.38	4.19	4.56	4.99
40590.3	3.06	3.26	3.44	3.66	3.65	3.88	3.81	4.10	4.06	4.38	4.19	4.56	4.98
40593.3	3.06	3.26	3.44	3.67	3.65	3.88	3.82	4.10	4.06	4.38	4.19	4.55	4.98
40596.3	3.06	3.26	3.44	3.67	3.65	3.88	3.82	4.10	4.06	4.38	4.19	4.55	4.97
40599.3	3.07	3.26	3.44	3.67	3.65	3.88	3.82	4.10	4.06	4.37	4.19	4.55	4.97
40602.2	3.07	3.26	3.44	3.67	3.65	3.88	3.82	4.10	4.06	4.37	4.19	4.55	4.96
40605.2	3.07	3.26	3.45	3.67	3.65	3.89	3.82	4.10	4.06	4.37	4.19	4.55	4.96
40608.2	3.07	3.27	3.45	3.67	3.65	3.89	3.83	4.10	4.06	4.37	4.19	4.55	4.96
40611.2	3.08	3.27	3.45	3.67	3.66	3.89	3.83	4.10	4.07	4.37	4.19	4.55	4.96
40614.1	3.08	3.27	3.45	3.67	3.66	3.90	3.83	4.10	4.07	4.37	4.19	4.55	4.96
40617.1	3.08	3.28	3.45	3.68	3.66	3.90	3.83	4.10	4.07	4.37	4.19	4.55	4.95
40620.1	3.09	3.28	3.46	3.68	3.66	3.90	3.84	4.11	4.08	4.37	4.20	4.55	4.95
40623.1	3.09	3.29	3.46	3.68	3.67	3.91	3.84	4.11	4.08	4.38	4.20	4.55	4.95
40626.0	3.10	3.29	3.47	3.69	3.67	3.91	3.85	4.12	4.09	4.39	4.21	4.56	4.96
40629.0	3.10	3.30	3.48	3.70	3.68	3.92	3.86	4.14	4.10	4.40	4.22	4.57	4.97
40631.9	3.10	3.29	3.47	3.70	3.68	3.93	3.86	4.14	4.11	4.40	4.22	4.58	4.97
40634.8	3.10	3.29	3.47	3.69	3.68	3.92	3.85	4.13	4.10	4.40	4.22	4.57	4.96
40637.8	3.10	3.29	3.47	3.69	3.67	3.92	3.85	4.13	4.10	4.39	4.21	4.56	4.95
40640.7	3.09	3.29	3.47	3.69	3.67	3.91	3.85	4.12	4.09	4.38	4.21	4.56	4.94
40643.6	3.09	3.28	3.46	3.68	3.67	3.91	3.84	4.12	4.09	4.37	4.20	4.55	4.94
40646.5	3.09	3.28	3.46	3.68	3.67	3.91	3.84	4.11	4.08	4.37	4.20	4.54	4.93
40649.4	3.08	3.28	3.46	3.68	3.66	3.91	3.84	4.11	4.08	4.36	4.19	4.54	4.92
40652.4	3.08	3.28	3.46	3.68	3.66	3.90	3.84	4.11	4.08	4.36	4.19	4.53	4.92
40655.3	3.08	3.27	3.45	3.68	3.66	3.90	3.84	4.11	4.08	4.36	4.19	4.53	4.91
40658.2	3.08	3.27	3.45	3.67	3.66	3.90	3.83	4.11	4.08	4.36	4.19	4.52	4.90
40661.1	3.07	3.27	3.45	3.67	3.66	3.90	3.83	4.11	4.08	4.36	4.19	4.52	4.90
40664.1	3.07	3.26	3.45	3.67	3.65	3.90	3.83	4.11	4.08	4.35	4.19	4.52	4.89

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
40667.0	3.07	3.26	3.44	3.67	3.65	3.90	3.83	4.11	4.07	4.35	4.19	4.52	4.89
40669.9	3.07	3.26	3.44	3.67	3.65	3.90	3.83	4.11	4.07	4.35	4.18	4.52	4.89
40672.8	3.06	3.26	3.44	3.66	3.65	3.89	3.83	4.10	4.07	4.35	4.18	4.51	4.89
40675.7	3.06	3.25	3.44	3.66	3.64	3.89	3.82	4.10	4.07	4.35	4.18	4.51	4.89
40678.7	3.06	3.25	3.43	3.66	3.64	3.89	3.82	4.10	4.07	4.35	4.18	4.52	4.89
40681.6	3.06	3.25	3.43	3.65	3.64	3.89	3.82	4.10	4.07	4.35	4.18	4.52	4.89
40684.5	3.05	3.25	3.43	3.65	3.63	3.89	3.81	4.10	4.07	4.35	4.18	4.51	4.89
40687.4	3.05	3.24	3.42	3.65	3.63	3.88	3.81	4.09	4.06	4.34	4.17	4.51	4.88
40690.3	3.05	3.24	3.42	3.64	3.63	3.88	3.81	4.09	4.06	4.33	4.17	4.50	4.87
40693.3	3.04	3.24	3.42	3.64	3.62	3.87	3.80	4.09	4.05	4.33	4.16	4.50	4.86
40696.2	3.04	3.24	3.42	3.64	3.62	3.87	3.80	4.08	4.05	4.32	4.16	4.49	4.86
40699.1	3.04	3.23	3.41	3.63	3.62	3.86	3.80	4.08	4.04	4.32	4.15	4.48	4.85
40702.0	3.04	3.23	3.41	3.63	3.61	3.86	3.79	4.07	4.04	4.31	4.15	4.47	4.84
40704.9	3.03	3.23	3.41	3.63	3.61	3.86	3.79	4.07	4.04	4.30	4.15	4.47	4.83
40707.9	3.03	3.22	3.41	3.62	3.61	3.85	3.78	4.06	4.03	4.30	4.14	4.46	4.82
40710.8	3.03	3.22	3.40	3.62	3.60	3.85	3.78	4.06	4.03	4.29	4.14	4.46	4.81
40713.7	3.03	3.22	3.40	3.62	3.60	3.85	3.78	4.06	4.03	4.29	4.14	4.45	4.80
40716.6	3.02	3.22	3.40	3.61	3.60	3.84	3.77	4.06	4.02	4.29	4.14	4.45	4.80
40719.6	3.02	3.21	3.40	3.61	3.60	3.84	3.77	4.06	4.02	4.29	4.13	4.45	4.79
40722.5	3.02	3.21	3.39	3.61	3.59	3.84	3.77	4.05	4.02	4.28	4.13	4.44	4.79
40725.4	3.02	3.21	3.39	3.61	3.59	3.83	3.77	4.05	4.02	4.28	4.13	4.44	4.79
40728.3	3.01	3.21	3.39	3.60	3.59	3.83	3.76	4.04	4.01	4.27	4.12	4.43	4.78
40731.2	3.01	3.21	3.39	3.60	3.58	3.83	3.76	4.04	4.01	4.27	4.12	4.43	4.78
40734.2	3.01	3.20	3.38	3.60	3.58	3.82	3.76	4.04	4.01	4.26	4.11	4.42	4.77
40737.1	3.01	3.20	3.38	3.59	3.58	3.82	3.75	4.03	4.00	4.26	4.11	4.41	4.76
40740.0	3.01	3.20	3.38	3.59	3.58	3.82	3.75	4.03	4.00	4.25	4.11	4.41	4.75
40743.0	3.00	3.19	3.37	3.58	3.57	3.81	3.74	4.02	3.99	4.25	4.10	4.40	4.74
40745.9	2.99	3.18	3.36	3.58	3.56	3.80	3.74	4.02	3.99	4.24	4.10	4.40	4.74
40748.9	2.98	3.17	3.35	3.57	3.55	3.80	3.73	4.01	3.98	4.24	4.09	4.39	4.73
40751.9	2.97	3.16	3.35	3.56	3.55	3.79	3.72	4.01	3.97	4.24	4.09	4.39	4.73
40754.9	2.96	3.15	3.34	3.56	3.54	3.78	3.72	4.00	3.97	4.23	4.08	4.38	4.72
40757.8	2.95	3.14	3.33	3.55	3.53	3.78	3.71	4.00	3.96	4.23	4.08	4.38	4.72
40760.8	2.94	3.14	3.32	3.54	3.53	3.77	3.70	3.99	3.96	4.22	4.07	4.37	4.71
40763.8	2.93	3.13	3.31	3.54	3.52	3.77	3.70	3.99	3.95	4.22	4.07	4.37	4.71
40766.8	2.93	3.12	3.31	3.53	3.52	3.76	3.69	3.98	3.95	4.22	4.06	4.37	4.71
40769.7	2.92	3.11	3.30	3.53	3.51	3.76	3.69	3.98	3.94	4.21	4.06	4.36	4.70
40772.7	2.91	3.10	3.29	3.52	3.50	3.75	3.68	3.97	3.94	4.21	4.06	4.36	4.70
40775.7	2.90	3.09	3.28	3.51	3.50	3.74	3.67	3.97	3.93	4.21	4.05	4.36	4.70
40778.7	2.89	3.09	3.28	3.51	3.49	3.74	3.67	3.96	3.93	4.21	4.05	4.36	4.69
40781.6	2.89	3.08	3.27	3.50	3.48	3.73	3.66	3.96	3.92	4.21	4.04	4.36	4.70
40784.6	2.88	3.07	3.26	3.49	3.48	3.73	3.66	3.95	3.92	4.21	4.04	4.36	4.70
40787.6	2.87	3.07	3.25	3.49	3.47	3.72	3.65	3.95	3.91	4.20	4.04	4.36	4.70
40790.6	2.87	3.06	3.25	3.48	3.46	3.72	3.65	3.95	3.91	4.20	4.03	4.36	4.69
40793.5	2.86	3.05	3.24	3.48	3.46	3.71	3.64	3.94	3.91	4.20	4.03	4.36	4.70
40796.5	2.85	3.05	3.23	3.47	3.45	3.71	3.64	3.94	3.90	4.20	4.03	4.36	4.70
40799.5	2.85	3.04	3.23	3.46	3.45	3.70	3.63	3.94	3.90	4.20	4.03	4.37	4.70

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
40802.4	2.84	3.03	3.22	3.46	3.44	3.70	3.63	3.93	3.90	4.21	4.03	4.37	4.71
40805.4	2.83	3.03	3.21	3.45	3.43	3.70	3.62	3.93	3.89	4.20	4.03	4.37	4.71
40808.4	2.83	3.02	3.21	3.45	3.43	3.69	3.62	3.93	3.89	4.20	4.02	4.37	4.71
40811.4	2.82	3.01	3.20	3.44	3.42	3.69	3.61	3.92	3.89	4.20	4.02	4.37	4.71
40814.3	2.81	3.01	3.20	3.43	3.42	3.68	3.61	3.92	3.88	4.20	4.02	4.37	4.71
40817.3	2.81	3.00	3.19	3.43	3.41	3.68	3.60	3.92	3.88	4.19	4.01	4.37	4.71
40820.3	2.80	3.00	3.18	3.42	3.40	3.67	3.60	3.91	3.87	4.19	4.01	4.37	4.71
40823.3	2.80	2.99	3.18	3.42	3.40	3.67	3.59	3.91	3.87	4.19	4.00	4.36	4.71
40826.2	2.79	2.99	3.17	3.41	3.39	3.66	3.59	3.90	3.87	4.18	4.00	4.36	4.71
40829.2	2.79	2.98	3.17	3.41	3.39	3.66	3.58	3.90	3.86	4.18	4.00	4.36	4.71
40832.2	2.78	2.98	3.16	3.40	3.38	3.65	3.58	3.90	3.86	4.18	3.99	4.35	4.71
40835.2	2.77	2.97	3.16	3.40	3.38	3.65	3.57	3.89	3.85	4.17	3.99	4.35	4.70
40838.1	2.77	2.97	3.15	3.39	3.37	3.64	3.57	3.89	3.85	4.17	3.99	4.35	4.70
40841.1	2.76	2.96	3.15	3.39	3.37	3.64	3.56	3.88	3.85	4.17	3.98	4.34	4.70
40844.1	2.76	2.96	3.15	3.38	3.37	3.64	3.56	3.88	3.84	4.16	3.98	4.34	4.69
40847.1	2.76	2.95	3.14	3.38	3.36	3.63	3.55	3.88	3.84	4.15	3.97	4.33	4.68
40850.0	2.75	2.95	3.14	3.37	3.36	3.63	3.55	3.87	3.83	4.15	3.97	4.32	4.68
40853.0	2.75	2.94	3.13	3.37	3.35	3.62	3.55	3.86	3.83	4.14	3.96	4.32	4.67
40855.9	2.75	2.94	3.13	3.37	3.36	3.62	3.55	3.87	3.83	4.14	3.96	4.32	4.67
40858.8	2.75	2.94	3.14	3.37	3.36	3.63	3.55	3.87	3.83	4.14	3.96	4.32	4.67
40861.8	2.75	2.95	3.14	3.38	3.36	3.63	3.55	3.87	3.83	4.15	3.96	4.32	4.67
40864.7	2.75	2.95	3.14	3.38	3.36	3.63	3.55	3.87	3.83	4.15	3.97	4.32	4.66
40867.6	2.75	2.95	3.14	3.38	3.36	3.63	3.56	3.87	3.84	4.15	3.97	4.32	4.66
40870.5	2.75	2.95	3.14	3.38	3.37	3.64	3.56	3.88	3.84	4.15	3.97	4.32	4.66
40873.4	2.76	2.96	3.15	3.39	3.37	3.64	3.56	3.88	3.84	4.15	3.97	4.32	4.66
40876.3	2.76	2.96	3.15	3.39	3.37	3.64	3.57	3.88	3.84	4.16	3.98	4.33	4.66
40879.3	2.76	2.96	3.15	3.39	3.37	3.64	3.57	3.89	3.85	4.16	3.98	4.33	4.66
40882.2	2.76	2.96	3.15	3.39	3.38	3.65	3.57	3.89	3.85	4.16	3.98	4.33	4.66
40885.1	2.76	2.96	3.16	3.40	3.38	3.65	3.58	3.90	3.86	4.17	3.99	4.33	4.66
40888.0	2.77	2.97	3.16	3.40	3.38	3.66	3.58	3.90	3.86	4.17	3.99	4.34	4.66
40890.9	2.77	2.97	3.16	3.40	3.39	3.66	3.58	3.90	3.87	4.17	4.00	4.34	4.67
40893.8	2.77	2.97	3.16	3.41	3.39	3.66	3.59	3.91	3.87	4.18	4.00	4.34	4.66
40896.8	2.77	2.98	3.17	3.41	3.39	3.67	3.59	3.91	3.87	4.18	4.00	4.34	4.66
40899.7	2.78	2.98	3.17	3.41	3.40	3.67	3.59	3.91	3.88	4.18	4.01	4.34	4.67
40902.6	2.78	2.98	3.17	3.42	3.40	3.68	3.60	3.92	3.88	4.19	4.01	4.34	4.67
40905.5	2.78	2.98	3.18	3.42	3.40	3.68	3.60	3.92	3.88	4.19	4.02	4.35	4.67
40908.4	2.79	2.99	3.18	3.43	3.41	3.68	3.61	3.93	3.89	4.19	4.02	4.35	4.67
40911.3	2.79	2.99	3.18	3.43	3.41	3.69	3.61	3.93	3.89	4.19	4.02	4.35	4.67
40914.3	2.79	2.99	3.19	3.43	3.42	3.69	3.61	3.94	3.90	4.20	4.03	4.35	4.67
40917.2	2.80	3.00	3.19	3.44	3.42	3.70	3.62	3.94	3.90	4.20	4.03	4.35	4.67
40920.1	2.80	3.00	3.19	3.44	3.43	3.70	3.63	3.95	3.91	4.20	4.04	4.36	4.68
40923.0	2.80	3.00	3.20	3.45	3.43	3.71	3.63	3.96	3.92	4.21	4.05	4.36	4.68
40925.9	2.81	3.01	3.20	3.45	3.44	3.72	3.64	3.96	3.93	4.21	4.05	4.37	4.69
40928.8	2.81	3.01	3.21	3.46	3.44	3.72	3.65	3.97	3.93	4.22	4.06	4.37	4.69
40931.8	2.82	3.02	3.21	3.47	3.45	3.73	3.65	3.98	3.94	4.22	4.06	4.38	4.70
40934.7	2.82	3.02	3.22	3.47	3.45	3.74	3.66	3.98	3.95	4.23	4.07	4.38	4.70

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
40937.6	2.83	3.02	3.22	3.48	3.46	3.75	3.67	3.99	3.95	4.23	4.07	4.39	4.71
40940.5	2.83	3.03	3.23	3.49	3.47	3.76	3.68	3.99	3.96	4.24	4.08	4.39	4.71
40943.4	2.83	3.03	3.24	3.50	3.48	3.77	3.69	4.00	3.97	4.24	4.08	4.40	4.72
40946.3	2.84	3.04	3.24	3.50	3.49	3.78	3.70	4.01	3.97	4.25	4.09	4.40	4.72
40949.3	2.84	3.04	3.25	3.51	3.49	3.79	3.71	4.01	3.98	4.26	4.10	4.41	4.73
40952.2	2.85	3.05	3.26	3.52	3.50	3.80	3.72	4.02	3.98	4.26	4.10	4.42	4.74
40955.1	2.85	3.06	3.26	3.53	3.51	3.80	3.73	4.03	3.99	4.27	4.11	4.43	4.76
40958.0	2.86	3.06	3.27	3.54	3.52	3.81	3.74	4.03	4.00	4.28	4.12	4.44	4.78
40960.9	2.86	3.06	3.27	3.54	3.52	3.81	3.73	4.03	3.99	4.28	4.11	4.44	4.78
40963.9	2.86	3.06	3.27	3.54	3.52	3.80	3.73	4.02	3.99	4.27	4.10	4.43	4.76
40966.8	2.86	3.07	3.27	3.54	3.52	3.80	3.73	4.01	3.98	4.26	4.10	4.42	4.75
40969.8	2.87	3.07	3.27	3.54	3.52	3.79	3.72	4.01	3.97	4.25	4.09	4.41	4.74
40972.7	2.87	3.07	3.27	3.54	3.52	3.79	3.72	4.00	3.97	4.25	4.08	4.41	4.74
40975.7	2.87	3.07	3.27	3.54	3.52	3.78	3.72	4.00	3.96	4.24	4.08	4.41	4.75
40978.6	2.87	3.07	3.27	3.54	3.52	3.78	3.71	4.00	3.96	4.24	4.08	4.41	4.75
40981.6	2.87	3.07	3.27	3.54	3.52	3.78	3.71	3.99	3.96	4.23	4.07	4.40	4.74
40984.5	2.87	3.07	3.27	3.53	3.52	3.77	3.70	3.98	3.95	4.22	4.06	4.39	4.73
40987.4	2.87	3.07	3.27	3.53	3.51	3.76	3.70	3.97	3.94	4.21	4.05	4.37	4.71
40990.4	2.87	3.07	3.27	3.53	3.51	3.76	3.69	3.97	3.93	4.20	4.04	4.36	4.69
40993.3	2.88	3.07	3.27	3.52	3.51	3.75	3.68	3.96	3.92	4.19	4.04	4.35	4.68
40996.3	2.88	3.07	3.27	3.52	3.50	3.74	3.68	3.95	3.91	4.18	4.03	4.34	4.67
40999.2	2.88	3.07	3.27	3.51	3.50	3.73	3.67	3.94	3.91	4.17	4.02	4.32	4.65
41002.2	2.88	3.07	3.27	3.51	3.49	3.73	3.66	3.93	3.90	4.16	4.01	4.31	4.64
41005.1	2.88	3.07	3.27	3.50	3.49	3.72	3.66	3.93	3.89	4.16	4.00	4.31	4.65
41008.1	2.88	3.07	3.26	3.50	3.48	3.72	3.65	3.92	3.89	4.16	4.00	4.31	4.65
41011.0	2.88	3.07	3.26	3.49	3.48	3.71	3.65	3.91	3.88	4.15	3.99	4.30	4.64
41013.9	2.88	3.07	3.26	3.49	3.47	3.70	3.64	3.90	3.87	4.14	3.98	4.29	4.62
41016.9	2.88	3.07	3.26	3.48	3.46	3.69	3.63	3.89	3.86	4.12	3.97	4.27	4.60
41019.8	2.88	3.07	3.25	3.47	3.46	3.68	3.62	3.88	3.85	4.11	3.96	4.26	4.58
41022.8	2.89	3.07	3.25	3.47	3.45	3.67	3.61	3.87	3.84	4.10	3.95	4.24	4.56
41025.7	2.89	3.07	3.25	3.46	3.44	3.66	3.60	3.86	3.83	4.08	3.93	4.23	4.55
41028.7	2.89	3.07	3.24	3.45	3.44	3.65	3.60	3.85	3.82	4.07	3.92	4.21	4.53
41031.6	2.89	3.06	3.24	3.44	3.43	3.65	3.59	3.84	3.81	4.06	3.91	4.20	4.52
41034.6	2.89	3.06	3.23	3.44	3.42	3.64	3.58	3.83	3.80	4.05	3.90	4.19	4.51
41037.5	2.89	3.06	3.23	3.43	3.41	3.63	3.57	3.82	3.79	4.04	3.89	4.18	4.50
41040.4	2.89	3.06	3.22	3.42	3.41	3.62	3.56	3.80	3.77	4.02	3.88	4.17	4.48
41043.4	2.89	3.06	3.22	3.41	3.40	3.61	3.55	3.79	3.76	4.01	3.86	4.15	4.46
41046.3	2.89	3.05	3.21	3.40	3.39	3.60	3.54	3.78	3.75	4.00	3.85	4.14	4.45
41049.3	2.89	3.05	3.20	3.39	3.38	3.58	3.53	3.77	3.74	3.98	3.84	4.12	4.43
41052.2	2.89	3.05	3.20	3.38	3.37	3.57	3.52	3.76	3.73	3.97	3.83	4.11	4.41
41055.2	2.89	3.05	3.19	3.38	3.36	3.56	3.51	3.75	3.72	3.96	3.81	4.09	4.40
41058.1	2.89	3.04	3.18	3.37	3.35	3.55	3.50	3.74	3.71	3.95	3.80	4.09	4.40
41061.1	2.89	3.04	3.17	3.36	3.34	3.54	3.49	3.73	3.70	3.94	3.80	4.08	4.39
41064.0	2.89	3.03	3.17	3.35	3.33	3.53	3.48	3.71	3.68	3.92	3.78	4.06	4.37
41067.0	2.88	3.03	3.16	3.34	3.33	3.53	3.47	3.71	3.68	3.92	3.78	4.06	4.37
41069.9	2.88	3.03	3.16	3.34	3.33	3.53	3.47	3.71	3.68	3.92	3.78	4.06	4.37

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
41072.9	2.88	3.03	3.16	3.34	3.33	3.53	3.47	3.71	3.68	3.92	3.78	4.06	4.36
41075.9	2.88	3.02	3.16	3.34	3.32	3.52	3.47	3.70	3.67	3.92	3.77	4.05	4.36
41078.9	2.88	3.02	3.15	3.33	3.32	3.52	3.46	3.70	3.67	3.91	3.77	4.05	4.36
41081.8	2.88	3.02	3.15	3.33	3.32	3.52	3.46	3.70	3.67	3.91	3.77	4.06	4.37
41084.8	2.88	3.01	3.15	3.33	3.32	3.52	3.46	3.70	3.67	3.91	3.77	4.06	4.38
41087.8	2.88	3.01	3.15	3.33	3.31	3.51	3.46	3.69	3.67	3.91	3.77	4.06	4.38
41090.8	2.88	3.01	3.14	3.32	3.31	3.51	3.45	3.69	3.66	3.91	3.76	4.05	4.37
41093.7	2.87	3.01	3.14	3.32	3.31	3.51	3.45	3.69	3.66	3.91	3.76	4.05	4.37
41096.7	2.87	3.00	3.14	3.32	3.31	3.51	3.45	3.69	3.66	3.91	3.76	4.05	4.37
41099.7	2.87	3.00	3.13	3.32	3.30	3.50	3.45	3.68	3.65	3.90	3.76	4.05	4.36
41102.6	2.87	3.00	3.13	3.31	3.30	3.50	3.44	3.68	3.65	3.90	3.75	4.05	4.36
41105.6	2.87	2.99	3.13	3.31	3.30	3.50	3.44	3.68	3.65	3.90	3.75	4.04	4.36
41108.6	2.87	2.99	3.12	3.31	3.29	3.49	3.44	3.68	3.65	3.89	3.75	4.04	4.36
41111.6	2.86	2.99	3.12	3.30	3.29	3.49	3.43	3.67	3.64	3.89	3.75	4.04	4.36
41114.5	2.86	2.98	3.12	3.30	3.29	3.49	3.43	3.67	3.64	3.89	3.74	4.04	4.36
41117.5	2.86	2.98	3.11	3.30	3.28	3.48	3.43	3.67	3.64	3.89	3.74	4.03	4.36
41120.5	2.86	2.98	3.11	3.29	3.28	3.48	3.42	3.66	3.63	3.88	3.74	4.03	4.36
41123.4	2.86	2.97	3.11	3.29	3.28	3.48	3.42	3.66	3.63	3.88	3.74	4.03	4.35
41126.4	2.85	2.97	3.10	3.29	3.27	3.47	3.41	3.66	3.63	3.88	3.73	4.02	4.35
41129.4	2.85	2.97	3.10	3.28	3.27	3.47	3.41	3.65	3.62	3.87	3.73	4.02	4.34
41132.4	2.85	2.96	3.10	3.28	3.26	3.46	3.41	3.65	3.62	3.87	3.72	4.01	4.34
41135.3	2.84	2.96	3.09	3.27	3.26	3.46	3.40	3.64	3.61	3.86	3.72	4.01	4.34
41138.3	2.84	2.96	3.09	3.27	3.26	3.45	3.40	3.64	3.61	3.86	3.71	4.01	4.33
41141.3	2.84	2.95	3.08	3.27	3.25	3.45	3.39	3.63	3.60	3.85	3.71	4.00	4.33
41144.3	2.84	2.95	3.08	3.26	3.25	3.45	3.39	3.63	3.60	3.85	3.70	4.00	4.33
41147.2	2.83	2.95	3.08	3.26	3.24	3.44	3.38	3.62	3.59	3.84	3.70	3.99	4.33
41150.2	2.83	2.94	3.07	3.25	3.24	3.43	3.38	3.62	3.59	3.84	3.69	3.99	4.32
41153.2	2.83	2.94	3.07	3.25	3.23	3.43	3.37	3.61	3.58	3.83	3.69	3.98	4.31
41156.1	2.82	2.93	3.06	3.24	3.23	3.42	3.37	3.61	3.58	3.83	3.68	3.98	4.31
41159.1	2.82	2.93	3.06	3.23	3.22	3.42	3.36	3.60	3.57	3.82	3.68	3.97	4.30
41162.1	2.82	2.93	3.05	3.23	3.22	3.41	3.35	3.59	3.56	3.81	3.67	3.96	4.29
41165.1	2.82	2.92	3.05	3.22	3.21	3.40	3.35	3.59	3.56	3.81	3.66	3.95	4.28
41168.0	2.81	2.92	3.04	3.22	3.20	3.40	3.34	3.58	3.55	3.80	3.66	3.95	4.28
41171.0	2.81	2.91	3.04	3.21	3.20	3.39	3.34	3.57	3.54	3.79	3.65	3.94	4.27
41174.0	2.81	2.92	3.04	3.21	3.20	3.39	3.34	3.58	3.55	3.80	3.65	3.95	4.28
41177.0	2.82	2.92	3.04	3.22	3.20	3.40	3.34	3.58	3.55	3.80	3.65	3.95	4.28
41180.0	2.82	2.92	3.05	3.22	3.20	3.40	3.34	3.58	3.55	3.80	3.65	3.95	4.28
41183.0	2.82	2.93	3.05	3.22	3.21	3.40	3.34	3.58	3.55	3.81	3.66	3.95	4.28
41186.0	2.83	2.93	3.05	3.22	3.21	3.40	3.35	3.58	3.55	3.81	3.66	3.96	4.29
41189.0	2.83	2.93	3.05	3.23	3.21	3.41	3.35	3.59	3.56	3.81	3.66	3.96	4.29
41192.0	2.83	2.94	3.06	3.23	3.22	3.41	3.35	3.59	3.56	3.81	3.66	3.96	4.29
41195.0	2.83	2.94	3.06	3.23	3.22	3.41	3.36	3.59	3.56	3.81	3.67	3.96	4.29
41198.0	2.83	2.94	3.06	3.24	3.22	3.42	3.36	3.60	3.57	3.82	3.67	3.97	4.30
41201.0	2.84	2.95	3.07	3.24	3.23	3.42	3.36	3.60	3.57	3.82	3.68	3.97	4.30
41204.0	2.84	2.95	3.07	3.24	3.23	3.42	3.37	3.61	3.58	3.82	3.68	3.98	4.31
41207.0	2.84	2.95	3.07	3.25	3.23	3.43	3.37	3.61	3.58	3.83	3.69	3.98	4.32

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
41210.0	2.84	2.96	3.08	3.25	3.24	3.43	3.38	3.62	3.59	3.84	3.69	3.99	4.33
41213.0	2.84	2.96	3.08	3.25	3.24	3.44	3.38	3.62	3.59	3.84	3.70	3.99	4.33
41216.0	2.84	2.96	3.08	3.26	3.24	3.44	3.38	3.63	3.60	3.85	3.70	4.00	4.34
41219.0	2.84	2.96	3.08	3.26	3.25	3.44	3.39	3.63	3.60	3.85	3.71	4.01	4.35
41222.0	2.84	2.97	3.09	3.26	3.25	3.45	3.39	3.64	3.61	3.86	3.71	4.01	4.36
41225.0	2.85	2.97	3.09	3.27	3.25	3.45	3.39	3.64	3.61	3.86	3.72	4.02	4.37
41228.0	2.85	2.97	3.09	3.27	3.26	3.46	3.40	3.64	3.61	3.87	3.72	4.02	4.38
41231.0	2.85	2.97	3.10	3.27	3.26	3.46	3.40	3.65	3.62	3.87	3.73	4.03	4.38
41234.0	2.85	2.97	3.10	3.28	3.26	3.47	3.41	3.66	3.62	3.88	3.73	4.04	4.39
41237.0	2.85	2.97	3.10	3.28	3.27	3.47	3.41	3.66	3.63	3.89	3.74	4.05	4.40
41240.0	2.85	2.97	3.10	3.28	3.27	3.48	3.42	3.67	3.64	3.89	3.75	4.05	4.40
41243.0	2.85	2.97	3.10	3.28	3.27	3.48	3.42	3.67	3.64	3.90	3.75	4.05	4.41
41246.0	2.85	2.98	3.11	3.29	3.27	3.48	3.42	3.68	3.65	3.90	3.76	4.06	4.41
41249.0	2.85	2.98	3.11	3.29	3.27	3.49	3.43	3.68	3.65	3.91	3.76	4.06	4.42
41252.0	2.84	2.98	3.11	3.29	3.28	3.49	3.43	3.69	3.65	3.91	3.77	4.07	4.43
41255.0	2.84	2.98	3.11	3.29	3.28	3.49	3.43	3.69	3.66	3.92	3.77	4.08	4.44
41258.0	2.84	2.98	3.11	3.30	3.28	3.50	3.44	3.70	3.66	3.93	3.78	4.09	4.45
41261.0	2.84	2.98	3.12	3.30	3.29	3.51	3.44	3.71	3.67	3.94	3.79	4.10	4.46
41264.0	2.84	2.98	3.12	3.31	3.30	3.52	3.45	3.72	3.68	3.95	3.80	4.11	4.48
41267.0	2.84	2.98	3.12	3.31	3.30	3.52	3.46	3.72	3.69	3.96	3.80	4.12	4.49
41270.0	2.84	2.98	3.13	3.32	3.30	3.52	3.46	3.72	3.69	3.96	3.81	4.12	4.49
41273.0	2.84	2.98	3.13	3.32	3.30	3.53	3.46	3.73	3.69	3.97	3.81	4.13	4.50
41276.0	2.84	2.98	3.13	3.32	3.30	3.53	3.46	3.73	3.69	3.97	3.81	4.13	4.51
41279.0	2.84	2.98	3.13	3.32	3.31	3.53	3.47	3.73	3.70	3.97	3.81	4.14	4.51
41281.9	2.84	2.98	3.13	3.32	3.31	3.53	3.47	3.74	3.70	3.98	3.82	4.15	4.52
41284.8	2.84	2.98	3.13	3.33	3.31	3.54	3.47	3.74	3.71	3.98	3.82	4.15	4.52
41287.7	2.85	2.98	3.13	3.33	3.32	3.54	3.48	3.74	3.71	3.99	3.83	4.16	4.53
41290.6	2.85	2.99	3.13	3.34	3.32	3.55	3.48	3.75	3.72	4.00	3.83	4.16	4.54
41293.4	2.85	2.99	3.14	3.34	3.32	3.55	3.49	3.76	3.73	4.01	3.84	4.17	4.55
41296.3	2.85	2.99	3.14	3.34	3.33	3.56	3.49	3.77	3.73	4.02	3.85	4.18	4.57
41299.2	2.85	2.99	3.14	3.34	3.33	3.56	3.50	3.78	3.74	4.03	3.86	4.20	4.59
41302.1	2.85	3.00	3.14	3.35	3.33	3.57	3.50	3.78	3.75	4.03	3.87	4.21	4.60
41305.0	2.85	3.00	3.14	3.35	3.33	3.57	3.50	3.78	3.75	4.04	3.87	4.21	4.60
41307.9	2.86	3.00	3.15	3.35	3.33	3.57	3.50	3.79	3.75	4.04	3.87	4.22	4.61
41310.8	2.86	3.00	3.15	3.35	3.34	3.57	3.50	3.79	3.75	4.05	3.88	4.22	4.61
41313.7	2.86	3.00	3.15	3.35	3.34	3.57	3.51	3.79	3.76	4.05	3.88	4.22	4.61
41316.6	2.86	3.00	3.15	3.35	3.34	3.57	3.51	3.79	3.76	4.05	3.88	4.23	4.62
41319.4	2.87	3.01	3.15	3.36	3.34	3.58	3.51	3.80	3.76	4.06	3.89	4.23	4.62
41322.3	2.87	3.01	3.16	3.36	3.34	3.58	3.51	3.80	3.77	4.06	3.89	4.24	4.63
41325.2	2.87	3.01	3.16	3.36	3.35	3.58	3.52	3.80	3.77	4.06	3.89	4.24	4.63
41328.1	2.87	3.01	3.16	3.36	3.35	3.59	3.52	3.81	3.77	4.07	3.90	4.24	4.63
41331.0	2.88	3.02	3.16	3.37	3.35	3.59	3.52	3.81	3.78	4.07	3.90	4.25	4.64
41333.9	2.88	3.02	3.17	3.37	3.35	3.59	3.53	3.82	3.78	4.08	3.91	4.25	4.64
41336.8	2.88	3.02	3.17	3.37	3.36	3.60	3.53	3.82	3.78	4.08	3.91	4.26	4.64
41339.7	2.89	3.02	3.17	3.38	3.36	3.60	3.53	3.82	3.79	4.09	3.91	4.27	4.65
41342.6	2.89	3.03	3.18	3.38	3.36	3.60	3.54	3.83	3.79	4.09	3.92	4.27	4.66

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
41345.4	2.89	3.03	3.18	3.38	3.37	3.61	3.54	3.83	3.80	4.10	3.92	4.28	4.67
41348.3	2.90	3.03	3.18	3.39	3.37	3.61	3.54	3.84	3.80	4.10	3.93	4.29	4.68
41351.2	2.90	3.04	3.18	3.39	3.37	3.61	3.55	3.84	3.80	4.11	3.93	4.30	4.70
41354.1	2.90	3.04	3.19	3.39	3.38	3.62	3.55	3.85	3.81	4.12	3.94	4.30	4.70
41357.0	2.91	3.04	3.19	3.40	3.38	3.62	3.55	3.85	3.81	4.12	3.94	4.31	4.71
41359.9	2.91	3.05	3.20	3.40	3.38	3.63	3.56	3.85	3.82	4.13	3.95	4.31	4.72
41362.8	2.91	3.05	3.20	3.40	3.39	3.63	3.56	3.86	3.82	4.13	3.95	4.32	4.72
41365.7	2.92	3.05	3.20	3.41	3.39	3.64	3.57	3.86	3.83	4.14	3.96	4.32	4.72
41368.6	2.92	3.06	3.21	3.41	3.39	3.64	3.57	3.87	3.83	4.14	3.96	4.33	4.72
41371.4	2.92	3.06	3.21	3.41	3.40	3.64	3.57	3.87	3.84	4.14	3.97	4.33	4.73
41374.3	2.93	3.06	3.21	3.42	3.40	3.65	3.58	3.88	3.84	4.15	3.97	4.34	4.73
41377.2	2.93	3.07	3.22	3.42	3.41	3.65	3.58	3.88	3.84	4.15	3.97	4.34	4.74
41380.1	2.94	3.07	3.22	3.43	3.41	3.66	3.59	3.89	3.85	4.16	3.98	4.35	4.75
41383.0	2.94	3.08	3.23	3.43	3.41	3.66	3.59	3.89	3.85	4.17	3.98	4.36	4.76
41386.0	2.93	3.07	3.22	3.42	3.41	3.65	3.58	3.88	3.85	4.16	3.98	4.35	4.75
41388.9	2.92	3.06	3.21	3.42	3.40	3.65	3.58	3.88	3.84	4.15	3.97	4.34	4.74
41391.9	2.92	3.05	3.20	3.41	3.39	3.64	3.57	3.87	3.83	4.14	3.96	4.33	4.73
41394.9	2.91	3.05	3.20	3.40	3.39	3.63	3.56	3.86	3.82	4.13	3.95	4.32	4.72
41397.9	2.90	3.04	3.19	3.39	3.38	3.62	3.55	3.85	3.81	4.12	3.94	4.31	4.71
41400.8	2.89	3.03	3.18	3.39	3.37	3.61	3.55	3.84	3.80	4.11	3.93	4.30	4.71
41403.8	2.88	3.02	3.18	3.38	3.36	3.61	3.54	3.83	3.80	4.11	3.93	4.29	4.70
41406.8	2.88	3.02	3.17	3.37	3.36	3.60	3.53	3.82	3.79	4.10	3.92	4.28	4.69
41409.8	2.87	3.01	3.16	3.36	3.35	3.59	3.52	3.82	3.78	4.09	3.91	4.28	4.68
41412.7	2.86	3.00	3.15	3.36	3.34	3.58	3.51	3.81	3.77	4.08	3.90	4.27	4.67
41415.7	2.85	2.99	3.14	3.35	3.33	3.58	3.51	3.80	3.76	4.07	3.89	4.26	4.66
41418.7	2.84	2.98	3.14	3.34	3.32	3.57	3.50	3.79	3.76	4.07	3.89	4.25	4.65
41421.6	2.83	2.98	3.13	3.33	3.32	3.56	3.49	3.78	3.75	4.06	3.88	4.24	4.64
41424.6	2.82	2.97	3.12	3.32	3.31	3.55	3.48	3.78	3.74	4.05	3.87	4.23	4.63
41427.6	2.82	2.96	3.11	3.32	3.30	3.54	3.48	3.77	3.73	4.04	3.86	4.23	4.62
41430.6	2.81	2.95	3.10	3.31	3.29	3.54	3.47	3.76	3.73	4.03	3.86	4.22	4.61
41433.5	2.80	2.94	3.10	3.30	3.28	3.53	3.46	3.75	3.72	4.03	3.85	4.21	4.61
41436.5	2.79	2.93	3.09	3.29	3.28	3.52	3.45	3.75	3.71	4.02	3.84	4.20	4.60
41439.5	2.78	2.92	3.08	3.28	3.27	3.51	3.44	3.74	3.70	4.01	3.83	4.20	4.60
41442.4	2.77	2.91	3.07	3.28	3.26	3.51	3.44	3.73	3.70	4.01	3.83	4.19	4.58
41445.4	2.76	2.91	3.06	3.27	3.25	3.50	3.43	3.73	3.69	4.00	3.82	4.18	4.58
41448.4	2.75	2.90	3.05	3.26	3.24	3.49	3.42	3.72	3.68	3.99	3.81	4.17	4.57
41451.4	2.74	2.89	3.04	3.25	3.23	3.48	3.41	3.71	3.67	3.98	3.80	4.16	4.57
41454.3	2.73	2.88	3.03	3.24	3.23	3.47	3.40	3.70	3.66	3.97	3.79	4.15	4.56
41457.3	2.72	2.87	3.03	3.23	3.22	3.47	3.40	3.69	3.66	3.96	3.79	4.14	4.54
41460.3	2.71	2.86	3.02	3.23	3.21	3.46	3.39	3.69	3.65	3.96	3.78	4.14	4.54
41463.3	2.70	2.85	3.01	3.22	3.20	3.45	3.38	3.68	3.64	3.95	3.77	4.13	4.53
41466.2	2.69	2.84	3.00	3.21	3.19	3.44	3.37	3.67	3.63	3.94	3.76	4.12	4.52
41469.2	2.68	2.83	2.99	3.20	3.18	3.43	3.36	3.66	3.62	3.93	3.75	4.11	4.51
41472.2	2.67	2.82	2.98	3.19	3.18	3.42	3.35	3.65	3.61	3.92	3.74	4.10	4.49
41475.1	2.66	2.81	2.97	3.18	3.17	3.42	3.34	3.64	3.60	3.91	3.73	4.09	4.48
41478.1	2.65	2.80	2.96	3.17	3.16	3.41	3.34	3.63	3.60	3.90	3.73	4.08	4.47

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
41481.1	2.64	2.79	2.95	3.17	3.15	3.40	3.33	3.62	3.59	3.89	3.72	4.07	4.46
41484.1	2.63	2.78	2.95	3.16	3.14	3.39	3.32	3.61	3.58	3.88	3.71	4.06	4.45
41487.0	2.62	2.77	2.94	3.15	3.13	3.38	3.31	3.60	3.57	3.87	3.70	4.05	4.43
41490.0	2.61	2.77	2.93	3.14	3.12	3.37	3.30	3.59	3.56	3.86	3.68	4.04	4.42
41493.0	2.61	2.77	2.93	3.14	3.12	3.37	3.30	3.59	3.55	3.85	3.68	4.03	4.41
41496.0	2.62	2.77	2.93	3.14	3.12	3.36	3.30	3.59	3.55	3.85	3.68	4.03	4.40
41499.0	2.63	2.78	2.93	3.14	3.12	3.36	3.29	3.58	3.55	3.85	3.67	4.02	4.39
41502.0	2.63	2.78	2.93	3.14	3.12	3.36	3.29	3.58	3.55	3.84	3.67	4.02	4.38
41505.0	2.64	2.78	2.94	3.14	3.12	3.36	3.29	3.58	3.55	3.84	3.67	4.01	4.37
41508.0	2.64	2.79	2.94	3.14	3.12	3.36	3.29	3.58	3.54	3.83	3.66	4.01	4.36
41511.0	2.65	2.79	2.94	3.14	3.12	3.36	3.29	3.57	3.54	3.83	3.66	4.00	4.35
41514.0	2.66	2.80	2.94	3.14	3.12	3.36	3.29	3.57	3.54	3.82	3.66	3.99	4.34
41517.0	2.66	2.80	2.95	3.14	3.12	3.36	3.29	3.57	3.53	3.82	3.65	3.99	4.33
41520.0	2.67	2.81	2.95	3.14	3.12	3.36	3.29	3.57	3.53	3.81	3.65	3.98	4.32
41523.0	2.67	2.81	2.95	3.14	3.13	3.35	3.29	3.56	3.53	3.81	3.64	3.97	4.31
41526.0	2.68	2.82	2.96	3.14	3.13	3.35	3.29	3.56	3.52	3.80	3.64	3.96	4.31
41529.0	2.68	2.83	2.96	3.15	3.13	3.36	3.29	3.56	3.53	3.80	3.64	3.96	4.30
41532.0	2.68	2.83	2.97	3.15	3.14	3.36	3.29	3.55	3.52	3.79	3.64	3.95	4.29
41535.0	2.68	2.84	2.98	3.16	3.15	3.36	3.30	3.55	3.52	3.80	3.64	3.95	4.29
41538.0	2.69	2.85	2.98	3.17	3.15	3.36	3.30	3.56	3.52	3.80	3.64	3.95	4.28
41541.0	2.69	2.85	2.99	3.17	3.16	3.37	3.31	3.56	3.53	3.80	3.64	3.96	4.29
41544.0	2.69	2.86	3.00	3.18	3.16	3.37	3.31	3.56	3.53	3.80	3.64	3.96	4.29
41547.0	2.69	2.86	3.01	3.18	3.17	3.37	3.31	3.56	3.53	3.80	3.65	3.96	4.29
41550.0	2.69	2.87	3.01	3.19	3.17	3.37	3.32	3.56	3.53	3.80	3.65	3.96	4.27
41553.0	2.70	2.87	3.02	3.19	3.18	3.38	3.32	3.57	3.54	3.81	3.65	3.96	4.27
41556.0	2.71	2.88	3.03	3.20	3.19	3.39	3.33	3.57	3.54	3.81	3.65	3.96	4.27
41559.0	2.71	2.88	3.03	3.21	3.20	3.39	3.34	3.58	3.55	3.82	3.66	3.97	4.27
41562.0	2.72	2.89	3.04	3.21	3.20	3.40	3.34	3.58	3.55	3.82	3.66	3.97	4.27
41565.0	2.73	2.89	3.04	3.22	3.21	3.40	3.35	3.59	3.56	3.82	3.67	3.97	4.27
41568.0	2.75	2.90	3.05	3.23	3.21	3.41	3.35	3.60	3.57	3.83	3.68	3.98	4.27
41571.0	2.76	2.91	3.06	3.23	3.22	3.41	3.36	3.60	3.57	3.84	3.69	3.98	4.28
41574.0	2.78	2.92	3.06	3.24	3.23	3.42	3.37	3.61	3.58	3.84	3.69	3.99	4.29
41577.0	2.80	2.94	3.07	3.25	3.24	3.43	3.38	3.62	3.59	3.85	3.70	3.99	4.30
41580.0	2.81	2.95	3.08	3.25	3.24	3.44	3.38	3.62	3.59	3.85	3.70	4.00	4.30
41583.0	2.84	2.97	3.09	3.26	3.25	3.44	3.39	3.63	3.60	3.86	3.71	4.01	4.31
41586.0	2.86	2.98	3.11	3.27	3.26	3.45	3.39	3.64	3.61	3.86	3.71	4.01	4.31
41589.0	2.88	3.00	3.12	3.28	3.27	3.46	3.40	3.64	3.61	3.86	3.72	4.02	4.32
41592.0	2.91	3.02	3.14	3.29	3.28	3.47	3.41	3.65	3.62	3.87	3.72	4.02	4.33
41595.0	2.94	3.05	3.16	3.31	3.30	3.48	3.42	3.66	3.63	3.88	3.73	4.03	4.35
41598.0	2.97	3.07	3.18	3.32	3.31	3.49	3.44	3.67	3.64	3.88	3.74	4.04	4.36
41601.0	2.97	3.07	3.17	3.32	3.31	3.48	3.43	3.66	3.63	3.88	3.73	4.04	4.36
41603.9	2.96	3.06	3.16	3.31	3.30	3.48	3.43	3.65	3.62	3.87	3.73	4.02	4.34
41606.9	2.95	3.05	3.16	3.31	3.29	3.47	3.42	3.65	3.62	3.86	3.72	4.01	4.33
41609.9	2.94	3.05	3.15	3.30	3.29	3.47	3.42	3.64	3.61	3.86	3.72	4.01	4.32
41612.9	2.93	3.04	3.14	3.29	3.28	3.46	3.41	3.64	3.61	3.85	3.71	4.00	4.32
41615.8	2.93	3.03	3.14	3.29	3.28	3.46	3.41	3.63	3.60	3.85	3.71	4.00	4.32

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
41618.8	2.92	3.02	3.13	3.28	3.27	3.45	3.40	3.63	3.60	3.84	3.70	3.99	4.31
41621.8	2.91	3.02	3.13	3.28	3.27	3.45	3.40	3.62	3.59	3.84	3.70	3.99	4.31
41624.8	2.90	3.01	3.12	3.27	3.26	3.44	3.39	3.62	3.59	3.84	3.69	3.99	4.31
41627.7	2.89	3.00	3.11	3.27	3.25	3.44	3.39	3.62	3.59	3.83	3.69	3.99	4.30
41630.7	2.88	3.00	3.11	3.26	3.25	3.43	3.38	3.61	3.58	3.83	3.69	3.98	4.30
41633.7	2.88	2.99	3.10	3.25	3.24	3.43	3.38	3.61	3.58	3.83	3.69	3.98	4.30
41636.6	2.87	2.98	3.09	3.25	3.24	3.43	3.37	3.61	3.58	3.83	3.69	3.98	4.29
41639.6	2.86	2.97	3.09	3.25	3.23	3.43	3.37	3.61	3.58	3.83	3.69	3.98	4.29
41642.6	2.85	2.97	3.08	3.24	3.23	3.42	3.37	3.61	3.58	3.83	3.69	3.98	4.29
41645.6	2.84	2.96	3.07	3.23	3.22	3.42	3.36	3.61	3.58	3.83	3.69	3.97	4.29
41648.5	2.83	2.95	3.07	3.23	3.22	3.41	3.36	3.61	3.58	3.83	3.68	3.97	4.29
41651.5	2.82	2.94	3.06	3.22	3.21	3.41	3.35	3.60	3.57	3.83	3.68	3.97	4.28
41654.5	2.81	2.93	3.05	3.22	3.20	3.41	3.35	3.60	3.57	3.83	3.68	3.97	4.28
41657.4	2.80	2.93	3.05	3.21	3.20	3.41	3.35	3.61	3.58	3.84	3.69	3.98	4.28
41660.4	2.80	2.92	3.04	3.21	3.19	3.40	3.34	3.61	3.58	3.84	3.69	3.99	4.28
41663.4	2.79	2.91	3.03	3.20	3.19	3.40	3.34	3.60	3.57	3.83	3.68	3.98	4.28
41666.4	2.78	2.90	3.02	3.19	3.18	3.39	3.33	3.59	3.56	3.82	3.67	3.96	4.27
41669.3	2.77	2.89	3.02	3.19	3.17	3.38	3.32	3.58	3.55	3.81	3.67	3.96	4.26
41672.3	2.76	2.89	3.01	3.18	3.17	3.38	3.32	3.58	3.55	3.81	3.66	3.96	4.26
41675.3	2.75	2.88	3.00	3.17	3.16	3.37	3.31	3.57	3.54	3.80	3.66	3.95	4.26
41678.3	2.74	2.87	2.99	3.17	3.15	3.37	3.30	3.57	3.54	3.80	3.65	3.95	4.25
41681.2	2.73	2.86	2.99	3.16	3.15	3.36	3.30	3.57	3.54	3.81	3.65	3.96	4.25
41684.2	2.72	2.85	2.98	3.15	3.14	3.36	3.29	3.57	3.54	3.81	3.66	3.96	4.25
41687.2	2.71	2.84	2.97	3.15	3.13	3.35	3.29	3.56	3.53	3.80	3.64	3.95	4.24
41690.1	2.70	2.83	2.96	3.14	3.12	3.34	3.28	3.55	3.51	3.79	3.63	3.93	4.23
41693.1	2.69	2.83	2.96	3.13	3.12	3.33	3.27	3.54	3.51	3.78	3.62	3.93	4.23
41696.1	2.68	2.82	2.95	3.12	3.11	3.33	3.26	3.53	3.50	3.78	3.62	3.92	4.22
41699.1	2.67	2.81	2.94	3.12	3.10	3.32	3.26	3.53	3.49	3.77	3.61	3.91	4.21
41702.0	2.66	2.80	2.93	3.11	3.10	3.31	3.25	3.52	3.49	3.77	3.61	3.91	4.21
41705.0	2.65	2.79	2.92	3.10	3.09	3.31	3.24	3.52	3.48	3.77	3.60	3.91	4.21
41707.9	2.65	2.79	2.93	3.11	3.09	3.31	3.25	3.52	3.49	3.77	3.61	3.91	4.21
41710.9	2.65	2.80	2.93	3.11	3.09	3.31	3.25	3.52	3.49	3.77	3.61	3.91	4.21
41713.8	2.66	2.80	2.93	3.11	3.10	3.32	3.25	3.53	3.49	3.77	3.61	3.91	4.21
41716.8	2.66	2.81	2.94	3.11	3.10	3.32	3.26	3.53	3.49	3.77	3.61	3.91	4.21
41719.7	2.67	2.81	2.94	3.12	3.10	3.32	3.26	3.53	3.49	3.77	3.61	3.92	4.22
41722.7	2.67	2.81	2.95	3.12	3.11	3.33	3.26	3.53	3.50	3.77	3.62	3.92	4.22
41725.6	2.67	2.82	2.95	3.13	3.11	3.33	3.27	3.54	3.50	3.78	3.62	3.93	4.23
41728.6	2.68	2.82	2.95	3.13	3.12	3.33	3.27	3.54	3.51	3.78	3.63	3.93	4.22
41731.5	2.68	2.83	2.96	3.13	3.12	3.34	3.27	3.55	3.52	3.79	3.63	3.93	4.22
41734.4	2.69	2.83	2.96	3.13	3.12	3.34	3.28	3.55	3.51	3.79	3.63	3.93	4.22
41737.4	2.69	2.83	2.96	3.14	3.12	3.34	3.28	3.55	3.51	3.79	3.63	3.93	4.22
41740.3	2.70	2.84	2.97	3.14	3.13	3.34	3.28	3.55	3.52	3.79	3.63	3.93	4.22
41743.3	2.70	2.84	2.97	3.14	3.13	3.34	3.28	3.55	3.52	3.79	3.64	3.93	4.22
41746.2	2.71	2.85	2.97	3.15	3.13	3.35	3.28	3.56	3.52	3.79	3.64	3.94	4.21
41749.2	2.71	2.85	2.98	3.15	3.13	3.35	3.29	3.56	3.53	3.79	3.64	3.94	4.21
41752.1	2.72	2.85	2.98	3.15	3.13	3.35	3.28	3.56	3.52	3.79	3.64	3.93	4.21

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
41755.1	2.72	2.86	2.98	3.15	3.13	3.35	3.28	3.55	3.52	3.78	3.63	3.92	4.20
41758.0	2.73	2.86	2.98	3.15	3.14	3.35	3.28	3.55	3.52	3.78	3.63	3.92	4.20
41760.9	2.73	2.87	2.99	3.15	3.14	3.35	3.29	3.55	3.52	3.77	3.63	3.92	4.19
41763.9	2.74	2.87	2.99	3.16	3.14	3.35	3.29	3.55	3.52	3.77	3.63	3.91	4.19
41766.8	2.74	2.87	2.99	3.16	3.15	3.35	3.29	3.55	3.52	3.77	3.63	3.91	4.19
41769.8	2.75	2.88	3.00	3.16	3.15	3.36	3.30	3.56	3.52	3.77	3.63	3.91	4.18
41772.7	2.75	2.88	3.00	3.17	3.15	3.36	3.30	3.56	3.53	3.77	3.64	3.91	4.18
41775.7	2.76	2.89	3.01	3.17	3.16	3.36	3.30	3.56	3.53	3.77	3.64	3.91	4.18
41778.6	2.76	2.89	3.01	3.17	3.16	3.37	3.31	3.56	3.53	3.78	3.64	3.91	4.18
41781.6	2.77	2.90	3.02	3.18	3.16	3.37	3.31	3.57	3.54	3.78	3.64	3.91	4.18
41784.5	2.78	2.90	3.02	3.18	3.17	3.38	3.32	3.57	3.54	3.78	3.65	3.91	4.18
41787.4	2.78	2.91	3.03	3.20	3.18	3.39	3.33	3.58	3.55	3.79	3.66	3.92	4.19
41790.4	2.79	2.92	3.04	3.21	3.19	3.40	3.34	3.59	3.56	3.80	3.67	3.92	4.19
41793.3	2.79	2.92	3.05	3.21	3.20	3.40	3.34	3.59	3.57	3.80	3.67	3.92	4.19
41796.3	2.80	2.93	3.05	3.22	3.20	3.41	3.35	3.59	3.57	3.79	3.66	3.92	4.19
41799.2	2.81	2.93	3.05	3.22	3.21	3.41	3.35	3.59	3.56	3.79	3.66	3.91	4.19
41802.2	2.81	2.94	3.06	3.22	3.21	3.41	3.35	3.59	3.56	3.79	3.66	3.91	4.18
41805.1	2.82	2.95	3.07	3.23	3.22	3.42	3.36	3.59	3.57	3.79	3.66	3.91	4.18
41808.1	2.82	2.95	3.08	3.24	3.23	3.43	3.37	3.60	3.57	3.79	3.67	3.91	4.18
41811.0	2.83	2.96	3.08	3.25	3.24	3.44	3.38	3.61	3.58	3.80	3.68	3.92	4.18
41813.9	2.83	2.96	3.09	3.25	3.24	3.44	3.38	3.61	3.58	3.80	3.68	3.92	4.18
41816.8	2.83	2.96	3.09	3.25	3.24	3.44	3.38	3.61	3.58	3.79	3.67	3.91	4.17
41819.7	2.83	2.96	3.09	3.25	3.24	3.44	3.38	3.60	3.58	3.79	3.67	3.91	4.17
41822.6	2.82	2.96	3.09	3.26	3.24	3.44	3.38	3.60	3.58	3.79	3.67	3.90	4.16
41825.5	2.82	2.96	3.09	3.26	3.25	3.44	3.39	3.60	3.58	3.79	3.67	3.90	4.16
41828.4	2.82	2.96	3.10	3.27	3.26	3.45	3.40	3.61	3.58	3.79	3.67	3.90	4.16
41831.3	2.82	2.96	3.10	3.28	3.26	3.45	3.40	3.61	3.59	3.79	3.68	3.90	4.15
41834.2	2.82	2.97	3.11	3.28	3.27	3.46	3.40	3.61	3.59	3.79	3.68	3.89	4.15
41837.1	2.82	2.97	3.11	3.28	3.27	3.46	3.40	3.61	3.59	3.78	3.68	3.89	4.14
41839.9	2.82	2.96	3.11	3.29	3.27	3.46	3.41	3.62	3.59	3.78	3.68	3.89	4.14
41842.8	2.82	2.96	3.12	3.29	3.28	3.47	3.42	3.62	3.60	3.79	3.68	3.89	4.13
41845.7	2.82	2.96	3.12	3.30	3.29	3.48	3.43	3.63	3.61	3.79	3.69	3.89	4.14
41848.6	2.81	2.96	3.11	3.31	3.29	3.49	3.44	3.64	3.62	3.80	3.70	3.90	4.14
41851.5	2.81	2.96	3.11	3.31	3.29	3.49	3.44	3.64	3.62	3.80	3.70	3.89	4.13
41854.4	2.81	2.96	3.11	3.31	3.29	3.49	3.43	3.64	3.61	3.79	3.70	3.89	4.13
41857.3	2.81	2.96	3.11	3.31	3.29	3.48	3.43	3.63	3.61	3.78	3.69	3.88	4.12
41860.2	2.81	2.96	3.11	3.30	3.29	3.48	3.43	3.62	3.60	3.78	3.68	3.87	4.11
41863.1	2.81	2.96	3.11	3.30	3.29	3.47	3.42	3.62	3.59	3.77	3.68	3.87	4.10
41866.0	2.81	2.96	3.11	3.30	3.28	3.47	3.42	3.61	3.59	3.76	3.67	3.86	4.09
41868.9	2.81	2.96	3.10	3.29	3.28	3.46	3.42	3.60	3.58	3.76	3.66	3.85	4.08
41871.8	2.81	2.95	3.10	3.29	3.28	3.46	3.41	3.60	3.58	3.75	3.66	3.84	4.07
41874.7	2.81	2.95	3.10	3.28	3.27	3.45	3.40	3.59	3.57	3.74	3.65	3.83	4.05
41877.6	2.81	2.95	3.09	3.28	3.26	3.44	3.40	3.58	3.56	3.73	3.64	3.82	4.04
41880.5	2.80	2.95	3.09	3.27	3.26	3.44	3.39	3.57	3.55	3.72	3.63	3.81	4.03
41883.4	2.80	2.94	3.08	3.27	3.25	3.43	3.38	3.57	3.54	3.71	3.62	3.80	4.02
41886.3	2.80	2.94	3.08	3.26	3.25	3.42	3.38	3.56	3.54	3.70	3.61	3.79	4.00

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
41889.2	2.80	2.94	3.07	3.25	3.24	3.42	3.37	3.55	3.53	3.69	3.61	3.78	3.99
41892.1	2.80	2.93	3.07	3.25	3.24	3.41	3.36	3.54	3.52	3.68	3.60	3.77	3.98
41894.9	2.80	2.93	3.06	3.24	3.23	3.40	3.36	3.54	3.52	3.67	3.59	3.76	3.97
41897.8	2.79	2.93	3.06	3.23	3.22	3.40	3.35	3.53	3.51	3.66	3.58	3.75	3.96
41900.7	2.79	2.93	3.06	3.23	3.22	3.39	3.34	3.52	3.50	3.65	3.58	3.74	3.95
41903.6	2.79	2.92	3.05	3.22	3.21	3.38	3.34	3.52	3.50	3.64	3.57	3.72	3.95
41906.5	2.79	2.92	3.05	3.22	3.21	3.38	3.33	3.51	3.49	3.64	3.56	3.71	3.94
41909.4	2.79	2.92	3.05	3.22	3.21	3.38	3.33	3.51	3.49	3.63	3.56	3.70	3.93
41912.3	2.79	2.92	3.04	3.21	3.20	3.37	3.33	3.50	3.48	3.62	3.55	3.70	3.93
41915.2	2.79	2.92	3.04	3.21	3.20	3.37	3.32	3.49	3.47	3.61	3.54	3.69	3.91
41918.1	2.79	2.92	3.04	3.21	3.19	3.36	3.32	3.48	3.46	3.61	3.53	3.68	3.90
41921.0	2.79	2.91	3.04	3.20	3.19	3.36	3.31	3.48	3.46	3.60	3.52	3.67	3.89
41924.0	2.78	2.91	3.03	3.19	3.18	3.35	3.30	3.47	3.45	3.58	3.51	3.65	3.87
41927.0	2.78	2.90	3.02	3.19	3.17	3.34	3.29	3.46	3.44	3.57	3.50	3.64	3.86
41930.0	2.78	2.90	3.02	3.18	3.16	3.32	3.28	3.44	3.42	3.56	3.49	3.63	3.84
41933.0	2.77	2.89	3.01	3.17	3.15	3.31	3.27	3.43	3.41	3.54	3.47	3.61	3.83
41936.0	2.77	2.89	3.00	3.16	3.14	3.30	3.26	3.41	3.40	3.53	3.46	3.60	3.81
41939.0	2.76	2.88	3.00	3.15	3.14	3.29	3.25	3.40	3.38	3.51	3.44	3.58	3.80
41942.0	2.76	2.88	2.99	3.14	3.13	3.28	3.24	3.39	3.37	3.50	3.43	3.56	3.78
41945.0	2.76	2.88	2.99	3.13	3.12	3.27	3.23	3.38	3.36	3.48	3.42	3.55	3.77
41948.0	2.76	2.87	2.98	3.12	3.11	3.26	3.22	3.36	3.35	3.47	3.41	3.54	3.75
41951.0	2.75	2.87	2.97	3.11	3.10	3.25	3.21	3.35	3.34	3.46	3.39	3.53	3.74
41954.0	2.75	2.86	2.97	3.10	3.09	3.24	3.20	3.34	3.32	3.44	3.38	3.52	3.73
41957.0	2.74	2.86	2.96	3.09	3.08	3.22	3.18	3.33	3.31	3.43	3.37	3.50	3.71
41960.0	2.74	2.85	2.95	3.08	3.07	3.21	3.17	3.31	3.30	3.42	3.36	3.49	3.70
41963.0	2.74	2.85	2.94	3.07	3.06	3.20	3.16	3.30	3.28	3.41	3.35	3.48	3.69
41966.0	2.73	2.84	2.93	3.06	3.05	3.18	3.15	3.29	3.27	3.40	3.34	3.47	3.68
41969.0	2.73	2.84	2.93	3.05	3.04	3.17	3.13	3.28	3.26	3.39	3.32	3.45	3.66
41972.0	2.72	2.83	2.92	3.04	3.03	3.16	3.12	3.27	3.25	3.38	3.31	3.44	3.65
41975.0	2.72	2.82	2.91	3.03	3.02	3.15	3.11	3.26	3.24	3.37	3.30	3.43	3.64
41978.0	2.72	2.82	2.90	3.02	3.01	3.14	3.10	3.25	3.23	3.36	3.29	3.42	3.63
41981.0	2.71	2.81	2.89	3.01	3.00	3.13	3.09	3.24	3.22	3.35	3.28	3.41	3.62
41984.0	2.71	2.80	2.89	3.00	2.99	3.12	3.08	3.23	3.21	3.34	3.27	3.40	3.62
41987.0	2.70	2.80	2.88	2.99	2.98	3.11	3.07	3.22	3.20	3.32	3.26	3.39	3.61
41990.0	2.70	2.79	2.87	2.98	2.97	3.10	3.06	3.21	3.19	3.31	3.25	3.38	3.60
41993.0	2.69	2.78	2.86	2.97	2.96	3.09	3.05	3.20	3.18	3.30	3.24	3.38	3.59
41996.0	2.69	2.78	2.85	2.96	2.95	3.08	3.04	3.19	3.17	3.29	3.23	3.37	3.58
41999.0	2.68	2.77	2.84	2.95	2.94	3.07	3.03	3.18	3.16	3.28	3.22	3.36	3.57
42002.0	2.68	2.76	2.83	2.94	2.93	3.06	3.02	3.17	3.15	3.27	3.21	3.35	3.56
42005.0	2.67	2.76	2.83	2.93	2.93	3.05	3.01	3.16	3.14	3.26	3.20	3.34	3.55
42008.0	2.66	2.75	2.82	2.92	2.92	3.04	3.00	3.15	3.13	3.25	3.19	3.33	3.55
42011.0	2.66	2.74	2.81	2.91	2.91	3.03	2.99	3.13	3.12	3.24	3.18	3.32	3.54
42014.0	2.65	2.74	2.80	2.91	2.90	3.02	2.98	3.12	3.11	3.23	3.17	3.32	3.53
42017.0	2.65	2.73	2.79	2.90	2.89	3.01	2.97	3.11	3.10	3.22	3.16	3.31	3.53
42020.0	2.64	2.72	2.79	2.89	2.88	3.00	2.96	3.10	3.08	3.22	3.15	3.30	3.52
42023.0	2.64	2.71	2.78	2.88	2.87	2.99	2.95	3.09	3.07	3.21	3.14	3.29	3.51

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42026.0	2.63	2.70	2.77	2.86	2.86	2.97	2.94	3.08	3.06	3.20	3.13	3.28	3.50
42029.0	2.63	2.70	2.76	2.85	2.85	2.96	2.93	3.07	3.05	3.19	3.12	3.27	3.49
42031.9	2.62	2.69	2.75	2.84	2.84	2.95	2.92	3.06	3.04	3.17	3.11	3.26	3.48
42034.8	2.61	2.68	2.74	2.83	2.82	2.94	2.90	3.05	3.03	3.16	3.09	3.25	3.46
42037.7	2.60	2.67	2.73	2.82	2.81	2.93	2.89	3.03	3.02	3.15	3.08	3.24	3.45
42040.6	2.59	2.66	2.72	2.81	2.80	2.92	2.88	3.02	3.00	3.13	3.07	3.22	3.44
42043.5	2.58	2.65	2.71	2.80	2.80	2.91	2.87	3.01	2.99	3.12	3.06	3.21	3.43
42046.4	2.57	2.64	2.70	2.79	2.79	2.90	2.86	3.00	2.98	3.11	3.05	3.20	3.42
42049.3	2.56	2.63	2.70	2.78	2.78	2.89	2.85	2.99	2.97	3.10	3.03	3.19	3.41
42052.2	2.55	2.63	2.69	2.78	2.77	2.88	2.84	2.98	2.96	3.09	3.03	3.19	3.40
42055.1	2.54	2.62	2.68	2.77	2.76	2.87	2.84	2.97	2.95	3.09	3.02	3.18	3.39
42057.9	2.54	2.61	2.67	2.76	2.75	2.86	2.83	2.96	2.94	3.08	3.01	3.17	3.38
42060.8	2.53	2.60	2.67	2.75	2.75	2.85	2.82	2.95	2.93	3.07	3.00	3.16	3.37
42063.7	2.52	2.60	2.66	2.75	2.74	2.84	2.81	2.94	2.92	3.06	2.99	3.15	3.36
42066.6	2.51	2.59	2.65	2.74	2.73	2.83	2.80	2.93	2.92	3.05	2.98	3.15	3.35
42069.5	2.51	2.58	2.65	2.73	2.73	2.83	2.80	2.93	2.91	3.04	2.97	3.14	3.35
42072.4	2.50	2.58	2.64	2.73	2.72	2.82	2.79	2.92	2.90	3.04	2.96	3.14	3.35
42075.3	2.49	2.57	2.63	2.72	2.71	2.81	2.78	2.91	2.89	3.03	2.96	3.13	3.34
42078.2	2.49	2.56	2.63	2.72	2.71	2.81	2.78	2.90	2.89	3.03	2.95	3.13	3.34
42081.1	2.48	2.56	2.62	2.71	2.70	2.80	2.77	2.90	2.88	3.02	2.94	3.12	3.33
42084.0	2.47	2.55	2.62	2.70	2.70	2.79	2.76	2.89	2.87	3.01	2.93	3.11	3.32
42086.9	2.47	2.55	2.61	2.70	2.69	2.79	2.76	2.88	2.87	3.01	2.93	3.11	3.32
42089.8	2.46	2.54	2.61	2.69	2.69	2.78	2.75	2.88	2.86	3.00	2.92	3.10	3.31
42092.7	2.45	2.54	2.60	2.69	2.68	2.78	2.75	2.87	2.85	3.00	2.91	3.10	3.31
42095.6	2.45	2.53	2.60	2.68	2.68	2.77	2.74	2.86	2.85	3.00	2.91	3.09	3.30
42098.5	2.44	2.53	2.59	2.68	2.67	2.77	2.74	2.86	2.84	2.99	2.90	3.09	3.30
42101.4	2.44	2.52	2.59	2.67	2.67	2.76	2.74	2.85	2.84	2.98	2.90	3.08	3.29
42104.3	2.43	2.52	2.58	2.67	2.66	2.76	2.73	2.85	2.83	2.98	2.89	3.07	3.29
42107.2	2.43	2.51	2.58	2.67	2.66	2.76	2.73	2.84	2.83	2.97	2.89	3.07	3.28
42110.1	2.42	2.51	2.57	2.66	2.66	2.75	2.72	2.84	2.82	2.97	2.88	3.06	3.28
42112.9	2.42	2.51	2.57	2.66	2.65	2.75	2.72	2.83	2.82	2.96	2.88	3.06	3.27
42115.8	2.42	2.50	2.57	2.66	2.65	2.75	2.72	2.83	2.82	2.96	2.87	3.06	3.27
42118.7	2.42	2.50	2.57	2.65	2.65	2.74	2.71	2.83	2.81	2.96	2.87	3.05	3.27
42121.6	2.42	2.50	2.57	2.66	2.65	2.75	2.72	2.84	2.82	2.97	2.88	3.06	3.27
42124.5	2.42	2.50	2.57	2.66	2.65	2.75	2.72	2.84	2.83	2.97	2.88	3.07	3.27
42127.4	2.42	2.50	2.56	2.66	2.65	2.75	2.72	2.84	2.82	2.97	2.88	3.06	3.27
42130.3	2.42	2.50	2.56	2.66	2.65	2.75	2.72	2.84	2.82	2.97	2.88	3.06	3.26
42133.2	2.43	2.50	2.56	2.65	2.65	2.75	2.72	2.84	2.82	2.97	2.88	3.06	3.26
42136.1	2.43	2.50	2.56	2.65	2.65	2.75	2.72	2.84	2.82	2.97	2.88	3.06	3.26
42139.0	2.44	2.50	2.56	2.65	2.65	2.75	2.72	2.84	2.83	2.97	2.88	3.05	3.26
42142.0	2.43	2.50	2.56	2.66	2.65	2.76	2.73	2.86	2.84	2.98	2.90	3.07	3.28
42144.9	2.43	2.50	2.57	2.67	2.66	2.77	2.74	2.87	2.85	2.99	2.91	3.08	3.29
42147.9	2.43	2.51	2.58	2.68	2.67	2.79	2.75	2.88	2.87	3.00	2.93	3.09	3.30
42150.9	2.43	2.51	2.59	2.69	2.68	2.80	2.76	2.90	2.88	3.02	2.94	3.10	3.31
42153.9	2.44	2.52	2.60	2.71	2.70	2.81	2.78	2.91	2.90	3.04	2.96	3.12	3.33
42156.8	2.44	2.53	2.61	2.72	2.71	2.83	2.80	2.93	2.92	3.05	2.98	3.14	3.34

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42159.8	2.44	2.54	2.62	2.74	2.73	2.85	2.82	2.96	2.94	3.07	3.00	3.16	3.36
42162.8	2.44	2.54	2.63	2.76	2.75	2.87	2.84	2.97	2.96	3.09	3.02	3.17	3.37
42165.8	2.44	2.55	2.64	2.77	2.76	2.89	2.85	2.99	2.98	3.11	3.04	3.19	3.38
42168.7	2.45	2.55	2.65	2.78	2.77	2.91	2.87	3.01	2.99	3.12	3.06	3.21	3.40
42171.7	2.45	2.56	2.66	2.79	2.78	2.92	2.88	3.03	3.01	3.14	3.08	3.22	3.42
42174.7	2.45	2.56	2.67	2.80	2.79	2.94	2.89	3.05	3.03	3.16	3.09	3.24	3.43
42177.6	2.45	2.57	2.67	2.81	2.80	2.95	2.91	3.06	3.04	3.17	3.11	3.26	3.45
42180.6	2.46	2.57	2.68	2.82	2.81	2.96	2.92	3.07	3.06	3.19	3.12	3.27	3.46
42183.6	2.46	2.58	2.69	2.83	2.82	2.97	2.93	3.09	3.07	3.20	3.13	3.28	3.48
42186.6	2.46	2.58	2.69	2.84	2.83	2.99	2.94	3.10	3.08	3.22	3.15	3.30	3.49
42189.5	2.47	2.59	2.70	2.85	2.84	3.00	2.95	3.11	3.09	3.23	3.16	3.31	3.51
42192.5	2.48	2.60	2.71	2.86	2.85	3.01	2.96	3.12	3.10	3.24	3.17	3.32	3.52
42195.5	2.48	2.60	2.72	2.88	2.86	3.02	2.98	3.13	3.11	3.25	3.18	3.33	3.53
42198.4	2.49	2.61	2.73	2.89	2.88	3.03	2.99	3.14	3.13	3.26	3.19	3.34	3.54
42201.4	2.50	2.62	2.74	2.90	2.89	3.04	3.00	3.16	3.14	3.27	3.20	3.35	3.55
42204.4	2.50	2.63	2.75	2.91	2.90	3.06	3.01	3.17	3.15	3.28	3.21	3.36	3.56
42207.4	2.51	2.64	2.76	2.92	2.91	3.07	3.03	3.18	3.16	3.29	3.23	3.38	3.57
42210.3	2.52	2.65	2.77	2.94	2.92	3.08	3.04	3.19	3.17	3.30	3.24	3.39	3.58
42213.3	2.53	2.66	2.79	2.95	2.94	3.09	3.05	3.20	3.19	3.32	3.25	3.40	3.59
42216.3	2.54	2.67	2.80	2.97	2.95	3.11	3.07	3.22	3.20	3.33	3.26	3.41	3.61
42219.3	2.55	2.68	2.81	2.98	2.97	3.12	3.08	3.23	3.21	3.35	3.28	3.43	3.63
42222.2	2.56	2.70	2.83	3.00	2.99	3.14	3.10	3.25	3.23	3.36	3.29	3.44	3.64
42225.2	2.57	2.71	2.84	3.02	3.00	3.15	3.11	3.26	3.24	3.38	3.31	3.46	3.66
42228.2	2.59	2.72	2.86	3.03	3.02	3.17	3.13	3.28	3.26	3.39	3.32	3.47	3.67
42231.1	2.60	2.74	2.88	3.05	3.04	3.18	3.14	3.29	3.27	3.41	3.34	3.49	3.69
42234.1	2.62	2.76	2.89	3.07	3.06	3.20	3.16	3.31	3.29	3.43	3.36	3.51	3.71
42237.1	2.63	2.77	2.91	3.09	3.08	3.22	3.18	3.33	3.31	3.44	3.38	3.53	3.74
42240.1	2.65	2.79	2.93	3.11	3.10	3.24	3.20	3.35	3.33	3.46	3.40	3.55	3.76
42243.0	2.67	2.81	2.96	3.13	3.12	3.26	3.22	3.37	3.35	3.48	3.42	3.57	3.78
42246.0	2.68	2.83	2.98	3.15	3.14	3.28	3.24	3.39	3.37	3.50	3.43	3.59	3.79
42248.9	2.68	2.83	2.97	3.14	3.13	3.27	3.23	3.38	3.36	3.50	3.43	3.58	3.79
42251.9	2.67	2.82	2.97	3.13	3.12	3.26	3.22	3.37	3.35	3.49	3.42	3.58	3.79
42254.8	2.66	2.81	2.96	3.12	3.11	3.25	3.21	3.36	3.34	3.49	3.41	3.57	3.79
42257.8	2.65	2.81	2.95	3.11	3.10	3.24	3.20	3.36	3.34	3.48	3.41	3.57	3.79
42260.7	2.65	2.80	2.95	3.10	3.09	3.24	3.19	3.35	3.33	3.48	3.40	3.57	3.79
42263.7	2.64	2.80	2.94	3.09	3.08	3.23	3.19	3.35	3.33	3.47	3.40	3.56	3.79
42266.6	2.63	2.79	2.93	3.08	3.07	3.22	3.18	3.34	3.32	3.47	3.39	3.56	3.79
42269.6	2.63	2.79	2.92	3.07	3.06	3.22	3.17	3.34	3.32	3.47	3.39	3.56	3.79
42272.5	2.62	2.78	2.91	3.07	3.06	3.21	3.17	3.33	3.31	3.47	3.39	3.56	3.79
42275.4	2.62	2.77	2.90	3.06	3.05	3.21	3.16	3.33	3.31	3.46	3.38	3.56	3.79
42278.4	2.61	2.77	2.89	3.05	3.04	3.20	3.16	3.33	3.31	3.46	3.38	3.56	3.79
42281.3	2.61	2.76	2.88	3.05	3.04	3.20	3.15	3.33	3.30	3.46	3.38	3.56	3.79
42284.3	2.60	2.75	2.87	3.04	3.03	3.19	3.15	3.32	3.30	3.46	3.38	3.56	3.80
42287.2	2.59	2.74	2.87	3.04	3.02	3.19	3.14	3.32	3.30	3.46	3.38	3.56	3.80
42290.2	2.59	2.73	2.86	3.03	3.02	3.19	3.14	3.32	3.30	3.46	3.38	3.57	3.80
42293.1	2.58	2.72	2.85	3.03	3.01	3.19	3.14	3.32	3.30	3.47	3.38	3.57	3.81

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42296.1	2.58	2.71	2.85	3.02	3.01	3.18	3.13	3.32	3.30	3.47	3.38	3.57	3.81
42299.0	2.57	2.70	2.84	3.02	3.00	3.18	3.13	3.32	3.30	3.47	3.38	3.58	3.81
42301.9	2.56	2.70	2.83	3.01	3.00	3.18	3.13	3.32	3.30	3.48	3.38	3.58	3.82
42304.9	2.55	2.69	2.83	3.01	3.00	3.18	3.12	3.32	3.30	3.48	3.38	3.59	3.83
42307.8	2.54	2.68	2.82	3.01	2.99	3.18	3.12	3.32	3.30	3.48	3.39	3.60	3.84
42310.8	2.53	2.68	2.82	3.00	2.99	3.18	3.12	3.33	3.30	3.49	3.39	3.61	3.85
42313.7	2.53	2.67	2.82	3.00	2.99	3.18	3.12	3.33	3.30	3.50	3.39	3.62	3.86
42316.7	2.52	2.67	2.81	3.00	2.99	3.18	3.12	3.33	3.31	3.51	3.40	3.63	3.88
42319.6	2.51	2.66	2.81	3.00	2.99	3.18	3.12	3.34	3.31	3.52	3.41	3.64	3.89
42322.6	2.51	2.66	2.81	3.00	2.99	3.18	3.12	3.35	3.32	3.53	3.42	3.66	3.92
42325.5	2.50	2.66	2.80	3.00	2.98	3.18	3.12	3.35	3.32	3.54	3.42	3.67	3.94
42328.4	2.50	2.65	2.80	3.00	2.98	3.18	3.13	3.36	3.33	3.56	3.43	3.69	3.96
42331.4	2.49	2.65	2.80	3.00	2.98	3.19	3.13	3.37	3.33	3.57	3.44	3.70	3.98
42334.3	2.49	2.65	2.80	3.00	2.99	3.19	3.13	3.37	3.34	3.58	3.45	3.72	4.00
42337.3	2.48	2.64	2.80	3.00	2.99	3.19	3.13	3.38	3.35	3.59	3.46	3.73	4.02
42340.2	2.48	2.64	2.80	3.00	2.99	3.20	3.13	3.39	3.35	3.61	3.47	3.75	4.05
42343.2	2.48	2.64	2.80	3.01	2.99	3.20	3.14	3.39	3.36	3.62	3.48	3.77	4.07
42346.1	2.48	2.64	2.80	3.01	2.99	3.21	3.14	3.40	3.37	3.63	3.48	3.78	4.09
42349.1	2.47	2.64	2.80	3.01	3.00	3.21	3.15	3.41	3.37	3.64	3.49	3.79	4.10
42352.0	2.47	2.64	2.80	3.01	3.00	3.22	3.15	3.41	3.38	3.65	3.50	3.81	4.12
42355.0	2.47	2.64	2.81	3.02	3.00	3.22	3.16	3.42	3.38	3.66	3.51	3.81	4.13
42358.0	2.48	2.65	2.81	3.02	3.01	3.22	3.16	3.42	3.39	3.66	3.51	3.82	4.14
42361.0	2.48	2.65	2.81	3.02	3.01	3.23	3.16	3.43	3.39	3.67	3.52	3.83	4.16
42364.0	2.48	2.65	2.82	3.03	3.01	3.23	3.17	3.44	3.40	3.68	3.52	3.84	4.17
42367.0	2.49	2.66	2.82	3.03	3.02	3.24	3.17	3.44	3.41	3.69	3.53	3.85	4.18
42370.0	2.49	2.66	2.82	3.04	3.02	3.24	3.18	3.45	3.41	3.69	3.54	3.86	4.20
42373.0	2.49	2.66	2.83	3.04	3.02	3.25	3.18	3.45	3.42	3.70	3.54	3.87	4.21
42376.0	2.49	2.66	2.83	3.04	3.03	3.25	3.19	3.46	3.42	3.70	3.55	3.88	4.21
42379.0	2.50	2.67	2.83	3.05	3.03	3.26	3.19	3.46	3.43	3.71	3.55	3.88	4.23
42382.0	2.50	2.67	2.84	3.05	3.04	3.26	3.20	3.47	3.43	3.72	3.56	3.89	4.23
42385.0	2.50	2.67	2.84	3.05	3.04	3.27	3.20	3.47	3.44	3.72	3.56	3.90	4.24
42388.0	2.51	2.68	2.84	3.06	3.04	3.27	3.20	3.48	3.44	3.73	3.57	3.90	4.25
42391.0	2.51	2.68	2.85	3.06	3.05	3.28	3.21	3.48	3.45	3.73	3.57	3.90	4.26
42394.0	2.51	2.68	2.85	3.06	3.05	3.28	3.21	3.49	3.45	3.74	3.58	3.91	4.27
42397.0	2.52	2.69	2.85	3.07	3.05	3.28	3.21	3.49	3.46	3.74	3.58	3.91	4.28
42400.0	2.52	2.69	2.85	3.07	3.05	3.29	3.22	3.50	3.46	3.75	3.59	3.92	4.28
42403.0	2.52	2.69	2.86	3.07	3.06	3.29	3.22	3.50	3.46	3.75	3.59	3.92	4.29
42406.0	2.53	2.70	2.86	3.07	3.06	3.29	3.22	3.50	3.46	3.75	3.59	3.93	4.30
42409.0	2.53	2.70	2.86	3.08	3.06	3.29	3.22	3.51	3.47	3.76	3.60	3.94	4.31
42412.0	2.53	2.70	2.86	3.08	3.06	3.30	3.23	3.51	3.47	3.76	3.60	3.94	4.31
42415.0	2.54	2.71	2.87	3.08	3.07	3.30	3.23	3.51	3.47	3.77	3.60	3.95	4.32
42418.0	2.54	2.71	2.87	3.09	3.07	3.30	3.23	3.52	3.48	3.77	3.61	3.95	4.33
42421.0	2.55	2.71	2.88	3.09	3.08	3.31	3.24	3.52	3.48	3.77	3.61	3.95	4.33
42424.0	2.55	2.72	2.88	3.09	3.08	3.31	3.24	3.52	3.49	3.78	3.61	3.95	4.34
42427.0	2.55	2.72	2.88	3.10	3.08	3.31	3.25	3.53	3.49	3.78	3.62	3.96	4.34
42430.0	2.56	2.72	2.89	3.10	3.09	3.32	3.25	3.53	3.49	3.78	3.62	3.96	4.35

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42433.0	2.56	2.73	2.89	3.11	3.09	3.32	3.25	3.53	3.50	3.79	3.63	3.97	4.36
42436.0	2.57	2.73	2.89	3.11	3.09	3.33	3.26	3.54	3.50	3.79	3.63	3.97	4.36
42439.0	2.57	2.74	2.90	3.11	3.10	3.33	3.26	3.54	3.51	3.80	3.64	3.98	4.37
42442.0	2.58	2.74	2.90	3.12	3.10	3.33	3.26	3.55	3.51	3.80	3.64	3.98	4.37
42445.0	2.58	2.74	2.91	3.12	3.11	3.34	3.27	3.55	3.51	3.81	3.64	3.99	4.38
42448.0	2.58	2.75	2.91	3.12	3.11	3.34	3.27	3.55	3.52	3.81	3.65	3.99	4.38
42451.0	2.59	2.75	2.91	3.13	3.11	3.34	3.27	3.56	3.52	3.81	3.65	4.00	4.39
42454.0	2.59	2.76	2.92	3.13	3.12	3.35	3.28	3.56	3.52	3.82	3.66	4.00	4.39
42457.0	2.60	2.76	2.92	3.14	3.12	3.35	3.28	3.57	3.53	3.83	3.66	4.01	4.40
42460.0	2.60	2.76	2.92	3.14	3.12	3.36	3.29	3.57	3.53	3.83	3.67	4.01	4.40
42463.0	2.61	2.77	2.93	3.15	3.13	3.37	3.30	3.58	3.54	3.84	3.68	4.02	4.41
42466.0	2.62	2.78	2.94	3.16	3.14	3.37	3.30	3.59	3.55	3.85	3.68	4.03	4.42
42469.0	2.64	2.80	2.95	3.17	3.15	3.38	3.31	3.60	3.56	3.86	3.69	4.04	4.43
42472.0	2.65	2.81	2.96	3.18	3.16	3.39	3.32	3.61	3.57	3.87	3.70	4.05	4.44
42475.0	2.66	2.82	2.97	3.19	3.17	3.40	3.33	3.62	3.58	3.88	3.71	4.06	4.45
42478.0	2.67	2.83	2.98	3.20	3.18	3.41	3.34	3.63	3.59	3.89	3.72	4.07	4.46
42481.0	2.68	2.84	2.99	3.21	3.19	3.42	3.35	3.64	3.60	3.90	3.73	4.08	4.47
42484.0	2.69	2.85	3.00	3.22	3.20	3.43	3.36	3.65	3.61	3.91	3.74	4.09	4.48
42487.0	2.70	2.86	3.02	3.23	3.21	3.44	3.37	3.66	3.62	3.92	3.75	4.10	4.49
42490.0	2.71	2.88	3.03	3.24	3.22	3.45	3.38	3.67	3.63	3.93	3.76	4.11	4.49
42493.0	2.71	2.89	3.04	3.25	3.24	3.46	3.39	3.68	3.64	3.94	3.77	4.12	4.50
42496.0	2.72	2.90	3.05	3.26	3.25	3.47	3.40	3.69	3.65	3.95	3.78	4.13	4.51
42499.0	2.73	2.91	3.06	3.27	3.26	3.48	3.41	3.70	3.66	3.96	3.79	4.14	4.52
42502.0	2.74	2.92	3.08	3.29	3.27	3.50	3.43	3.71	3.67	3.97	3.80	4.15	4.53
42505.0	2.74	2.93	3.09	3.30	3.28	3.51	3.44	3.72	3.68	3.98	3.82	4.16	4.54
42508.0	2.75	2.93	3.10	3.31	3.29	3.52	3.45	3.73	3.69	3.99	3.83	4.17	4.55
42511.0	2.75	2.94	3.11	3.32	3.30	3.53	3.46	3.74	3.70	4.00	3.84	4.18	4.56
42514.0	2.76	2.95	3.12	3.33	3.32	3.54	3.47	3.75	3.71	4.01	3.85	4.19	4.57
42517.0	2.76	2.95	3.13	3.34	3.33	3.55	3.48	3.76	3.72	4.02	3.86	4.20	4.58
42520.0	2.76	2.96	3.14	3.36	3.34	3.56	3.49	3.77	3.73	4.03	3.87	4.21	4.59
42523.0	2.77	2.96	3.14	3.37	3.35	3.57	3.50	3.78	3.74	4.04	3.88	4.22	4.60
42526.0	2.77	2.97	3.15	3.38	3.36	3.58	3.51	3.79	3.75	4.05	3.89	4.23	4.61
42529.0	2.77	2.97	3.16	3.39	3.38	3.60	3.53	3.80	3.77	4.06	3.90	4.24	4.62
42532.0	2.77	2.97	3.16	3.40	3.39	3.61	3.54	3.82	3.78	4.07	3.92	4.25	4.63
42535.0	2.78	2.98	3.17	3.41	3.40	3.62	3.55	3.83	3.79	4.08	3.93	4.26	4.65
42538.0	2.78	2.98	3.17	3.42	3.40	3.63	3.56	3.84	3.80	4.09	3.94	4.27	4.66
42541.0	2.78	2.98	3.18	3.43	3.41	3.64	3.57	3.85	3.81	4.11	3.95	4.29	4.67
42544.0	2.78	2.99	3.18	3.44	3.42	3.66	3.59	3.86	3.82	4.12	3.96	4.30	4.68
42547.0	2.78	2.99	3.18	3.44	3.42	3.67	3.60	3.88	3.84	4.13	3.98	4.31	4.70
42550.0	2.78	2.99	3.19	3.45	3.43	3.68	3.61	3.89	3.85	4.14	3.99	4.32	4.71
42553.0	2.78	2.99	3.19	3.45	3.43	3.69	3.62	3.90	3.86	4.15	4.00	4.33	4.72
42556.0	2.78	2.99	3.19	3.46	3.44	3.70	3.63	3.91	3.87	4.17	4.01	4.35	4.73
42559.0	2.78	2.99	3.19	3.46	3.44	3.71	3.63	3.93	3.89	4.18	4.03	4.36	4.75
42562.0	2.78	2.99	3.20	3.47	3.45	3.72	3.64	3.94	3.90	4.19	4.04	4.37	4.76
42565.0	2.78	2.99	3.20	3.47	3.45	3.73	3.64	3.95	3.91	4.21	4.05	4.39	4.78
42568.0	2.78	2.99	3.20	3.47	3.45	3.74	3.65	3.97	3.93	4.22	4.07	4.40	4.79

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42571.0	2.77	2.98	3.19	3.46	3.44	3.72	3.64	3.96	3.91	4.21	4.06	4.39	4.78
42574.0	2.76	2.97	3.18	3.45	3.43	3.71	3.62	3.94	3.90	4.19	4.04	4.37	4.76
42577.0	2.75	2.96	3.16	3.44	3.42	3.69	3.61	3.93	3.89	4.18	4.03	4.36	4.75
42580.0	2.74	2.95	3.15	3.42	3.40	3.68	3.60	3.92	3.88	4.17	4.02	4.35	4.73
42583.0	2.73	2.94	3.14	3.41	3.39	3.67	3.58	3.91	3.86	4.16	4.01	4.33	4.72
42586.0	2.72	2.93	3.13	3.40	3.38	3.65	3.57	3.89	3.85	4.14	4.00	4.32	4.71
42589.0	2.71	2.92	3.12	3.39	3.37	3.64	3.56	3.88	3.84	4.13	3.99	4.31	4.69
42592.0	2.70	2.91	3.11	3.38	3.36	3.63	3.55	3.87	3.83	4.12	3.98	4.30	4.68
42595.0	2.70	2.91	3.10	3.37	3.35	3.62	3.54	3.86	3.82	4.11	3.96	4.29	4.67
42598.0	2.69	2.90	3.09	3.36	3.34	3.61	3.53	3.85	3.80	4.10	3.95	4.27	4.66
42601.0	2.68	2.89	3.09	3.35	3.33	3.60	3.52	3.84	3.79	4.09	3.94	4.26	4.65
42604.0	2.67	2.88	3.08	3.34	3.32	3.59	3.51	3.82	3.78	4.08	3.93	4.25	4.64
42607.0	2.67	2.87	3.07	3.33	3.31	3.58	3.50	3.82	3.77	4.08	3.92	4.25	4.64
42610.0	2.66	2.87	3.06	3.33	3.31	3.57	3.49	3.81	3.77	4.07	3.92	4.25	4.63
42613.0	2.66	2.86	3.06	3.32	3.30	3.57	3.49	3.81	3.76	4.07	3.92	4.25	4.62
42616.0	2.65	2.85	3.05	3.31	3.29	3.56	3.48	3.80	3.76	4.07	3.91	4.24	4.62
42619.0	2.65	2.85	3.04	3.30	3.29	3.56	3.48	3.80	3.75	4.06	3.91	4.24	4.62
42622.0	2.64	2.84	3.03	3.30	3.28	3.55	3.47	3.79	3.75	4.06	3.90	4.23	4.61
42625.0	2.64	2.84	3.03	3.29	3.27	3.55	3.46	3.78	3.74	4.05	3.90	4.22	4.60
42628.0	2.63	2.83	3.02	3.28	3.26	3.54	3.45	3.77	3.73	4.04	3.89	4.21	4.59
42631.0	2.63	2.83	3.02	3.28	3.26	3.53	3.45	3.77	3.72	4.03	3.88	4.21	4.59
42634.0	2.62	2.82	3.01	3.27	3.25	3.52	3.44	3.76	3.71	4.02	3.87	4.20	4.58
42637.0	2.62	2.82	3.01	3.26	3.24	3.52	3.43	3.75	3.71	4.01	3.86	4.19	4.57
42640.0	2.62	2.81	3.00	3.26	3.24	3.51	3.42	3.74	3.70	4.01	3.85	4.18	4.57
42643.0	2.62	2.81	3.00	3.25	3.23	3.50	3.42	3.74	3.69	4.00	3.85	4.18	4.56
42646.0	2.61	2.81	2.99	3.25	3.23	3.50	3.41	3.73	3.69	3.99	3.84	4.17	4.55
42649.0	2.61	2.81	2.99	3.24	3.22	3.49	3.41	3.73	3.68	3.98	3.84	4.16	4.55
42652.0	2.61	2.80	2.98	3.24	3.22	3.48	3.40	3.72	3.68	3.98	3.83	4.16	4.55
42655.0	2.61	2.80	2.98	3.23	3.21	3.48	3.39	3.71	3.67	3.97	3.82	4.15	4.54
42658.0	2.61	2.80	2.98	3.23	3.21	3.47	3.39	3.71	3.66	3.96	3.82	4.15	4.54
42661.0	2.61	2.80	2.97	3.22	3.21	3.47	3.38	3.70	3.66	3.96	3.81	4.14	4.54
42664.0	2.61	2.79	2.97	3.22	3.20	3.46	3.38	3.70	3.65	3.95	3.81	4.14	4.54
42667.0	2.61	2.79	2.97	3.22	3.20	3.46	3.38	3.69	3.65	3.95	3.80	4.13	4.53
42670.0	2.61	2.79	2.97	3.21	3.20	3.46	3.37	3.69	3.64	3.94	3.80	4.13	4.54
42673.0	2.61	2.79	2.97	3.21	3.19	3.45	3.37	3.68	3.64	3.94	3.80	4.13	4.54
42676.0	2.61	2.79	2.96	3.21	3.19	3.45	3.37	3.68	3.63	3.93	3.79	4.12	4.54
42679.0	2.61	2.79	2.96	3.21	3.19	3.44	3.36	3.67	3.63	3.93	3.78	4.12	4.53
42681.9	2.61	2.79	2.96	3.20	3.18	3.44	3.36	3.67	3.62	3.92	3.78	4.11	4.53
42684.9	2.61	2.79	2.96	3.20	3.18	3.43	3.35	3.66	3.62	3.91	3.77	4.10	4.52
42687.9	2.61	2.78	2.95	3.19	3.18	3.43	3.35	3.65	3.61	3.90	3.76	4.09	4.51
42690.9	2.61	2.78	2.95	3.19	3.17	3.42	3.34	3.65	3.60	3.89	3.76	4.08	4.51
42693.8	2.61	2.78	2.95	3.19	3.17	3.42	3.33	3.64	3.60	3.89	3.75	4.08	4.50
42696.8	2.61	2.78	2.94	3.18	3.16	3.41	3.33	3.63	3.59	3.88	3.74	4.07	4.49
42699.8	2.60	2.78	2.94	3.18	3.16	3.40	3.32	3.63	3.58	3.87	3.73	4.06	4.48
42702.8	2.60	2.77	2.93	3.17	3.15	3.40	3.32	3.62	3.57	3.86	3.73	4.05	4.47
42705.7	2.60	2.77	2.93	3.17	3.15	3.39	3.31	3.61	3.57	3.85	3.72	4.04	4.46

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42708.7	2.60	2.77	2.93	3.16	3.14	3.39	3.31	3.60	3.56	3.84	3.71	4.03	4.45
42711.7	2.60	2.77	2.92	3.16	3.14	3.38	3.30	3.59	3.55	3.83	3.70	4.02	4.44
42714.6	2.60	2.76	2.92	3.15	3.13	3.37	3.29	3.59	3.54	3.82	3.69	4.01	4.43
42717.6	2.60	2.76	2.92	3.15	3.13	3.37	3.29	3.58	3.54	3.82	3.69	4.00	4.42
42720.6	2.60	2.76	2.91	3.14	3.12	3.36	3.28	3.57	3.53	3.81	3.68	3.99	4.41
42723.6	2.60	2.76	2.91	3.14	3.12	3.35	3.27	3.56	3.52	3.80	3.67	3.98	4.40
42726.5	2.60	2.75	2.90	3.13	3.11	3.35	3.27	3.55	3.51	3.79	3.66	3.97	4.39
42729.5	2.59	2.75	2.90	3.12	3.11	3.34	3.26	3.54	3.50	3.78	3.65	3.96	4.37
42732.5	2.59	2.75	2.89	3.12	3.10	3.33	3.25	3.54	3.49	3.77	3.64	3.95	4.36
42735.4	2.59	2.74	2.89	3.11	3.10	3.32	3.25	3.53	3.48	3.76	3.63	3.94	4.35
42738.4	2.59	2.74	2.88	3.11	3.09	3.32	3.24	3.52	3.48	3.75	3.62	3.93	4.34
42741.4	2.59	2.74	2.88	3.10	3.08	3.31	3.23	3.51	3.47	3.74	3.61	3.92	4.33
42744.4	2.59	2.73	2.87	3.09	3.08	3.30	3.22	3.50	3.46	3.73	3.60	3.91	4.31
42747.3	2.59	2.73	2.87	3.09	3.07	3.29	3.22	3.49	3.45	3.72	3.59	3.90	4.30
42750.3	2.58	2.73	2.86	3.08	3.06	3.28	3.21	3.48	3.44	3.71	3.58	3.89	4.29
42753.3	2.58	2.72	2.86	3.07	3.06	3.27	3.20	3.47	3.43	3.69	3.58	3.87	4.28
42756.3	2.58	2.72	2.85	3.07	3.05	3.27	3.19	3.46	3.42	3.68	3.57	3.86	4.26
42759.2	2.58	2.72	2.85	3.06	3.04	3.26	3.18	3.45	3.41	3.67	3.56	3.85	4.25
42762.2	2.58	2.71	2.84	3.05	3.04	3.25	3.17	3.44	3.40	3.66	3.55	3.84	4.23
42765.2	2.57	2.71	2.84	3.04	3.03	3.24	3.17	3.43	3.39	3.65	3.54	3.83	4.22
42768.1	2.57	2.70	2.83	3.04	3.02	3.23	3.16	3.42	3.38	3.64	3.53	3.82	4.20
42771.1	2.57	2.70	2.82	3.03	3.01	3.22	3.15	3.41	3.37	3.63	3.51	3.80	4.19
42774.1	2.57	2.69	2.82	3.02	3.00	3.21	3.14	3.40	3.36	3.62	3.50	3.79	4.17
42777.1	2.57	2.69	2.81	3.01	3.00	3.20	3.13	3.39	3.35	3.61	3.49	3.78	4.15
42780.0	2.56	2.69	2.80	3.00	2.99	3.19	3.12	3.38	3.34	3.60	3.48	3.77	4.14
42783.0	2.56	2.68	2.80	3.00	2.98	3.18	3.11	3.37	3.33	3.58	3.47	3.76	4.13
42786.0	2.55	2.67	2.79	2.99	2.97	3.18	3.10	3.36	3.32	3.58	3.47	3.75	4.12
42789.0	2.55	2.67	2.78	2.98	2.97	3.17	3.10	3.36	3.32	3.57	3.46	3.75	4.12
42792.0	2.54	2.66	2.77	2.97	2.96	3.16	3.09	3.35	3.31	3.57	3.45	3.74	4.11
42795.0	2.53	2.65	2.77	2.97	2.95	3.16	3.08	3.34	3.30	3.56	3.45	3.73	4.10
42798.0	2.52	2.64	2.76	2.96	2.95	3.15	3.08	3.34	3.30	3.55	3.44	3.73	4.10
42801.0	2.51	2.63	2.75	2.95	2.94	3.14	3.07	3.33	3.29	3.55	3.44	3.72	4.09
42804.0	2.51	2.63	2.74	2.95	2.93	3.14	3.06	3.33	3.28	3.54	3.43	3.72	4.09
42807.0	2.50	2.62	2.74	2.94	2.93	3.13	3.06	3.32	3.28	3.53	3.42	3.71	4.08
42810.0	2.49	2.61	2.73	2.94	2.92	3.13	3.05	3.31	3.27	3.53	3.42	3.70	4.07
42813.0	2.48	2.60	2.72	2.93	2.91	3.12	3.05	3.31	3.27	3.52	3.41	3.70	4.06
42816.0	2.47	2.60	2.72	2.92	2.91	3.11	3.04	3.30	3.26	3.51	3.41	3.69	4.06
42819.0	2.47	2.59	2.71	2.92	2.90	3.11	3.03	3.29	3.25	3.51	3.40	3.68	4.05
42822.0	2.46	2.58	2.70	2.91	2.89	3.10	3.03	3.29	3.25	3.50	3.39	3.68	4.04
42825.0	2.45	2.57	2.69	2.90	2.89	3.09	3.02	3.28	3.24	3.49	3.39	3.67	4.03
42828.0	2.44	2.57	2.69	2.90	2.88	3.09	3.01	3.27	3.23	3.49	3.38	3.66	4.03
42831.0	2.44	2.56	2.68	2.89	2.88	3.08	3.01	3.27	3.22	3.48	3.37	3.65	4.02
42834.0	2.43	2.55	2.68	2.88	2.87	3.07	3.00	3.26	3.22	3.47	3.36	3.64	4.01
42837.0	2.42	2.55	2.67	2.88	2.86	3.07	2.99	3.25	3.21	3.46	3.36	3.63	4.00
42840.0	2.42	2.54	2.66	2.87	2.86	3.06	2.99	3.24	3.20	3.45	3.35	3.62	3.99
42843.0	2.41	2.53	2.66	2.87	2.85	3.05	2.98	3.23	3.19	3.44	3.34	3.61	3.98

Notes

1. Velocities are provided for Hutt River branches only.
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Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42846.0	2.40	2.53	2.65	2.86	2.84	3.04	2.97	3.23	3.18	3.43	3.33	3.60	3.97
42849.0	2.39	2.52	2.64	2.85	2.84	3.04	2.96	3.22	3.18	3.42	3.32	3.59	3.96
42852.0	2.39	2.51	2.64	2.85	2.83	3.03	2.96	3.21	3.17	3.41	3.31	3.58	3.95
42855.0	2.38	2.51	2.63	2.84	2.83	3.02	2.95	3.20	3.16	3.40	3.30	3.57	3.94
42858.0	2.37	2.50	2.62	2.83	2.82	3.02	2.94	3.20	3.15	3.39	3.30	3.56	3.93
42861.0	2.37	2.49	2.62	2.83	2.81	3.01	2.94	3.19	3.15	3.38	3.29	3.55	3.92
42864.0	2.36	2.49	2.61	2.82	2.81	3.00	2.93	3.18	3.14	3.37	3.28	3.53	3.90
42867.0	2.35	2.48	2.61	2.82	2.80	3.00	2.92	3.17	3.13	3.36	3.27	3.52	3.89
42870.0	2.35	2.48	2.60	2.81	2.80	2.99	2.92	3.17	3.13	3.35	3.27	3.51	3.88
42873.0	2.34	2.47	2.59	2.80	2.79	2.99	2.91	3.16	3.12	3.34	3.26	3.50	3.86
42876.0	2.34	2.46	2.59	2.80	2.78	2.98	2.91	3.15	3.11	3.33	3.25	3.49	3.85
42879.0	2.33	2.46	2.58	2.79	2.78	2.97	2.90	3.15	3.11	3.32	3.25	3.48	3.84
42882.0	2.32	2.45	2.58	2.79	2.77	2.97	2.89	3.14	3.10	3.32	3.24	3.47	3.83
42885.0	2.32	2.45	2.57	2.78	2.77	2.96	2.89	3.14	3.09	3.31	3.24	3.46	3.81
42888.0	2.32	2.45	2.57	2.79	2.77	2.97	2.89	3.14	3.10	3.31	3.24	3.46	3.81
42891.0	2.33	2.45	2.58	2.79	2.78	2.97	2.90	3.14	3.10	3.31	3.24	3.46	3.81
42894.0	2.33	2.46	2.58	2.80	2.78	2.97	2.90	3.15	3.11	3.32	3.25	3.46	3.81
42897.0	2.33	2.46	2.59	2.80	2.79	2.98	2.90	3.15	3.11	3.32	3.25	3.46	3.81
42900.0	2.34	2.47	2.59	2.81	2.79	2.98	2.91	3.15	3.11	3.32	3.26	3.46	3.81
42903.0	2.34	2.47	2.59	2.81	2.80	2.99	2.91	3.16	3.12	3.33	3.26	3.46	3.80
42906.0	2.34	2.47	2.60	2.81	2.80	2.99	2.92	3.16	3.12	3.33	3.26	3.47	3.80
42909.0	2.35	2.48	2.60	2.82	2.80	3.00	2.92	3.17	3.12	3.33	3.27	3.47	3.80
42912.0	2.35	2.48	2.61	2.82	2.81	3.00	2.93	3.17	3.13	3.33	3.27	3.47	3.80
42915.0	2.35	2.48	2.61	2.83	2.81	3.00	2.93	3.17	3.13	3.34	3.28	3.47	3.81
42918.0	2.36	2.49	2.61	2.83	2.82	3.01	2.94	3.18	3.14	3.34	3.28	3.48	3.81
42921.0	2.36	2.49	2.62	2.84	2.82	3.02	2.94	3.19	3.14	3.34	3.29	3.48	3.81
42924.0	2.36	2.49	2.62	2.84	2.83	3.03	2.95	3.19	3.15	3.35	3.30	3.48	3.81
42927.0	2.37	2.50	2.62	2.85	2.84	3.04	2.96	3.21	3.16	3.36	3.31	3.49	3.82
42930.0	2.37	2.50	2.63	2.86	2.84	3.04	2.97	3.22	3.17	3.37	3.32	3.49	3.82
42933.0	2.37	2.50	2.63	2.86	2.85	3.05	2.97	3.22	3.18	3.37	3.33	3.49	3.82
42936.0	2.38	2.51	2.63	2.87	2.85	3.05	2.98	3.23	3.19	3.38	3.33	3.50	3.83
42939.0	2.38	2.51	2.64	2.87	2.85	3.06	2.98	3.23	3.19	3.38	3.34	3.50	3.83
42942.0	2.38	2.51	2.64	2.87	2.86	3.06	2.99	3.24	3.19	3.39	3.34	3.50	3.83
42945.0	2.38	2.51	2.64	2.88	2.86	3.06	2.99	3.24	3.20	3.39	3.35	3.50	3.83
42948.0	2.39	2.52	2.64	2.88	2.86	3.07	2.99	3.24	3.20	3.40	3.35	3.51	3.84
42951.0	2.39	2.52	2.65	2.89	2.87	3.07	3.00	3.25	3.20	3.40	3.35	3.51	3.84
42954.0	2.39	2.52	2.65	2.89	2.87	3.08	3.00	3.25	3.21	3.40	3.36	3.51	3.84
42957.0	2.39	2.52	2.65	2.89	2.88	3.08	3.00	3.25	3.21	3.41	3.36	3.51	3.84
42960.0	2.39	2.53	2.65	2.90	2.88	3.08	3.01	3.26	3.21	3.41	3.36	3.51	3.84
42963.0	2.40	2.53	2.66	2.90	2.88	3.09	3.01	3.26	3.21	3.41	3.36	3.51	3.84
42966.0	2.40	2.53	2.66	2.90	2.89	3.09	3.01	3.26	3.21	3.41	3.36	3.51	3.84
42969.0	2.40	2.53	2.66	2.91	2.89	3.09	3.02	3.26	3.21	3.41	3.36	3.51	3.84
42972.0	2.40	2.54	2.66	2.91	2.89	3.10	3.02	3.26	3.21	3.41	3.36	3.51	3.84
42975.0	2.40	2.54	2.67	2.91	2.90	3.10	3.02	3.26	3.21	3.41	3.36	3.51	3.85
42978.0	2.41	2.54	2.67	2.92	2.90	3.10	3.03	3.26	3.22	3.41	3.36	3.52	3.85
42981.0	2.41	2.54	2.67	2.92	2.90	3.11	3.03	3.26	3.22	3.41	3.37	3.52	3.85

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
42984.0	2.41	2.54	2.67	2.92	2.90	3.11	3.03	3.27	3.22	3.42	3.37	3.52	3.85
42987.0	2.41	2.54	2.67	2.93	2.91	3.11	3.04	3.27	3.22	3.42	3.37	3.52	3.86
42989.9	2.41	2.54	2.67	2.92	2.91	3.11	3.03	3.27	3.22	3.42	3.37	3.52	3.86
42992.8	2.40	2.54	2.67	2.92	2.90	3.11	3.03	3.27	3.22	3.42	3.37	3.52	3.86
42995.7	2.40	2.54	2.67	2.92	2.90	3.11	3.03	3.27	3.22	3.42	3.37	3.52	3.86
42998.6	2.40	2.53	2.66	2.92	2.90	3.11	3.03	3.27	3.22	3.42	3.37	3.52	3.86
43001.6	2.39	2.53	2.66	2.92	2.90	3.11	3.03	3.27	3.22	3.41	3.37	3.52	3.86
43004.5	2.39	2.53	2.66	2.91	2.90	3.11	3.03	3.26	3.22	3.41	3.37	3.52	3.86
43007.4	2.39	2.52	2.66	2.91	2.89	3.11	3.03	3.26	3.22	3.41	3.37	3.52	3.86
43010.3	2.38	2.52	2.65	2.91	2.89	3.11	3.03	3.26	3.22	3.41	3.37	3.52	3.86
43013.2	2.38	2.52	2.65	2.91	2.89	3.10	3.02	3.26	3.21	3.41	3.37	3.52	3.86
43016.1	2.38	2.51	2.65	2.91	2.89	3.10	3.02	3.26	3.21	3.41	3.37	3.52	3.86
43019.0	2.37	2.51	2.64	2.91	2.89	3.10	3.02	3.26	3.21	3.41	3.37	3.52	3.86
43021.9	2.37	2.51	2.64	2.90	2.89	3.10	3.02	3.26	3.21	3.41	3.37	3.52	3.87
43024.9	2.37	2.51	2.64	2.90	2.88	3.10	3.02	3.26	3.21	3.41	3.37	3.52	3.87
43027.8	2.36	2.50	2.64	2.90	2.88	3.10	3.02	3.26	3.21	3.41	3.37	3.52	3.87
43030.7	2.36	2.50	2.64	2.90	2.88	3.10	3.02	3.26	3.21	3.41	3.37	3.52	3.87
43033.6	2.36	2.50	2.63	2.90	2.88	3.10	3.01	3.26	3.21	3.41	3.37	3.51	3.87
43036.5	2.35	2.50	2.63	2.90	2.88	3.10	3.01	3.26	3.21	3.41	3.37	3.51	3.87
43039.4	2.35	2.49	2.63	2.89	2.87	3.09	3.01	3.26	3.21	3.41	3.37	3.51	3.87
43042.3	2.35	2.49	2.63	2.89	2.87	3.09	3.01	3.25	3.21	3.41	3.37	3.51	3.87
43045.2	2.35	2.49	2.62	2.89	2.87	3.09	3.01	3.25	3.21	3.41	3.37	3.51	3.87
43048.1	2.34	2.49	2.62	2.89	2.87	3.09	3.01	3.25	3.21	3.41	3.37	3.51	3.87
43051.1	2.34	2.48	2.62	2.89	2.87	3.09	3.01	3.25	3.21	3.41	3.37	3.51	3.87
43054.0	2.34	2.48	2.62	2.89	2.87	3.09	3.01	3.25	3.20	3.41	3.37	3.51	3.87
43056.9	2.34	2.48	2.62	2.89	2.87	3.09	3.01	3.25	3.20	3.41	3.37	3.51	3.87
43059.8	2.33	2.48	2.61	2.88	2.86	3.09	3.00	3.25	3.20	3.41	3.37	3.51	3.87
43062.7	2.33	2.47	2.61	2.88	2.86	3.09	3.00	3.25	3.20	3.41	3.37	3.51	3.87
43065.6	2.33	2.47	2.61	2.88	2.86	3.09	3.00	3.25	3.20	3.41	3.37	3.51	3.87
43068.5	2.33	2.47	2.61	2.88	2.86	3.09	3.00	3.25	3.20	3.41	3.37	3.51	3.87
43071.4	2.32	2.47	2.60	2.88	2.86	3.09	3.00	3.25	3.20	3.41	3.37	3.51	3.87
43074.4	2.32	2.47	2.60	2.88	2.86	3.09	3.00	3.25	3.20	3.41	3.37	3.51	3.87
43077.3	2.32	2.46	2.60	2.88	2.86	3.08	3.00	3.25	3.20	3.41	3.37	3.51	3.87
43080.2	2.32	2.46	2.60	2.88	2.86	3.08	3.00	3.25	3.20	3.41	3.37	3.51	3.88
43083.1	2.32	2.46	2.60	2.87	2.85	3.08	3.00	3.25	3.20	3.41	3.37	3.52	3.89
43086.0	2.31	2.46	2.60	2.87	2.85	3.08	3.00	3.25	3.20	3.41	3.37	3.52	3.89
43086.0	2.31	2.46	2.60	2.87	2.85	3.08	3.00	3.25	3.20	3.41	3.37	3.52	3.89
43093.3	2.30	2.44	2.58	2.86	2.84	3.07	2.98	3.24	3.19	3.40	3.36	3.51	3.89
43100.7	2.28	2.42	2.56	2.84	2.82	3.06	2.97	3.23	3.18	3.40	3.35	3.51	3.90
43108.0	2.26	2.40	2.54	2.83	2.81	3.05	2.96	3.22	3.17	3.39	3.35	3.51	3.91
43115.4	2.24	2.38	2.53	2.82	2.80	3.04	2.95	3.22	3.16	3.39	3.34	3.51	3.92
43122.7	2.22	2.37	2.52	2.81	2.79	3.03	2.94	3.21	3.16	3.39	3.34	3.52	3.94
43130.1	2.21	2.36	2.51	2.80	2.78	3.02	2.93	3.21	3.15	3.38	3.34	3.51	3.94
43137.4	2.20	2.36	2.50	2.79	2.77	3.01	2.92	3.20	3.14	3.37	3.33	3.50	3.94
43144.8	2.19	2.35	2.50	2.78	2.76	3.01	2.91	3.19	3.14	3.37	3.32	3.50	3.95
43152.1	2.19	2.34	2.48	2.77	2.75	3.00	2.90	3.18	3.13	3.36	3.32	3.50	3.97

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
43159.4	2.19	2.33	2.47	2.77	2.74	2.99	2.90	3.18	3.12	3.36	3.31	3.51	3.99
43166.8	2.18	2.32	2.46	2.76	2.74	2.98	2.89	3.17	3.12	3.36	3.31	3.52	4.01
43174.1	2.17	2.31	2.45	2.75	2.73	2.97	2.88	3.16	3.11	3.35	3.30	3.52	4.04
43181.5	2.16	2.30	2.44	2.74	2.72	2.96	2.87	3.15	3.09	3.34	3.29	3.51	4.06
43188.8	2.14	2.29	2.43	2.73	2.71	2.95	2.86	3.14	3.08	3.33	3.28	3.51	4.06
43196.2	2.13	2.28	2.42	2.72	2.70	2.94	2.85	3.13	3.07	3.32	3.27	3.49	4.05
43203.5	2.12	2.27	2.41	2.72	2.70	2.93	2.84	3.12	3.06	3.31	3.26	3.48	4.04
43209.0	2.63	2.73	2.81	2.95	2.94	3.19	3.11	3.41	3.38	3.57	3.49	3.74	4.11
43214.5	2.35	2.48	2.61	2.81	2.79	3.03	2.96	3.26	3.22	3.51	3.34	3.68	4.04
43221.3	2.34	2.48	2.60	2.80	2.79	3.03	2.96	3.25	3.22	3.51	3.34	3.68	4.04
43228.1	2.34	2.47	2.60	2.80	2.79	3.03	2.96	3.25	3.22	3.51	3.34	3.68	4.04
43234.9	2.34	2.47	2.60	2.80	2.79	3.02	2.96	3.25	3.21	3.51	3.34	3.68	4.04
43241.7	2.34	2.47	2.60	2.80	2.78	3.02	2.96	3.25	3.21	3.50	3.34	3.67	4.03
43248.5	2.33	2.47	2.60	2.80	2.78	3.02	2.95	3.25	3.21	3.50	3.33	3.67	4.03
43255.3	2.33	2.46	2.60	2.79	2.78	3.02	2.95	3.24	3.21	3.50	3.33	3.66	4.02
43262.1	2.33	2.46	2.60	2.79	2.78	3.01	2.95	3.24	3.20	3.49	3.33	3.66	4.01
43268.9	2.33	2.46	2.59	2.79	2.78	3.01	2.95	3.24	3.20	3.49	3.33	3.65	4.00
43275.8	2.32	2.46	2.59	2.79	2.77	3.01	2.94	3.24	3.20	3.49	3.32	3.65	4.00
43282.6	2.32	2.46	2.59	2.79	2.77	3.01	2.94	3.23	3.20	3.48	3.32	3.65	3.99
43289.4	2.32	2.46	2.59	2.78	2.77	3.00	2.94	3.23	3.19	3.48	3.32	3.64	3.99
43296.2	2.32	2.45	2.59	2.78	2.76	3.00	2.94	3.23	3.19	3.48	3.31	3.64	3.98
43303.0	2.32	2.45	2.59	2.78	2.76	3.00	2.93	3.22	3.19	3.47	3.31	3.63	3.97
43309.8	2.32	2.45	2.59	2.77	2.76	2.99	2.93	3.22	3.18	3.47	3.31	3.63	3.97
43316.6	2.32	2.45	2.59	2.77	2.76	2.99	2.93	3.22	3.18	3.46	3.30	3.63	3.96
43323.4	2.32	2.45	2.58	2.77	2.75	2.99	2.92	3.21	3.18	3.46	3.30	3.63	3.96
43330.2	2.33	2.46	2.58	2.76	2.75	2.98	2.92	3.21	3.17	3.46	3.30	3.62	3.96
43337.0	2.34	2.46	2.58	2.76	2.75	2.98	2.92	3.21	3.17	3.46	3.29	3.62	3.96
43337.0	2.34	2.46	2.58	2.76	2.75	2.98	2.92	3.21	3.17	3.46	3.29	3.62	3.96
43339.9	2.33	2.45	2.57	2.75	2.74	2.97	2.91	3.20	3.16	3.45	3.28	3.61	3.95
43342.7	2.33	2.45	2.57	2.75	2.73	2.96	2.90	3.19	3.15	3.44	3.27	3.60	3.93
43345.6	2.32	2.44	2.56	2.74	2.72	2.96	2.89	3.18	3.14	3.43	3.27	3.59	3.92
43348.5	2.32	2.44	2.55	2.73	2.72	2.95	2.88	3.17	3.13	3.42	3.26	3.58	3.91
43351.3	2.31	2.43	2.55	2.72	2.71	2.94	2.88	3.16	3.13	3.41	3.25	3.57	3.90
43354.2	2.31	2.43	2.54	2.72	2.70	2.93	2.87	3.15	3.12	3.40	3.24	3.56	3.89
43357.1	2.30	2.42	2.53	2.71	2.70	2.92	2.86	3.15	3.11	3.39	3.23	3.55	3.88
43359.9	2.30	2.42	2.53	2.70	2.69	2.92	2.85	3.14	3.10	3.38	3.22	3.54	3.87
43362.8	2.29	2.41	2.52	2.70	2.68	2.91	2.85	3.13	3.09	3.37	3.21	3.53	3.86
43365.7	2.29	2.41	2.52	2.69	2.67	2.90	2.84	3.12	3.08	3.37	3.20	3.52	3.85
43368.6	2.28	2.40	2.51	2.68	2.67	2.89	2.83	3.11	3.08	3.36	3.20	3.51	3.84
43371.4	2.28	2.39	2.51	2.68	2.66	2.89	2.82	3.10	3.07	3.35	3.19	3.51	3.83
43374.3	2.27	2.39	2.50	2.67	2.65	2.88	2.82	3.10	3.06	3.34	3.18	3.50	3.82
43377.2	2.27	2.38	2.49	2.66	2.65	2.87	2.81	3.09	3.05	3.33	3.17	3.49	3.81
43380.0	2.27	2.38	2.49	2.66	2.64	2.86	2.80	3.08	3.04	3.32	3.16	3.48	3.80
43382.9	2.26	2.37	2.48	2.65	2.64	2.86	2.80	3.07	3.04	3.31	3.16	3.47	3.79
43385.8	2.26	2.37	2.48	2.64	2.63	2.85	2.79	3.07	3.03	3.31	3.15	3.46	3.78
43388.6	2.25	2.36	2.47	2.64	2.62	2.84	2.78	3.06	3.02	3.30	3.14	3.45	3.77

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
43391.5	2.25	2.36	2.47	2.63	2.62	2.84	2.78	3.05	3.01	3.29	3.13	3.44	3.76
43394.4	2.24	2.35	2.46	2.63	2.61	2.83	2.77	3.04	3.01	3.28	3.13	3.43	3.75
43397.2	2.24	2.35	2.46	2.62	2.61	2.82	2.76	3.04	3.00	3.27	3.12	3.43	3.74
43400.1	2.23	2.34	2.45	2.61	2.60	2.82	2.76	3.03	2.99	3.27	3.11	3.42	3.73
43403.0	2.23	2.34	2.45	2.61	2.59	2.81	2.75	3.02	2.99	3.26	3.10	3.41	3.72
43405.8	2.22	2.33	2.44	2.60	2.59	2.80	2.74	3.01	2.98	3.25	3.10	3.40	3.71
43408.7	2.22	2.33	2.44	2.60	2.58	2.80	2.74	3.01	2.97	3.24	3.09	3.39	3.70
43411.6	2.21	2.32	2.43	2.59	2.58	2.79	2.73	3.00	2.97	3.23	3.08	3.38	3.69
43414.4	2.21	2.32	2.43	2.58	2.57	2.78	2.72	2.99	2.96	3.23	3.07	3.38	3.68
43417.3	2.20	2.32	2.42	2.58	2.57	2.78	2.72	2.99	2.95	3.22	3.07	3.37	3.67
43420.2	2.20	2.31	2.42	2.57	2.56	2.77	2.71	2.98	2.94	3.21	3.06	3.36	3.66
43423.1	2.20	2.31	2.41	2.57	2.56	2.76	2.71	2.97	2.94	3.20	3.05	3.35	3.65
43425.9	2.19	2.30	2.41	2.56	2.55	2.76	2.70	2.96	2.93	3.19	3.04	3.34	3.64
43428.8	2.19	2.30	2.40	2.56	2.54	2.75	2.69	2.96	2.92	3.18	3.04	3.33	3.63
43431.7	2.18	2.29	2.40	2.55	2.54	2.75	2.69	2.95	2.92	3.18	3.03	3.32	3.62
43434.5	2.18	2.29	2.39	2.55	2.53	2.74	2.68	2.94	2.91	3.17	3.02	3.31	3.61
43437.4	2.17	2.28	2.39	2.54	2.53	2.73	2.68	2.94	2.90	3.16	3.01	3.30	3.59
43440.3	2.17	2.28	2.38	2.53	2.52	2.73	2.67	2.93	2.89	3.15	3.00	3.29	3.58
43443.1	2.16	2.27	2.38	2.53	2.52	2.72	2.66	2.92	2.88	3.14	2.99	3.28	3.56
43446.0	2.16	2.27	2.37	2.52	2.51	2.71	2.65	2.91	2.87	3.13	2.98	3.26	3.54
43448.9	2.16	2.27	2.37	2.53	2.51	2.71	2.66	2.91	2.88	3.13	2.98	3.26	3.54
43451.7	2.17	2.28	2.38	2.53	2.52	2.72	2.66	2.91	2.88	3.13	2.98	3.26	3.54
43454.6	2.18	2.28	2.38	2.54	2.52	2.72	2.67	2.91	2.88	3.13	2.98	3.27	3.54
43457.5	2.18	2.29	2.39	2.54	2.53	2.72	2.67	2.91	2.88	3.13	2.98	3.26	3.54
43460.3	2.19	2.29	2.39	2.54	2.53	2.73	2.67	2.91	2.88	3.13	2.99	3.26	3.54
43463.2	2.19	2.30	2.40	2.54	2.53	2.73	2.67	2.91	2.88	3.13	2.98	3.26	3.54
43466.1	2.20	2.30	2.40	2.55	2.54	2.73	2.67	2.91	2.88	3.13	2.98	3.26	3.55
43468.9	2.21	2.31	2.41	2.55	2.54	2.73	2.67	2.91	2.88	3.13	2.98	3.26	3.54
43471.8	2.21	2.32	2.41	2.55	2.54	2.73	2.68	2.91	2.88	3.12	2.99	3.25	3.54
43474.7	2.22	2.32	2.42	2.55	2.54	2.73	2.68	2.91	2.88	3.13	2.99	3.25	3.54
43477.6	2.23	2.33	2.43	2.56	2.55	2.73	2.68	2.91	2.88	3.13	3.00	3.26	3.54
43480.4	2.23	2.34	2.43	2.57	2.55	2.74	2.68	2.92	2.88	3.13	3.00	3.26	3.55
43483.3	2.24	2.35	2.44	2.57	2.56	2.74	2.69	2.92	2.89	3.14	3.01	3.26	3.55
43486.2	2.25	2.35	2.45	2.58	2.57	2.74	2.69	2.93	2.89	3.14	3.01	3.27	3.55
43489.0	2.26	2.36	2.46	2.59	2.58	2.75	2.70	2.93	2.90	3.15	3.02	3.27	3.55
43491.9	2.26	2.37	2.47	2.60	2.59	2.75	2.71	2.94	2.91	3.15	3.02	3.28	3.56
43494.8	2.27	2.38	2.47	2.61	2.60	2.76	2.71	2.94	2.91	3.16	3.03	3.28	3.56
43497.6	2.28	2.38	2.48	2.62	2.60	2.77	2.72	2.95	2.92	3.17	3.03	3.29	3.56
43500.5	2.28	2.39	2.49	2.62	2.61	2.78	2.73	2.96	2.93	3.18	3.04	3.29	3.57
43503.4	2.29	2.40	2.50	2.63	2.62	2.79	2.74	2.96	2.93	3.18	3.05	3.30	3.57
43506.2	2.30	2.41	2.51	2.64	2.63	2.79	2.75	2.97	2.94	3.18	3.05	3.31	3.57
43509.1	2.31	2.42	2.52	2.65	2.64	2.80	2.76	2.98	2.95	3.20	3.07	3.31	3.58
43512.0	2.32	2.42	2.52	2.66	2.65	2.81	2.77	2.99	2.96	3.21	3.07	3.32	3.59
43514.8	2.32	2.43	2.53	2.67	2.66	2.82	2.78	3.00	2.97	3.21	3.08	3.33	3.60
43517.7	2.33	2.44	2.54	2.68	2.67	2.83	2.79	3.01	2.98	3.21	3.09	3.34	3.61
43520.6	2.34	2.45	2.55	2.69	2.68	2.84	2.80	3.02	2.99	3.22	3.09	3.35	3.61

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
43523.4	2.35	2.46	2.56	2.70	2.69	2.85	2.80	3.03	3.00	3.23	3.10	3.35	3.62
43526.3	2.36	2.47	2.57	2.71	2.70	2.86	2.81	3.04	3.01	3.23	3.11	3.36	3.62
43529.2	2.37	2.49	2.59	2.72	2.71	2.87	2.82	3.05	3.02	3.24	3.12	3.37	3.63
43532.1	2.38	2.50	2.60	2.73	2.72	2.88	2.83	3.06	3.03	3.25	3.13	3.38	3.63
43534.9	2.39	2.51	2.61	2.74	2.73	2.89	2.84	3.07	3.04	3.26	3.14	3.38	3.64
43537.8	2.39	2.51	2.62	2.75	2.74	2.90	2.85	3.07	3.04	3.27	3.14	3.39	3.64
43540.7	2.40	2.52	2.63	2.76	2.75	2.91	2.86	3.08	3.05	3.27	3.15	3.39	3.65
43543.5	2.41	2.53	2.64	2.77	2.76	2.91	2.87	3.09	3.06	3.28	3.16	3.40	3.66
43546.4	2.42	2.54	2.65	2.78	2.77	2.93	2.88	3.10	3.07	3.29	3.17	3.41	3.67
43549.3	2.43	2.55	2.66	2.79	2.78	2.94	2.89	3.11	3.08	3.30	3.18	3.41	3.67
43552.1	2.43	2.56	2.67	2.80	2.79	2.95	2.90	3.12	3.09	3.31	3.19	3.42	3.68
43555.0	2.44	2.57	2.69	2.81	2.80	2.96	2.91	3.13	3.10	3.32	3.20	3.43	3.69
43557.9	2.44	2.57	2.69	2.81	2.80	2.95	2.91	3.13	3.10	3.31	3.19	3.42	3.68
43560.7	2.44	2.57	2.69	2.81	2.80	2.95	2.91	3.12	3.09	3.31	3.19	3.42	3.67
43563.6	2.44	2.57	2.69	2.80	2.80	2.95	2.90	3.12	3.09	3.30	3.18	3.41	3.67
43566.5	2.44	2.56	2.68	2.80	2.79	2.94	2.90	3.11	3.08	3.29	3.18	3.40	3.66
43569.3	2.43	2.56	2.68	2.80	2.79	2.94	2.89	3.11	3.08	3.29	3.17	3.39	3.65
43572.2	2.43	2.56	2.68	2.79	2.79	2.93	2.89	3.10	3.07	3.28	3.17	3.39	3.64
43575.1	2.43	2.56	2.68	2.79	2.78	2.93	2.89	3.10	3.07	3.27	3.16	3.38	3.63
43577.9	2.43	2.56	2.67	2.79	2.78	2.92	2.88	3.09	3.06	3.27	3.16	3.37	3.61
43580.8	2.43	2.56	2.67	2.79	2.78	2.92	2.88	3.09	3.06	3.26	3.15	3.37	3.60
43583.7	2.43	2.55	2.67	2.78	2.78	2.92	2.88	3.08	3.05	3.26	3.15	3.36	3.59
43586.6	2.43	2.55	2.66	2.78	2.77	2.91	2.87	3.08	3.05	3.25	3.14	3.35	3.57
43589.4	2.43	2.55	2.66	2.78	2.77	2.91	2.87	3.07	3.04	3.25	3.14	3.35	3.56
43592.3	2.42	2.55	2.66	2.77	2.77	2.90	2.86	3.07	3.04	3.24	3.13	3.34	3.56
43595.2	2.42	2.54	2.65	2.77	2.76	2.90	2.86	3.06	3.03	3.23	3.12	3.33	3.55
43598.0	2.42	2.54	2.65	2.77	2.76	2.89	2.85	3.05	3.03	3.22	3.11	3.32	3.54
43600.9	2.42	2.54	2.65	2.76	2.75	2.89	2.85	3.05	3.02	3.22	3.10	3.31	3.53
43603.8	2.42	2.54	2.64	2.76	2.75	2.88	2.84	3.04	3.01	3.21	3.10	3.30	3.52
43606.6	2.42	2.53	2.64	2.76	2.75	2.88	2.84	3.03	3.01	3.20	3.09	3.29	3.51
43609.5	2.42	2.53	2.64	2.75	2.75	2.88	2.84	3.03	3.00	3.19	3.09	3.28	3.50
43612.4	2.42	2.53	2.63	2.75	2.74	2.87	2.83	3.03	3.00	3.18	3.08	3.27	3.49
43615.2	2.41	2.53	2.63	2.75	2.74	2.87	2.83	3.02	3.00	3.18	3.08	3.27	3.48
43618.1	2.41	2.53	2.63	2.75	2.74	2.87	2.83	3.02	2.99	3.17	3.07	3.25	3.47
43621.0	2.41	2.53	2.63	2.74	2.74	2.86	2.83	3.01	2.99	3.17	3.07	3.25	3.46
43623.8	2.41	2.52	2.62	2.74	2.73	2.86	2.83	3.01	2.99	3.16	3.07	3.24	3.45
43626.7	2.41	2.52	2.62	2.74	2.73	2.86	2.82	3.01	2.98	3.16	3.06	3.23	3.44
43629.6	2.41	2.52	2.62	2.74	2.73	2.86	2.82	3.00	2.98	3.15	3.06	3.23	3.43
43632.4	2.41	2.52	2.62	2.74	2.73	2.85	2.82	3.00	2.98	3.15	3.05	3.22	3.42
43635.3	2.41	2.52	2.62	2.74	2.73	2.85	2.82	3.00	2.97	3.14	3.05	3.21	3.41
43638.2	2.41	2.52	2.62	2.73	2.73	2.85	2.82	2.99	2.97	3.14	3.04	3.21	3.40
43641.1	2.41	2.52	2.62	2.73	2.72	2.85	2.81	2.99	2.97	3.13	3.04	3.20	3.40
43643.9	2.41	2.52	2.61	2.73	2.72	2.85	2.81	2.99	2.96	3.13	3.04	3.19	3.39
43646.8	2.41	2.52	2.61	2.73	2.72	2.84	2.81	2.98	2.96	3.12	3.03	3.19	3.38
43649.7	2.41	2.52	2.61	2.73	2.72	2.84	2.81	2.98	2.96	3.12	3.03	3.18	3.37
43652.5	2.41	2.51	2.61	2.73	2.72	2.84	2.81	2.98	2.95	3.11	3.02	3.18	3.36

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
43655.4	2.41	2.51	2.61	2.72	2.72	2.84	2.81	2.97	2.95	3.11	3.02	3.17	3.35
43658.3	2.41	2.51	2.61	2.72	2.72	2.84	2.81	2.97	2.95	3.10	3.02	3.17	3.34
43661.1	2.41	2.51	2.61	2.72	2.71	2.84	2.80	2.97	2.95	3.10	3.01	3.16	3.34
43664.0	2.41	2.51	2.61	2.72	2.71	2.83	2.80	2.96	2.94	3.09	3.01	3.15	3.33
43667.0	2.41	2.52	2.61	2.72	2.71	2.83	2.80	2.96	2.94	3.09	3.00	3.15	3.32
43669.9	2.42	2.52	2.61	2.72	2.71	2.83	2.80	2.95	2.93	3.08	3.00	3.14	3.31
43672.9	2.42	2.52	2.61	2.72	2.71	2.83	2.80	2.95	2.93	3.07	2.99	3.13	3.30
43675.9	2.43	2.53	2.61	2.72	2.71	2.83	2.80	2.95	2.93	3.07	2.99	3.13	3.29
43678.9	2.43	2.53	2.61	2.72	2.71	2.83	2.80	2.95	2.93	3.07	2.99	3.12	3.28
43681.8	2.44	2.53	2.62	2.72	2.71	2.83	2.80	2.95	2.93	3.07	3.00	3.12	3.28
43684.8	2.44	2.54	2.62	2.72	2.72	2.83	2.81	2.96	2.94	3.07	3.00	3.12	3.27
43687.8	2.45	2.54	2.62	2.72	2.72	2.84	2.81	2.96	2.94	3.07	3.00	3.12	3.26
43690.8	2.45	2.54	2.62	2.72	2.72	2.84	2.81	2.96	2.94	3.07	3.00	3.12	3.25
43693.7	2.46	2.55	2.62	2.73	2.72	2.84	2.81	2.96	2.94	3.07	3.00	3.12	3.25
43696.7	2.46	2.55	2.63	2.73	2.72	2.84	2.82	2.96	2.95	3.07	3.01	3.12	3.24
43699.7	2.47	2.55	2.63	2.73	2.72	2.84	2.81	2.96	2.94	3.07	3.00	3.11	3.23
43702.6	2.48	2.56	2.63	2.73	2.72	2.84	2.81	2.95	2.94	3.06	3.00	3.11	3.21
43705.6	2.48	2.56	2.63	2.73	2.72	2.84	2.81	2.95	2.93	3.05	2.99	3.10	3.21
43708.6	2.49	2.56	2.63	2.72	2.72	2.83	2.81	2.95	2.93	3.05	2.99	3.09	3.20
43711.6	2.49	2.57	2.63	2.73	2.72	2.83	2.81	2.94	2.93	3.04	2.98	3.09	3.19
43714.5	2.50	2.57	2.64	2.73	2.72	2.83	2.81	2.94	2.93	3.04	2.98	3.09	3.18
43717.5	2.50	2.58	2.64	2.73	2.72	2.83	2.81	2.94	2.93	3.03	2.98	3.08	3.17
43720.5	2.51	2.58	2.64	2.73	2.72	2.84	2.81	2.94	2.93	3.03	2.98	3.08	3.16
43723.4	2.51	2.58	2.64	2.74	2.73	2.84	2.82	2.95	2.93	3.04	2.99	3.08	3.16
43726.4	2.52	2.58	2.65	2.74	2.73	2.85	2.82	2.95	2.94	3.04	2.99	3.09	3.16
43729.4	2.52	2.59	2.65	2.74	2.73	2.85	2.82	2.95	2.93	3.04	2.99	3.08	3.15
43732.4	2.53	2.59	2.65	2.74	2.73	2.84	2.82	2.94	2.93	3.03	2.98	3.08	3.15
43735.3	2.53	2.59	2.65	2.73	2.73	2.84	2.81	2.94	2.92	3.02	2.98	3.07	3.14
43738.3	2.54	2.59	2.65	2.73	2.73	2.83	2.81	2.93	2.92	3.02	2.97	3.06	3.13
43741.3	2.55	2.60	2.65	2.73	2.73	2.83	2.81	2.93	2.92	3.02	2.97	3.06	3.13
43744.3	2.55	2.60	2.65	2.73	2.72	2.83	2.81	2.94	2.92	3.02	2.97	3.06	3.13
43747.2	2.56	2.60	2.65	2.73	2.72	2.84	2.81	2.94	2.92	3.02	2.97	3.06	3.12
43750.2	2.56	2.61	2.65	2.73	2.72	2.84	2.81	2.94	2.92	3.01	2.97	3.06	3.12
43753.2	2.57	2.61	2.65	2.73	2.72	2.83	2.81	2.93	2.92	3.01	2.97	3.05	3.11
43756.1	2.57	2.61	2.65	2.73	2.72	2.83	2.81	2.93	2.91	3.00	2.96	3.05	3.11
43759.1	2.58	2.61	2.65	2.72	2.72	2.82	2.80	2.92	2.90	3.00	2.95	3.04	3.10
43762.1	2.59	2.62	2.65	2.72	2.71	2.82	2.80	2.91	2.90	2.99	2.95	3.03	3.09
43765.1	2.59	2.62	2.65	2.72	2.71	2.81	2.79	2.91	2.89	2.98	2.94	3.03	3.08
43768.0	2.60	2.63	2.65	2.71	2.71	2.81	2.79	2.90	2.89	2.98	2.94	3.02	3.08
43771.0	2.60	2.63	2.65	2.71	2.70	2.81	2.79	2.90	2.88	2.97	2.93	3.02	3.07
43773.9	2.60	2.63	2.65	2.71	2.70	2.80	2.78	2.90	2.88	2.97	2.93	3.02	3.07
43776.9	2.60	2.62	2.65	2.71	2.70	2.80	2.78	2.89	2.88	2.97	2.93	3.02	3.07
43779.8	2.59	2.62	2.64	2.70	2.70	2.80	2.78	2.89	2.88	2.97	2.93	3.01	3.07
43782.8	2.59	2.61	2.64	2.70	2.69	2.80	2.78	2.89	2.88	2.97	2.93	3.01	3.06
43785.7	2.58	2.61	2.64	2.70	2.69	2.79	2.77	2.89	2.87	2.96	2.92	3.01	3.06
43788.7	2.58	2.61	2.63	2.70	2.69	2.79	2.77	2.88	2.87	2.96	2.92	3.00	3.06

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
43791.6	2.58	2.60	2.63	2.69	2.69	2.79	2.77	2.88	2.87	2.96	2.92	3.00	3.05
43794.6	2.57	2.60	2.63	2.69	2.68	2.79	2.77	2.88	2.86	2.95	2.91	3.00	3.05
43797.5	2.57	2.60	2.62	2.69	2.68	2.78	2.76	2.87	2.86	2.95	2.91	2.99	3.04
43800.5	2.57	2.59	2.62	2.69	2.68	2.78	2.76	2.87	2.86	2.95	2.91	2.99	3.04
43803.4	2.56	2.59	2.62	2.68	2.68	2.78	2.76	2.87	2.85	2.94	2.91	2.99	3.04
43806.4	2.56	2.58	2.61	2.68	2.67	2.78	2.76	2.87	2.85	2.95	2.91	2.99	3.04
43809.3	2.56	2.58	2.61	2.68	2.67	2.77	2.75	2.87	2.85	2.95	2.91	2.99	3.04
43812.3	2.55	2.58	2.61	2.68	2.67	2.77	2.75	2.86	2.85	2.94	2.90	2.99	3.04
43815.2	2.55	2.57	2.60	2.67	2.67	2.77	2.75	2.86	2.84	2.94	2.90	2.98	3.03
43818.2	2.55	2.57	2.60	2.67	2.66	2.76	2.74	2.85	2.83	2.93	2.89	2.97	3.02
43821.1	2.54	2.57	2.60	2.66	2.66	2.76	2.74	2.84	2.83	2.92	2.88	2.96	3.01
43824.1	2.54	2.56	2.59	2.66	2.65	2.75	2.73	2.84	2.82	2.91	2.87	2.96	3.00
43827.0	2.54	2.56	2.59	2.65	2.65	2.74	2.72	2.83	2.81	2.91	2.87	2.95	3.00
43829.9	2.53	2.56	2.59	2.65	2.64	2.74	2.72	2.82	2.81	2.90	2.86	2.94	2.99
43832.9	2.53	2.56	2.58	2.64	2.64	2.73	2.71	2.82	2.80	2.90	2.86	2.94	2.99
43835.8	2.53	2.55	2.58	2.64	2.63	2.73	2.71	2.81	2.80	2.89	2.85	2.94	2.98
43838.8	2.53	2.55	2.57	2.63	2.63	2.72	2.70	2.81	2.79	2.88	2.85	2.93	2.98
43841.7	2.52	2.55	2.57	2.63	2.62	2.71	2.69	2.80	2.79	2.88	2.84	2.92	2.97
43844.7	2.52	2.54	2.57	2.62	2.62	2.71	2.69	2.80	2.78	2.87	2.84	2.91	2.96
43847.6	2.52	2.54	2.56	2.62	2.61	2.70	2.69	2.79	2.78	2.87	2.83	2.91	2.96
43850.6	2.52	2.54	2.56	2.62	2.61	2.70	2.68	2.79	2.77	2.86	2.83	2.90	2.95
43853.5	2.51	2.53	2.56	2.61	2.60	2.70	2.68	2.78	2.77	2.86	2.82	2.90	2.95
43856.5	2.51	2.53	2.56	2.61	2.60	2.69	2.67	2.78	2.76	2.85	2.81	2.89	2.94
43859.4	2.51	2.53	2.55	2.60	2.59	2.68	2.66	2.77	2.75	2.84	2.81	2.88	2.94
43862.4	2.51	2.53	2.55	2.59	2.59	2.67	2.65	2.76	2.74	2.83	2.80	2.88	2.93
43865.3	2.51	2.52	2.55	2.58	2.58	2.66	2.65	2.75	2.73	2.83	2.79	2.87	2.93
43868.3	2.50	2.52	2.54	2.58	2.57	2.66	2.64	2.74	2.73	2.82	2.78	2.86	2.92
43871.2	2.50	2.52	2.54	2.57	2.57	2.65	2.63	2.73	2.72	2.81	2.77	2.86	2.91
43874.2	2.50	2.52	2.54	2.57	2.57	2.64	2.63	2.73	2.71	2.81	2.76	2.85	2.91
43877.1	2.50	2.52	2.54	2.57	2.56	2.64	2.62	2.72	2.71	2.80	2.76	2.84	2.90
43880.1	2.50	2.51	2.53	2.56	2.56	2.63	2.61	2.72	2.70	2.79	2.75	2.83	2.89
43883.0	2.50	2.51	2.53	2.56	2.56	2.63	2.61	2.71	2.69	2.78	2.75	2.82	2.89
43885.9	2.50	2.51	2.53	2.56	2.56	2.62	2.61	2.71	2.69	2.78	2.74	2.82	2.88
43888.8	2.50	2.51	2.53	2.56	2.56	2.62	2.60	2.70	2.69	2.77	2.74	2.82	2.88
43891.7	2.50	2.51	2.53	2.56	2.56	2.62	2.60	2.70	2.69	2.77	2.74	2.81	2.87
43894.6	2.50	2.51	2.54	2.56	2.56	2.62	2.60	2.70	2.68	2.77	2.73	2.81	2.87
43897.5	2.50	2.51	2.54	2.56	2.56	2.62	2.60	2.70	2.68	2.76	2.73	2.81	2.87
43900.4	2.49	2.51	2.54	2.56	2.56	2.61	2.60	2.69	2.68	2.76	2.73	2.80	2.87
43903.3	2.49	2.51	2.54	2.56	2.56	2.61	2.60	2.69	2.68	2.76	2.73	2.80	2.87
43906.2	2.49	2.51	2.54	2.56	2.56	2.61	2.59	2.69	2.68	2.76	2.73	2.80	2.87
43909.1	2.49	2.51	2.54	2.56	2.56	2.61	2.59	2.69	2.68	2.76	2.73	2.80	2.87
43912.0	2.49	2.51	2.54	2.56	2.56	2.61	2.59	2.69	2.68	2.76	2.73	2.80	2.86
43914.9	2.49	2.51	2.54	2.56	2.56	2.61	2.59	2.69	2.67	2.76	2.73	2.80	2.86
43917.8	2.49	2.51	2.54	2.56	2.56	2.61	2.59	2.69	2.67	2.75	2.73	2.80	2.86
43920.7	2.48	2.51	2.54	2.56	2.56	2.61	2.59	2.69	2.67	2.75	2.73	2.80	2.85
43923.6	2.48	2.51	2.54	2.56	2.56	2.61	2.59	2.69	2.67	2.75	2.72	2.80	2.85

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
43926.5	2.48	2.51	2.54	2.56	2.56	2.61	2.59	2.69	2.67	2.75	2.72	2.79	2.85
43929.4	2.48	2.51	2.54	2.56	2.56	2.61	2.59	2.69	2.67	2.75	2.72	2.79	2.85
43932.3	2.47	2.51	2.54	2.56	2.56	2.60	2.59	2.69	2.67	2.75	2.72	2.79	2.84
43935.2	2.47	2.51	2.54	2.56	2.56	2.60	2.59	2.69	2.67	2.75	2.72	2.79	2.84
43938.1	2.47	2.51	2.53	2.56	2.56	2.60	2.59	2.69	2.67	2.75	2.72	2.79	2.84
43941.0	2.47	2.50	2.53	2.56	2.56	2.60	2.59	2.69	2.67	2.75	2.72	2.79	2.84
43943.9	2.46	2.50	2.53	2.56	2.56	2.60	2.58	2.69	2.67	2.75	2.72	2.79	2.84
43946.8	2.46	2.50	2.53	2.55	2.55	2.60	2.58	2.68	2.67	2.75	2.72	2.79	2.84
43949.7	2.46	2.50	2.53	2.55	2.55	2.60	2.58	2.68	2.67	2.75	2.72	2.79	2.84
43952.6	2.45	2.50	2.53	2.55	2.55	2.60	2.58	2.68	2.67	2.75	2.72	2.79	2.84
43955.5	2.45	2.50	2.53	2.55	2.55	2.60	2.58	2.68	2.67	2.75	2.72	2.79	2.84
43958.4	2.45	2.49	2.53	2.55	2.55	2.60	2.58	2.68	2.67	2.75	2.72	2.79	2.84
43961.3	2.45	2.49	2.52	2.55	2.55	2.60	2.58	2.68	2.67	2.75	2.72	2.79	2.84
43964.2	2.44	2.49	2.52	2.55	2.55	2.60	2.58	2.68	2.67	2.75	2.72	2.79	2.83
43967.1	2.44	2.49	2.52	2.55	2.55	2.59	2.58	2.68	2.67	2.75	2.72	2.79	2.83
43970.0	2.44	2.49	2.52	2.54	2.54	2.59	2.58	2.68	2.66	2.75	2.72	2.79	2.83
43972.9	2.43	2.49	2.52	2.54	2.54	2.59	2.58	2.68	2.66	2.75	2.72	2.79	2.83
43975.8	2.43	2.48	2.51	2.54	2.54	2.59	2.58	2.68	2.66	2.75	2.72	2.79	2.83
43978.7	2.42	2.48	2.51	2.54	2.54	2.59	2.57	2.68	2.66	2.74	2.71	2.79	2.83
43981.6	2.42	2.48	2.51	2.54	2.54	2.59	2.57	2.68	2.66	2.74	2.71	2.79	2.83
43984.5	2.42	2.48	2.51	2.54	2.54	2.59	2.57	2.68	2.66	2.74	2.71	2.79	2.83
43987.4	2.41	2.47	2.51	2.53	2.53	2.59	2.57	2.68	2.66	2.74	2.71	2.78	2.83
43990.3	2.41	2.47	2.51	2.53	2.53	2.59	2.57	2.68	2.66	2.74	2.71	2.78	2.83
43993.2	2.41	2.47	2.50	2.53	2.53	2.59	2.57	2.68	2.66	2.74	2.71	2.78	2.83
43996.1	2.40	2.47	2.50	2.53	2.53	2.59	2.57	2.67	2.66	2.74	2.71	2.78	2.83
43999.0	2.40	2.46	2.50	2.52	2.52	2.58	2.57	2.67	2.66	2.74	2.71	2.78	2.83
44001.9	2.39	2.46	2.49	2.52	2.52	2.58	2.56	2.67	2.65	2.73	2.70	2.78	2.82
44004.8	2.38	2.45	2.48	2.51	2.51	2.57	2.55	2.66	2.65	2.73	2.70	2.77	2.82
44007.7	2.37	2.44	2.47	2.50	2.50	2.57	2.55	2.66	2.64	2.72	2.69	2.77	2.81
44010.6	2.36	2.43	2.47	2.49	2.49	2.56	2.54	2.65	2.64	2.72	2.69	2.76	2.81
44013.5	2.35	2.42	2.46	2.49	2.48	2.55	2.54	2.65	2.63	2.71	2.68	2.75	2.80
44016.4	2.35	2.41	2.45	2.48	2.48	2.55	2.53	2.64	2.62	2.71	2.68	2.75	2.79
44019.3	2.34	2.40	2.44	2.47	2.47	2.54	2.52	2.63	2.62	2.70	2.67	2.74	2.79
44022.2	2.33	2.39	2.43	2.46	2.46	2.54	2.52	2.63	2.61	2.70	2.66	2.74	2.78
44025.1	2.32	2.39	2.42	2.45	2.45	2.53	2.51	2.62	2.61	2.69	2.66	2.73	2.78
44028.0	2.31	2.38	2.42	2.45	2.45	2.52	2.51	2.62	2.60	2.68	2.65	2.73	2.77
44030.9	2.30	2.37	2.41	2.44	2.44	2.52	2.50	2.61	2.60	2.68	2.65	2.72	2.76
44033.8	2.29	2.36	2.40	2.43	2.43	2.51	2.49	2.61	2.59	2.67	2.64	2.71	2.76
44036.7	2.29	2.35	2.39	2.43	2.42	2.51	2.49	2.60	2.59	2.67	2.64	2.71	2.75
44039.6	2.28	2.34	2.39	2.42	2.42	2.50	2.48	2.60	2.58	2.66	2.63	2.70	2.75
44042.5	2.27	2.34	2.38	2.42	2.41	2.49	2.48	2.59	2.57	2.65	2.63	2.70	2.74
44045.4	2.26	2.33	2.37	2.41	2.41	2.49	2.47	2.58	2.57	2.65	2.62	2.69	2.73
44048.3	2.25	2.32	2.36	2.40	2.40	2.48	2.46	2.58	2.56	2.64	2.61	2.68	2.73
44051.2	2.24	2.31	2.36	2.40	2.39	2.48	2.46	2.57	2.56	2.64	2.61	2.68	2.72
44054.1	2.23	2.30	2.35	2.39	2.39	2.47	2.45	2.57	2.55	2.63	2.60	2.67	2.72
44057.0	2.23	2.29	2.34	2.39	2.38	2.47	2.45	2.56	2.55	2.63	2.60	2.67	2.71

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
44059.9	2.22	2.29	2.33	2.38	2.38	2.46	2.44	2.56	2.54	2.62	2.59	2.66	2.70
44062.8	2.21	2.28	2.33	2.38	2.38	2.46	2.44	2.56	2.54	2.62	2.59	2.66	2.70
44065.7	2.20	2.27	2.32	2.38	2.37	2.46	2.44	2.55	2.54	2.62	2.59	2.65	2.70
44068.6	2.19	2.26	2.31	2.37	2.37	2.46	2.44	2.55	2.53	2.61	2.58	2.65	2.69
44071.5	2.19	2.25	2.31	2.37	2.36	2.45	2.43	2.54	2.53	2.60	2.58	2.64	2.69
44074.4	2.18	2.25	2.30	2.36	2.36	2.44	2.43	2.54	2.52	2.60	2.57	2.64	2.68
44077.3	2.17	2.24	2.29	2.36	2.35	2.44	2.42	2.53	2.52	2.59	2.57	2.63	2.67
44080.2	2.16	2.23	2.28	2.35	2.35	2.43	2.41	2.53	2.51	2.59	2.56	2.63	2.67
44083.1	2.15	2.22	2.28	2.34	2.34	2.43	2.41	2.52	2.51	2.58	2.56	2.62	2.66
44086.0	2.15	2.22	2.27	2.34	2.33	2.42	2.40	2.52	2.50	2.58	2.55	2.62	2.66
44088.9	2.14	2.21	2.26	2.33	2.33	2.42	2.40	2.51	2.50	2.57	2.54	2.61	2.65
44091.8	2.13	2.20	2.26	2.33	2.32	2.41	2.39	2.51	2.49	2.57	2.54	2.60	2.65
44094.7	2.12	2.19	2.25	2.32	2.32	2.40	2.39	2.50	2.49	2.56	2.53	2.60	2.64
44097.6	2.11	2.18	2.24	2.32	2.31	2.40	2.38	2.49	2.48	2.55	2.53	2.59	2.63
44100.5	2.11	2.18	2.24	2.31	2.30	2.39	2.38	2.49	2.48	2.55	2.52	2.59	2.63
44103.4	2.10	2.17	2.23	2.30	2.30	2.39	2.37	2.48	2.47	2.54	2.52	2.58	2.62
44106.3	2.09	2.16	2.22	2.30	2.29	2.38	2.36	2.48	2.47	2.54	2.51	2.57	2.62
44109.2	2.08	2.15	2.22	2.29	2.29	2.38	2.36	2.47	2.46	2.53	2.51	2.57	2.61
44112.1	2.08	2.15	2.21	2.29	2.28	2.37	2.35	2.47	2.46	2.53	2.50	2.56	2.60
44115.0	2.07	2.14	2.20	2.28	2.28	2.37	2.35	2.46	2.45	2.52	2.50	2.56	2.60
44118.0	2.07	2.14	2.20	2.28	2.28	2.37	2.35	2.46	2.45	2.52	2.50	2.56	2.59
44121.0	2.07	2.14	2.20	2.28	2.27	2.37	2.35	2.46	2.45	2.52	2.50	2.56	2.59
44124.0	2.07	2.14	2.20	2.28	2.28	2.37	2.35	2.47	2.45	2.52	2.50	2.55	2.59
44127.0	2.07	2.14	2.20	2.28	2.28	2.37	2.35	2.47	2.45	2.52	2.50	2.55	2.59
44130.0	2.07	2.14	2.20	2.28	2.28	2.37	2.35	2.47	2.46	2.52	2.50	2.55	2.59
44133.0	2.07	2.14	2.20	2.28	2.28	2.37	2.35	2.47	2.46	2.53	2.50	2.55	2.59
44136.0	2.07	2.14	2.20	2.28	2.28	2.37	2.35	2.47	2.46	2.53	2.50	2.55	2.59
44139.0	2.07	2.14	2.20	2.28	2.28	2.37	2.35	2.47	2.46	2.53	2.50	2.55	2.59
44142.0	2.07	2.14	2.20	2.28	2.28	2.37	2.35	2.47	2.46	2.53	2.50	2.55	2.59
44145.0	2.08	2.14	2.20	2.28	2.28	2.37	2.35	2.47	2.46	2.53	2.50	2.55	2.59
44148.0	2.08	2.14	2.20	2.28	2.28	2.37	2.35	2.47	2.46	2.53	2.51	2.55	2.59
44151.0	2.08	2.14	2.20	2.28	2.28	2.37	2.36	2.48	2.46	2.53	2.51	2.55	2.59
44154.0	2.08	2.14	2.20	2.28	2.28	2.38	2.36	2.48	2.47	2.53	2.51	2.56	2.59
44157.0	2.08	2.14	2.20	2.28	2.28	2.38	2.36	2.48	2.47	2.53	2.51	2.56	2.59
44160.0	2.08	2.14	2.20	2.28	2.28	2.38	2.36	2.48	2.47	2.54	2.51	2.56	2.59
44163.0	2.08	2.14	2.20	2.29	2.28	2.38	2.36	2.48	2.47	2.54	2.51	2.56	2.59
44166.0	2.08	2.14	2.20	2.29	2.28	2.38	2.36	2.48	2.47	2.54	2.51	2.56	2.59
44169.0	2.08	2.14	2.20	2.29	2.28	2.38	2.36	2.48	2.47	2.54	2.51	2.56	2.59
44172.0	2.08	2.14	2.20	2.29	2.28	2.38	2.36	2.48	2.47	2.54	2.51	2.56	2.59
44175.0	2.08	2.14	2.20	2.29	2.28	2.38	2.36	2.49	2.47	2.54	2.51	2.56	2.59
44178.0	2.08	2.14	2.20	2.29	2.28	2.39	2.37	2.49	2.48	2.54	2.52	2.57	2.59
44181.0	2.08	2.14	2.20	2.29	2.28	2.39	2.37	2.49	2.48	2.54	2.52	2.57	2.59
44184.0	2.09	2.14	2.20	2.29	2.29	2.39	2.37	2.49	2.48	2.55	2.52	2.57	2.60
44187.0	2.09	2.14	2.20	2.29	2.29	2.39	2.37	2.49	2.48	2.55	2.52	2.57	2.60
44190.0	2.09	2.14	2.21	2.29	2.29	2.39	2.37	2.49	2.48	2.55	2.52	2.57	2.60
44193.0	2.09	2.14	2.21	2.30	2.29	2.39	2.37	2.50	2.49	2.55	2.52	2.58	2.60

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
44196.0	2.09	2.14	2.21	2.30	2.29	2.40	2.37	2.50	2.49	2.55	2.53	2.58	2.61
44199.0	2.09	2.14	2.21	2.30	2.29	2.40	2.38	2.50	2.49	2.56	2.53	2.58	2.61
44202.0	2.09	2.14	2.21	2.30	2.29	2.40	2.38	2.50	2.49	2.56	2.53	2.58	2.61
44205.0	2.09	2.15	2.21	2.30	2.29	2.40	2.38	2.51	2.49	2.56	2.53	2.58	2.61
44208.0	2.09	2.15	2.21	2.30	2.30	2.40	2.38	2.51	2.50	2.56	2.53	2.59	2.62
44211.0	2.09	2.15	2.21	2.30	2.30	2.41	2.38	2.51	2.50	2.57	2.54	2.59	2.62
44214.0	2.09	2.15	2.21	2.31	2.30	2.41	2.39	2.51	2.50	2.57	2.54	2.59	2.62
44217.0	2.10	2.15	2.21	2.31	2.30	2.41	2.39	2.51	2.50	2.57	2.54	2.59	2.62
44220.0	2.10	2.15	2.21	2.31	2.30	2.41	2.39	2.52	2.51	2.57	2.54	2.60	2.63
44223.0	2.10	2.15	2.22	2.31	2.30	2.41	2.39	2.52	2.51	2.58	2.55	2.60	2.63
44226.0	2.10	2.15	2.22	2.31	2.31	2.42	2.39	2.52	2.51	2.58	2.55	2.60	2.63
44229.0	2.10	2.15	2.22	2.31	2.31	2.42	2.40	2.53	2.51	2.58	2.55	2.61	2.63
44232.0	2.11	2.15	2.22	2.31	2.31	2.42	2.39	2.52	2.51	2.58	2.55	2.60	2.63
44234.9	2.11	2.16	2.22	2.31	2.31	2.42	2.39	2.52	2.51	2.58	2.55	2.60	2.63
44237.9	2.11	2.16	2.22	2.31	2.31	2.41	2.39	2.52	2.51	2.57	2.55	2.60	2.63
44240.9	2.11	2.16	2.22	2.31	2.30	2.41	2.39	2.52	2.50	2.57	2.54	2.59	2.63
44243.9	2.12	2.16	2.22	2.31	2.30	2.41	2.39	2.51	2.50	2.57	2.54	2.59	2.62
44246.8	2.12	2.16	2.22	2.31	2.30	2.41	2.39	2.51	2.50	2.56	2.54	2.59	2.62
44249.8	2.12	2.16	2.22	2.31	2.30	2.41	2.38	2.51	2.50	2.56	2.53	2.58	2.61
44252.8	2.13	2.17	2.22	2.31	2.30	2.40	2.38	2.50	2.49	2.56	2.53	2.58	2.61
44255.8	2.13	2.17	2.22	2.30	2.30	2.40	2.38	2.50	2.49	2.55	2.52	2.57	2.61
44258.7	2.13	2.17	2.22	2.30	2.30	2.40	2.38	2.50	2.48	2.55	2.52	2.57	2.60
44261.7	2.14	2.17	2.22	2.30	2.30	2.40	2.38	2.49	2.48	2.54	2.52	2.57	2.60
44264.7	2.14	2.18	2.22	2.30	2.30	2.40	2.38	2.49	2.48	2.54	2.52	2.56	2.60
44267.7	2.14	2.18	2.22	2.30	2.30	2.39	2.37	2.49	2.48	2.54	2.51	2.56	2.59
44270.6	2.15	2.18	2.22	2.30	2.29	2.39	2.37	2.48	2.47	2.54	2.51	2.56	2.59
44273.6	2.15	2.18	2.23	2.30	2.29	2.39	2.37	2.48	2.47	2.53	2.51	2.55	2.59
44276.6	2.15	2.19	2.23	2.30	2.29	2.39	2.37	2.48	2.47	2.53	2.50	2.55	2.58
44279.6	2.16	2.19	2.23	2.30	2.29	2.39	2.37	2.47	2.46	2.52	2.50	2.55	2.58
44282.5	2.16	2.19	2.23	2.30	2.29	2.39	2.37	2.47	2.46	2.52	2.49	2.54	2.57
44285.5	2.17	2.19	2.23	2.30	2.29	2.38	2.37	2.46	2.45	2.51	2.49	2.54	2.57
44288.5	2.17	2.20	2.23	2.30	2.29	2.38	2.36	2.46	2.45	2.51	2.48	2.53	2.57
44291.4	2.17	2.20	2.23	2.29	2.29	2.38	2.36	2.46	2.45	2.51	2.48	2.53	2.56
44294.4	2.18	2.20	2.23	2.29	2.29	2.38	2.36	2.45	2.44	2.50	2.48	2.52	2.56
44297.4	2.18	2.21	2.23	2.29	2.29	2.38	2.36	2.45	2.44	2.50	2.47	2.52	2.55
44300.4	2.18	2.21	2.24	2.29	2.29	2.38	2.36	2.45	2.44	2.49	2.47	2.51	2.55
44303.3	2.19	2.21	2.24	2.29	2.29	2.38	2.36	2.44	2.43	2.49	2.47	2.51	2.55
44306.3	2.19	2.22	2.24	2.29	2.29	2.37	2.36	2.44	2.43	2.49	2.46	2.51	2.54
44309.3	2.19	2.22	2.24	2.29	2.29	2.37	2.36	2.44	2.43	2.48	2.46	2.50	2.54
44312.3	2.20	2.22	2.25	2.29	2.29	2.37	2.36	2.44	2.43	2.48	2.46	2.50	2.54
44315.2	2.20	2.23	2.25	2.29	2.29	2.37	2.35	2.43	2.43	2.48	2.46	2.50	2.53
44318.2	2.20	2.23	2.25	2.29	2.29	2.37	2.36	2.43	2.42	2.48	2.45	2.50	2.53
44321.2	2.21	2.23	2.26	2.29	2.29	2.37	2.36	2.43	2.42	2.48	2.45	2.50	2.53
44324.2	2.21	2.24	2.26	2.29	2.29	2.37	2.36	2.43	2.42	2.47	2.45	2.49	2.53
44327.1	2.22	2.24	2.27	2.29	2.29	2.37	2.35	2.43	2.42	2.47	2.45	2.49	2.53
44330.1	2.22	2.24	2.27	2.29	2.29	2.37	2.35	2.43	2.42	2.47	2.45	2.49	2.53

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
44333.1	2.22	2.25	2.27	2.29	2.30	2.37	2.35	2.43	2.42	2.47	2.45	2.49	2.52
44336.1	2.23	2.25	2.28	2.30	2.30	2.37	2.35	2.42	2.42	2.47	2.44	2.49	2.52
44339.0	2.23	2.25	2.28	2.30	2.30	2.37	2.35	2.42	2.41	2.46	2.44	2.48	2.52
44342.0	2.23	2.26	2.28	2.30	2.31	2.37	2.35	2.42	2.41	2.46	2.44	2.48	2.52
44345.0	2.22	2.25	2.27	2.29	2.30	2.36	2.34	2.41	2.41	2.45	2.43	2.47	2.51
44348.0	2.21	2.24	2.26	2.28	2.29	2.35	2.34	2.40	2.40	2.44	2.42	2.46	2.50
44351.0	2.20	2.23	2.25	2.27	2.28	2.34	2.33	2.39	2.39	2.44	2.41	2.46	2.49
44354.0	2.19	2.22	2.24	2.27	2.27	2.33	2.32	2.38	2.38	2.43	2.41	2.45	2.48
44357.0	2.19	2.21	2.23	2.26	2.26	2.33	2.31	2.38	2.37	2.42	2.40	2.44	2.47
44360.0	2.18	2.20	2.22	2.25	2.25	2.32	2.30	2.37	2.36	2.41	2.39	2.43	2.46
44363.0	2.17	2.19	2.22	2.24	2.24	2.31	2.29	2.36	2.35	2.40	2.38	2.42	2.45
44366.0	2.16	2.18	2.21	2.23	2.23	2.30	2.29	2.35	2.34	2.39	2.37	2.41	2.44
44369.0	2.15	2.17	2.20	2.22	2.22	2.29	2.28	2.34	2.34	2.38	2.37	2.40	2.43
44372.0	2.14	2.16	2.19	2.21	2.22	2.29	2.27	2.33	2.33	2.37	2.36	2.39	2.42
44375.0	2.13	2.15	2.18	2.20	2.21	2.28	2.26	2.33	2.32	2.37	2.35	2.38	2.41
44378.0	2.12	2.14	2.17	2.20	2.20	2.27	2.26	2.32	2.31	2.36	2.34	2.37	2.41
44381.0	2.11	2.13	2.16	2.19	2.19	2.26	2.25	2.31	2.30	2.35	2.34	2.37	2.40
44384.0	2.10	2.12	2.15	2.18	2.18	2.25	2.24	2.30	2.29	2.34	2.33	2.36	2.39
44387.0	2.10	2.11	2.15	2.17	2.17	2.25	2.23	2.30	2.29	2.34	2.32	2.35	2.38
44390.0	2.09	2.11	2.14	2.16	2.16	2.24	2.23	2.29	2.28	2.33	2.31	2.34	2.37
44393.0	2.08	2.10	2.13	2.16	2.15	2.23	2.22	2.28	2.27	2.32	2.31	2.33	2.36
44396.0	2.07	2.09	2.12	2.15	2.15	2.22	2.21	2.27	2.26	2.31	2.30	2.32	2.35
44399.0	2.06	2.08	2.11	2.14	2.14	2.22	2.20	2.27	2.25	2.31	2.29	2.32	2.35
44402.0	2.05	2.07	2.10	2.13	2.13	2.21	2.19	2.26	2.25	2.30	2.28	2.31	2.34
44405.0	2.05	2.06	2.09	2.13	2.12	2.20	2.19	2.25	2.24	2.29	2.28	2.30	2.33
44408.0	2.04	2.05	2.09	2.12	2.11	2.19	2.18	2.25	2.23	2.28	2.27	2.29	2.33
44411.0	2.03	2.05	2.08	2.11	2.11	2.19	2.17	2.24	2.23	2.28	2.26	2.29	2.32
44414.0	2.02	2.04	2.07	2.10	2.10	2.18	2.17	2.23	2.22	2.27	2.26	2.28	2.31
44417.0	2.01	2.03	2.06	2.10	2.09	2.17	2.16	2.23	2.21	2.26	2.25	2.27	2.30
44420.0	2.01	2.02	2.05	2.09	2.09	2.16	2.15	2.22	2.21	2.26	2.24	2.27	2.30
44423.0	2.00	2.01	2.04	2.08	2.08	2.16	2.14	2.21	2.20	2.25	2.23	2.26	2.29
44426.0	1.99	2.01	2.03	2.08	2.07	2.15	2.13	2.20	2.19	2.24	2.23	2.25	2.28
44429.0	1.98	2.00	2.03	2.07	2.06	2.14	2.13	2.20	2.18	2.23	2.22	2.24	2.28
44432.0	1.97	1.99	2.02	2.06	2.06	2.13	2.12	2.19	2.18	2.23	2.21	2.24	2.27
44435.0	1.97	1.98	2.01	2.05	2.05	2.12	2.11	2.18	2.17	2.22	2.21	2.23	2.26
44438.0	1.96	1.97	2.00	2.05	2.04	2.11	2.10	2.18	2.16	2.21	2.20	2.22	2.26
44441.0	1.95	1.97	1.99	2.04	2.04	2.10	2.09	2.17	2.16	2.21	2.19	2.22	2.25
44444.0	1.94	1.96	1.99	2.03	2.03	2.10	2.08	2.16	2.15	2.20	2.19	2.21	2.24
44447.0	1.93	1.95	1.98	2.03	2.02	2.09	2.08	2.16	2.14	2.19	2.18	2.20	2.24
44450.0	1.93	1.94	1.97	2.02	2.01	2.08	2.07	2.15	2.14	2.19	2.17	2.20	2.23
44453.0	1.92	1.93	1.96	2.01	2.01	2.07	2.06	2.14	2.13	2.18	2.17	2.19	2.22
44456.0	1.91	1.93	1.95	2.01	2.00	2.07	2.06	2.14	2.12	2.17	2.16	2.18	2.22
44459.0	1.90	1.92	1.95	2.00	1.99	2.06	2.05	2.13	2.12	2.17	2.15	2.18	2.21
44462.0	1.89	1.91	1.94	1.99	1.99	2.05	2.04	2.12	2.11	2.16	2.15	2.17	2.20
44464.9	1.89	1.90	1.93	1.99	1.99	2.05	2.04	2.13	2.11	2.16	2.15	2.17	2.21
44467.8	1.88	1.90	1.93	1.99	1.99	2.05	2.04	2.13	2.11	2.16	2.15	2.17	2.21

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
44470.6	1.88	1.89	1.92	1.99	1.99	2.06	2.04	2.13	2.12	2.16	2.15	2.18	2.21
44473.5	1.87	1.88	1.92	1.99	1.99	2.06	2.04	2.13	2.12	2.17	2.15	2.18	2.21
44476.4	1.86	1.88	1.92	1.99	1.99	2.06	2.05	2.13	2.12	2.17	2.15	2.18	2.21
44479.3	1.86	1.87	1.92	1.99	1.99	2.06	2.05	2.13	2.12	2.17	2.16	2.18	2.22
44482.1	1.85	1.87	1.92	1.99	1.99	2.06	2.05	2.14	2.12	2.17	2.16	2.18	2.22
44485.0	1.85	1.87	1.92	1.99	1.99	2.06	2.05	2.14	2.12	2.17	2.16	2.19	2.22
44487.9	1.84	1.86	1.92	1.99	1.99	2.06	2.05	2.14	2.13	2.17	2.16	2.19	2.23
44490.8	1.83	1.86	1.92	1.99	1.99	2.06	2.05	2.14	2.13	2.18	2.16	2.19	2.23
44493.6	1.83	1.86	1.92	1.99	1.99	2.06	2.05	2.14	2.13	2.18	2.17	2.19	2.23
44496.5	1.83	1.86	1.91	2.00	1.99	2.06	2.05	2.15	2.13	2.18	2.17	2.20	2.23
44499.4	1.82	1.86	1.91	2.00	1.99	2.06	2.05	2.15	2.14	2.18	2.17	2.20	2.24
44502.3	1.82	1.86	1.91	2.00	1.99	2.07	2.05	2.15	2.14	2.19	2.17	2.20	2.24
44505.1	1.81	1.85	1.91	2.00	1.99	2.07	2.06	2.15	2.14	2.19	2.18	2.21	2.24
44508.0	1.81	1.85	1.91	2.00	1.99	2.07	2.06	2.16	2.14	2.19	2.18	2.21	2.25
44510.9	1.81	1.85	1.91	2.00	1.99	2.07	2.06	2.16	2.15	2.20	2.18	2.21	2.25
44513.8	1.80	1.85	1.91	2.00	1.99	2.07	2.06	2.16	2.15	2.20	2.18	2.22	2.25
44516.6	1.80	1.85	1.91	2.00	2.00	2.07	2.06	2.17	2.15	2.20	2.19	2.22	2.26
44519.5	1.80	1.85	1.91	2.00	2.00	2.07	2.06	2.17	2.15	2.20	2.19	2.22	2.26
44522.4	1.79	1.85	1.91	2.00	2.00	2.08	2.06	2.17	2.16	2.21	2.19	2.23	2.26
44525.3	1.79	1.84	1.91	2.00	2.00	2.08	2.06	2.17	2.16	2.21	2.20	2.23	2.27
44528.1	1.79	1.84	1.91	2.00	2.00	2.08	2.06	2.18	2.16	2.21	2.20	2.23	2.27
44531.0	1.79	1.84	1.91	2.00	2.00	2.08	2.07	2.18	2.16	2.22	2.20	2.23	2.27
44533.9	1.78	1.84	1.91	2.00	2.00	2.08	2.07	2.18	2.17	2.22	2.20	2.24	2.28
44536.8	1.78	1.84	1.91	2.01	2.00	2.08	2.07	2.18	2.17	2.22	2.21	2.24	2.28
44539.6	1.78	1.84	1.91	2.01	2.00	2.09	2.07	2.19	2.17	2.22	2.21	2.24	2.28
44542.5	1.78	1.84	1.91	2.01	2.00	2.09	2.07	2.19	2.18	2.23	2.21	2.25	2.29
44545.4	1.77	1.84	1.91	2.01	2.00	2.09	2.07	2.19	2.18	2.23	2.21	2.25	2.29
44548.3	1.77	1.84	1.91	2.01	2.00	2.09	2.08	2.20	2.18	2.23	2.22	2.25	2.30
44551.1	1.77	1.84	1.91	2.01	2.00	2.10	2.08	2.20	2.18	2.24	2.22	2.26	2.30
44554.0	1.77	1.84	1.91	2.01	2.01	2.10	2.08	2.20	2.19	2.24	2.22	2.26	2.31
44556.9	1.77	1.83	1.91	2.01	2.01	2.10	2.08	2.20	2.19	2.24	2.23	2.27	2.32
44559.8	1.76	1.83	1.91	2.01	2.01	2.10	2.08	2.21	2.19	2.25	2.23	2.27	2.33
44562.6	1.76	1.83	1.91	2.01	2.01	2.11	2.09	2.21	2.20	2.25	2.24	2.28	2.33
44565.5	1.76	1.83	1.91	2.02	2.01	2.11	2.09	2.22	2.20	2.26	2.24	2.28	2.34
44568.4	1.76	1.83	1.91	2.02	2.01	2.11	2.09	2.22	2.21	2.26	2.24	2.29	2.35
44571.3	1.76	1.83	1.91	2.02	2.01	2.11	2.09	2.22	2.21	2.27	2.25	2.29	2.36
44574.1	1.75	1.83	1.91	2.02	2.01	2.12	2.09	2.23	2.21	2.27	2.25	2.30	2.36
44577.0	1.75	1.83	1.91	2.02	2.02	2.12	2.10	2.23	2.22	2.27	2.25	2.30	2.37
44580.0	1.76	1.84	1.92	2.03	2.02	2.12	2.10	2.24	2.22	2.28	2.26	2.31	2.39
44582.9	1.76	1.84	1.93	2.03	2.03	2.13	2.11	2.24	2.23	2.29	2.27	2.32	2.40
44585.9	1.76	1.84	1.93	2.04	2.03	2.14	2.11	2.25	2.24	2.29	2.27	2.33	2.41
44588.8	1.76	1.85	1.94	2.04	2.04	2.14	2.12	2.26	2.24	2.30	2.28	2.34	2.43
44591.8	1.77	1.85	1.94	2.05	2.04	2.15	2.13	2.26	2.25	2.31	2.29	2.35	2.44
44594.7	1.77	1.86	1.94	2.05	2.05	2.15	2.13	2.27	2.26	2.32	2.29	2.36	2.46
44597.7	1.77	1.86	1.95	2.06	2.05	2.16	2.14	2.28	2.26	2.33	2.30	2.36	2.47
44600.6	1.77	1.86	1.95	2.07	2.06	2.17	2.14	2.28	2.27	2.34	2.31	2.37	2.48

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
44603.6	1.77	1.87	1.96	2.07	2.06	2.17	2.15	2.29	2.28	2.34	2.31	2.38	2.49
44606.5	1.77	1.87	1.96	2.08	2.07	2.18	2.15	2.30	2.28	2.35	2.32	2.39	2.50
44609.5	1.78	1.87	1.97	2.08	2.07	2.18	2.16	2.30	2.29	2.36	2.33	2.40	2.51
44612.4	1.78	1.87	1.97	2.09	2.08	2.19	2.17	2.31	2.30	2.37	2.34	2.41	2.53
44615.4	1.78	1.88	1.98	2.09	2.08	2.19	2.17	2.32	2.30	2.39	2.34	2.42	2.55
44618.3	1.78	1.88	1.98	2.10	2.09	2.20	2.18	2.33	2.31	2.40	2.35	2.44	2.56
44621.3	1.78	1.88	1.98	2.10	2.09	2.21	2.18	2.33	2.32	2.41	2.36	2.45	2.58
44624.2	1.78	1.88	1.99	2.10	2.10	2.21	2.19	2.34	2.33	2.42	2.37	2.46	2.59
44627.2	1.78	1.89	1.99	2.11	2.10	2.22	2.19	2.35	2.34	2.43	2.38	2.47	2.61
44630.1	1.78	1.89	1.99	2.11	2.11	2.22	2.20	2.36	2.34	2.44	2.39	2.48	2.63
44633.1	1.78	1.89	2.00	2.12	2.11	2.23	2.20	2.37	2.35	2.46	2.40	2.49	2.64
44636.0	1.78	1.89	2.00	2.12	2.12	2.23	2.21	2.38	2.36	2.47	2.41	2.51	2.66
44639.0	1.78	1.89	2.00	2.13	2.12	2.24	2.21	2.38	2.37	2.48	2.42	2.52	2.67
44642.0	1.78	1.89	2.00	2.13	2.13	2.25	2.22	2.39	2.38	2.49	2.43	2.53	2.69
44644.9	1.78	1.89	2.01	2.14	2.13	2.25	2.23	2.40	2.39	2.51	2.44	2.55	2.71
44647.9	1.78	1.90	2.01	2.14	2.13	2.26	2.23	2.42	2.40	2.52	2.46	2.56	2.73
44650.8	1.78	1.90	2.01	2.14	2.14	2.27	2.24	2.43	2.41	2.54	2.47	2.58	2.75
44653.8	1.78	1.90	2.01	2.15	2.14	2.28	2.24	2.44	2.42	2.56	2.48	2.60	2.76
44656.7	1.78	1.90	2.02	2.15	2.14	2.29	2.25	2.45	2.43	2.57	2.49	2.61	2.78
44659.7	1.78	1.90	2.02	2.16	2.15	2.29	2.26	2.45	2.44	2.58	2.50	2.62	2.79
44662.6	1.78	1.90	2.02	2.16	2.15	2.30	2.26	2.46	2.45	2.59	2.51	2.63	2.81
44665.6	1.78	1.90	2.02	2.16	2.15	2.31	2.27	2.47	2.45	2.60	2.51	2.64	2.82
44668.5	1.78	1.90	2.02	2.16	2.16	2.31	2.27	2.47	2.46	2.60	2.52	2.65	2.84
44671.5	1.78	1.90	2.02	2.17	2.16	2.31	2.27	2.48	2.46	2.62	2.53	2.66	2.86
44674.4	1.78	1.90	2.03	2.17	2.16	2.32	2.28	2.48	2.47	2.63	2.54	2.67	2.89
44677.4	1.78	1.90	2.03	2.17	2.17	2.32	2.28	2.49	2.47	2.63	2.54	2.68	2.89
44680.3	1.78	1.90	2.03	2.18	2.17	2.33	2.29	2.49	2.48	2.64	2.55	2.68	2.90
44683.3	1.77	1.90	2.03	2.18	2.17	2.33	2.29	2.50	2.48	2.64	2.55	2.69	2.91
44686.2	1.77	1.90	2.03	2.18	2.17	2.33	2.29	2.50	2.49	2.65	2.56	2.69	2.92
44689.2	1.77	1.90	2.03	2.18	2.17	2.34	2.30	2.51	2.49	2.66	2.56	2.70	2.93
44692.1	1.77	1.90	2.03	2.18	2.18	2.34	2.30	2.51	2.50	2.66	2.57	2.71	2.94
44695.1	1.77	1.90	2.03	2.19	2.18	2.35	2.30	2.52	2.50	2.67	2.57	2.72	2.96
44698.0	1.77	1.90	2.03	2.19	2.18	2.35	2.31	2.52	2.51	2.68	2.58	2.72	2.97
44701.0	1.77	1.90	2.03	2.19	2.18	2.35	2.31	2.53	2.51	2.68	2.58	2.73	2.98
44704.0	1.77	1.90	2.03	2.19	2.18	2.35	2.31	2.53	2.51	2.68	2.58	2.73	2.97
44706.9	1.77	1.90	2.03	2.19	2.18	2.35	2.31	2.53	2.51	2.68	2.58	2.73	2.97
44709.9	1.77	1.90	2.03	2.19	2.18	2.35	2.31	2.53	2.51	2.68	2.58	2.73	2.97
44712.9	1.77	1.90	2.03	2.19	2.18	2.35	2.31	2.53	2.51	2.68	2.58	2.73	2.97
44715.9	1.77	1.90	2.03	2.19	2.18	2.35	2.31	2.53	2.51	2.68	2.58	2.73	2.97
44718.8	1.77	1.90	2.03	2.19	2.18	2.35	2.31	2.53	2.51	2.68	2.58	2.72	2.96
44721.8	1.77	1.90	2.03	2.19	2.18	2.35	2.31	2.53	2.51	2.68	2.58	2.72	2.96
44724.8	1.77	1.90	2.03	2.19	2.18	2.35	2.31	2.53	2.51	2.68	2.58	2.72	2.95
44727.8	1.77	1.90	2.03	2.19	2.18	2.35	2.30	2.53	2.51	2.68	2.58	2.72	2.95
44730.7	1.77	1.90	2.03	2.19	2.18	2.35	2.30	2.52	2.51	2.67	2.58	2.72	2.95
44733.7	1.77	1.90	2.03	2.18	2.18	2.35	2.30	2.52	2.51	2.67	2.58	2.72	2.95
44736.7	1.77	1.89	2.03	2.18	2.17	2.35	2.30	2.52	2.50	2.67	2.58	2.71	2.94

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
44739.6	1.76	1.89	2.03	2.18	2.17	2.35	2.30	2.52	2.50	2.67	2.57	2.71	2.94
44742.6	1.76	1.89	2.03	2.18	2.17	2.34	2.30	2.52	2.50	2.67	2.57	2.71	2.94
44745.6	1.76	1.89	2.03	2.18	2.17	2.34	2.30	2.52	2.50	2.67	2.57	2.71	2.93
44748.6	1.76	1.89	2.02	2.18	2.17	2.34	2.30	2.52	2.50	2.66	2.57	2.71	2.93
44751.5	1.76	1.89	2.02	2.18	2.17	2.34	2.30	2.52	2.50	2.66	2.57	2.71	2.93
44754.5	1.76	1.89	2.02	2.18	2.17	2.34	2.29	2.51	2.50	2.66	2.57	2.70	2.92
44757.5	1.76	1.89	2.02	2.18	2.17	2.34	2.29	2.51	2.49	2.66	2.57	2.70	2.93
44760.4	1.76	1.89	2.02	2.18	2.17	2.34	2.29	2.51	2.49	2.66	2.56	2.70	2.92
44763.4	1.76	1.89	2.02	2.17	2.17	2.34	2.29	2.51	2.49	2.66	2.56	2.70	2.92
44766.4	1.76	1.89	2.02	2.17	2.17	2.34	2.29	2.51	2.49	2.66	2.56	2.70	2.91
44769.4	1.76	1.89	2.02	2.17	2.17	2.34	2.29	2.51	2.49	2.66	2.56	2.70	2.91
44772.3	1.76	1.89	2.02	2.17	2.16	2.33	2.29	2.51	2.49	2.65	2.56	2.70	2.91
44775.3	1.76	1.89	2.02	2.17	2.16	2.33	2.29	2.51	2.49	2.65	2.56	2.69	2.91
44778.3	1.76	1.89	2.02	2.17	2.16	2.33	2.29	2.51	2.49	2.65	2.56	2.69	2.90
44781.3	1.76	1.89	2.02	2.17	2.16	2.33	2.29	2.50	2.49	2.65	2.56	2.69	2.90
44784.2	1.76	1.89	2.02	2.17	2.16	2.33	2.29	2.50	2.49	2.65	2.56	2.69	2.90
44787.2	1.76	1.89	2.02	2.17	2.16	2.33	2.28	2.50	2.49	2.65	2.55	2.69	2.90
44790.2	1.76	1.89	2.02	2.17	2.16	2.33	2.28	2.50	2.48	2.65	2.55	2.69	2.89
44793.1	1.76	1.89	2.02	2.17	2.16	2.33	2.28	2.50	2.48	2.64	2.55	2.68	2.89
44796.1	1.76	1.89	2.02	2.17	2.16	2.33	2.28	2.50	2.48	2.64	2.55	2.68	2.88
44799.1	1.76	1.89	2.02	2.17	2.16	2.33	2.28	2.50	2.48	2.64	2.55	2.68	2.88
44802.1	1.76	1.89	2.02	2.16	2.16	2.32	2.28	2.50	2.48	2.64	2.55	2.68	2.88
44805.0	1.76	1.89	2.02	2.16	2.16	2.32	2.28	2.50	2.48	2.64	2.55	2.68	2.88
44808.0	1.76	1.89	2.01	2.16	2.16	2.32	2.28	2.49	2.48	2.64	2.55	2.68	2.87
44810.9	1.76	1.89	2.02	2.16	2.16	2.32	2.28	2.49	2.48	2.64	2.55	2.68	2.87
44813.9	1.76	1.89	2.02	2.17	2.16	2.32	2.28	2.49	2.48	2.64	2.55	2.68	2.87
44816.8	1.76	1.89	2.02	2.17	2.16	2.32	2.28	2.50	2.48	2.64	2.55	2.68	2.87
44819.8	1.76	1.89	2.02	2.17	2.16	2.32	2.28	2.50	2.48	2.64	2.55	2.68	2.87
44822.7	1.77	1.89	2.02	2.17	2.16	2.33	2.28	2.50	2.48	2.64	2.55	2.68	2.87
44825.6	1.77	1.90	2.02	2.17	2.16	2.33	2.28	2.50	2.48	2.64	2.55	2.68	2.87
44828.6	1.77	1.90	2.03	2.17	2.16	2.33	2.28	2.50	2.48	2.64	2.55	2.68	2.87
44831.5	1.77	1.90	2.03	2.17	2.17	2.33	2.28	2.50	2.48	2.64	2.55	2.68	2.87
44834.5	1.77	1.90	2.03	2.17	2.17	2.33	2.29	2.50	2.48	2.64	2.55	2.68	2.87
44837.4	1.77	1.90	2.03	2.18	2.17	2.33	2.29	2.50	2.48	2.64	2.55	2.68	2.87
44840.4	1.78	1.91	2.03	2.18	2.17	2.33	2.29	2.50	2.49	2.64	2.55	2.68	2.87
44843.3	1.78	1.91	2.04	2.18	2.17	2.33	2.29	2.50	2.49	2.65	2.55	2.68	2.87
44846.2	1.78	1.91	2.04	2.18	2.17	2.34	2.29	2.50	2.49	2.65	2.55	2.69	2.88
44849.2	1.78	1.91	2.04	2.18	2.18	2.34	2.29	2.51	2.49	2.65	2.56	2.69	2.88
44852.1	1.78	1.92	2.04	2.19	2.18	2.34	2.29	2.51	2.49	2.65	2.56	2.69	2.88
44855.1	1.79	1.92	2.04	2.19	2.18	2.34	2.30	2.51	2.49	2.65	2.56	2.69	2.89
44858.0	1.79	1.92	2.05	2.19	2.18	2.34	2.30	2.51	2.49	2.65	2.56	2.69	2.90
44860.9	1.79	1.92	2.05	2.19	2.18	2.34	2.30	2.51	2.49	2.65	2.56	2.69	2.89
44863.9	1.79	1.92	2.05	2.19	2.18	2.34	2.30	2.51	2.49	2.65	2.56	2.69	2.88
44866.8	1.80	1.93	2.05	2.19	2.19	2.34	2.30	2.51	2.50	2.65	2.56	2.70	2.89
44869.8	1.80	1.93	2.05	2.20	2.19	2.35	2.30	2.51	2.50	2.66	2.56	2.70	2.88
44872.7	1.80	1.93	2.06	2.20	2.19	2.35	2.31	2.52	2.50	2.66	2.57	2.70	2.90

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
44875.6	1.80	1.93	2.06	2.20	2.19	2.35	2.31	2.52	2.50	2.66	2.57	2.70	2.91
44878.6	1.81	1.94	2.06	2.20	2.20	2.35	2.31	2.52	2.50	2.66	2.57	2.70	2.91
44881.5	1.81	1.94	2.06	2.21	2.20	2.35	2.31	2.52	2.51	2.66	2.57	2.70	2.92
44884.5	1.81	1.94	2.07	2.21	2.20	2.36	2.31	2.52	2.51	2.67	2.58	2.70	2.91
44887.4	1.81	1.94	2.07	2.21	2.20	2.36	2.32	2.53	2.51	2.67	2.58	2.71	2.91
44890.4	1.82	1.95	2.07	2.21	2.21	2.36	2.32	2.53	2.51	2.67	2.58	2.71	2.92
44893.3	1.82	1.95	2.07	2.22	2.21	2.36	2.32	2.53	2.52	2.67	2.58	2.71	2.92
44896.2	1.82	1.95	2.08	2.22	2.21	2.37	2.33	2.53	2.52	2.68	2.59	2.71	2.92
44899.2	1.82	1.96	2.08	2.22	2.21	2.37	2.33	2.54	2.52	2.68	2.59	2.72	2.92
44902.1	1.83	1.96	2.08	2.22	2.22	2.37	2.33	2.54	2.53	2.68	2.59	2.72	2.93
44905.1	1.83	1.96	2.09	2.23	2.22	2.38	2.33	2.54	2.53	2.69	2.60	2.72	2.93
44908.0	1.83	1.96	2.09	2.23	2.22	2.38	2.34	2.55	2.53	2.69	2.60	2.73	2.94
44911.0	1.83	1.96	2.09	2.23	2.23	2.38	2.34	2.55	2.54	2.69	2.60	2.73	2.96
44914.0	1.83	1.97	2.09	2.24	2.23	2.39	2.34	2.56	2.54	2.70	2.61	2.74	2.95
44917.0	1.83	1.97	2.09	2.24	2.23	2.39	2.35	2.56	2.54	2.70	2.61	2.74	2.95
44920.0	1.83	1.97	2.09	2.24	2.23	2.39	2.35	2.56	2.55	2.71	2.62	2.75	2.96
44923.0	1.83	1.97	2.10	2.24	2.24	2.40	2.35	2.57	2.55	2.71	2.62	2.75	2.96
44926.0	1.84	1.97	2.10	2.25	2.24	2.40	2.36	2.57	2.56	2.72	2.63	2.76	2.97
44929.0	1.84	1.97	2.10	2.25	2.24	2.41	2.36	2.58	2.56	2.73	2.63	2.76	2.98
44932.0	1.84	1.97	2.10	2.25	2.25	2.41	2.37	2.58	2.57	2.73	2.64	2.77	2.98
44935.0	1.84	1.98	2.11	2.26	2.25	2.41	2.37	2.59	2.57	2.74	2.64	2.78	2.99
44938.0	1.84	1.98	2.11	2.26	2.25	2.42	2.37	2.59	2.58	2.74	2.65	2.78	3.00
44941.0	1.84	1.98	2.11	2.26	2.26	2.42	2.38	2.60	2.58	2.75	2.65	2.79	3.00
44944.0	1.84	1.98	2.11	2.27	2.26	2.43	2.38	2.61	2.59	2.76	2.66	2.80	3.01
44947.0	1.84	1.98	2.12	2.27	2.26	2.43	2.39	2.61	2.60	2.77	2.67	2.80	3.02
44950.0	1.85	1.99	2.12	2.28	2.27	2.44	2.39	2.62	2.60	2.77	2.67	2.81	3.03
44953.0	1.85	1.99	2.12	2.28	2.27	2.44	2.40	2.62	2.61	2.78	2.68	2.82	3.04
44956.0	1.85	1.99	2.13	2.28	2.28	2.45	2.40	2.63	2.61	2.79	2.69	2.82	3.05
44959.0	1.85	1.99	2.13	2.29	2.28	2.45	2.41	2.64	2.62	2.79	2.69	2.83	3.06
44962.0	1.85	2.00	2.13	2.29	2.29	2.46	2.41	2.64	2.63	2.80	2.70	2.84	3.06
44965.0	1.85	2.00	2.14	2.30	2.29	2.47	2.42	2.65	2.63	2.81	2.71	2.85	3.07
44968.0	1.86	2.00	2.14	2.30	2.30	2.47	2.42	2.66	2.64	2.82	2.71	2.85	3.08
44971.0	1.86	2.01	2.15	2.31	2.30	2.48	2.43	2.66	2.65	2.82	2.72	2.86	3.09
44974.0	1.86	2.01	2.15	2.31	2.31	2.48	2.44	2.67	2.65	2.83	2.73	2.87	3.10
44977.0	1.86	2.01	2.15	2.32	2.31	2.49	2.44	2.68	2.66	2.84	2.73	2.88	3.10
44980.0	1.87	2.02	2.16	2.32	2.32	2.50	2.45	2.68	2.67	2.85	2.74	2.89	3.11
44983.0	1.87	2.02	2.16	2.33	2.32	2.50	2.45	2.69	2.67	2.85	2.75	2.89	3.13
44986.0	1.87	2.02	2.17	2.34	2.33	2.51	2.46	2.70	2.68	2.86	2.76	2.90	3.14
44989.0	1.88	2.03	2.17	2.34	2.33	2.52	2.47	2.71	2.69	2.87	2.77	2.91	3.15
44992.0	1.88	2.03	2.18	2.35	2.34	2.52	2.47	2.71	2.70	2.88	2.77	2.92	3.16
44995.0	1.88	2.04	2.18	2.35	2.35	2.53	2.48	2.72	2.70	2.89	2.78	2.93	3.16
44998.0	1.89	2.04	2.19	2.36	2.35	2.53	2.48	2.73	2.71	2.90	2.79	2.94	3.18
45001.0	1.89	2.04	2.19	2.37	2.36	2.54	2.49	2.73	2.71	2.91	2.79	2.95	3.19
45004.0	1.89	2.05	2.20	2.37	2.36	2.54	2.49	2.74	2.72	2.92	2.80	2.96	3.21
45007.0	1.90	2.05	2.21	2.38	2.37	2.55	2.50	2.75	2.73	2.93	2.81	2.97	3.24
45010.0	1.90	2.06	2.21	2.39	2.38	2.56	2.51	2.76	2.74	2.94	2.82	2.98	3.25

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
45013.0	1.91	2.06	2.22	2.39	2.39	2.57	2.52	2.76	2.75	2.95	2.83	2.99	3.28
45016.0	1.91	2.07	2.23	2.40	2.40	2.58	2.53	2.78	2.76	2.97	2.84	3.01	3.30
45018.9	1.91	2.07	2.23	2.41	2.40	2.59	2.54	2.79	2.77	2.97	2.85	3.01	3.30
45021.8	1.92	2.08	2.23	2.41	2.40	2.59	2.54	2.79	2.77	2.97	2.85	3.01	3.31
45024.7	1.92	2.08	2.24	2.41	2.41	2.59	2.54	2.80	2.78	2.97	2.85	3.01	3.30
45027.6	1.93	2.08	2.24	2.42	2.41	2.59	2.54	2.80	2.78	2.97	2.86	3.01	3.30
45030.5	1.93	2.09	2.24	2.42	2.41	2.59	2.54	2.80	2.78	2.98	2.86	3.01	3.29
45033.4	1.93	2.09	2.25	2.42	2.41	2.60	2.55	2.80	2.78	2.98	2.86	3.01	3.30
45036.3	1.94	2.09	2.25	2.42	2.41	2.60	2.55	2.80	2.79	2.98	2.87	3.02	3.30
45039.2	1.94	2.10	2.25	2.42	2.42	2.60	2.55	2.81	2.79	2.99	2.87	3.03	3.31
45042.1	1.95	2.10	2.26	2.43	2.42	2.61	2.56	2.81	2.80	3.00	2.88	3.03	3.31
45045.0	1.95	2.10	2.26	2.43	2.42	2.61	2.56	2.81	2.80	2.99	2.88	3.03	3.31
45048.0	1.96	2.11	2.26	2.43	2.42	2.61	2.56	2.81	2.79	2.99	2.88	3.03	3.31
45050.9	1.96	2.11	2.26	2.43	2.42	2.61	2.56	2.81	2.79	2.99	2.88	3.03	3.30
45053.8	1.96	2.12	2.26	2.43	2.42	2.61	2.56	2.81	2.80	2.99	2.88	3.02	3.30
45056.7	1.97	2.12	2.27	2.43	2.42	2.61	2.56	2.81	2.79	2.99	2.88	3.02	3.29
45059.6	1.97	2.12	2.27	2.43	2.42	2.61	2.56	2.81	2.79	2.98	2.88	3.01	3.28
45062.5	1.98	2.13	2.27	2.43	2.42	2.61	2.56	2.81	2.79	2.98	2.87	3.01	3.28
45065.4	1.98	2.13	2.27	2.43	2.42	2.61	2.55	2.81	2.79	2.98	2.87	3.01	3.28
45068.3	1.99	2.13	2.28	2.43	2.42	2.61	2.55	2.81	2.79	2.97	2.87	3.01	3.27
45071.2	1.99	2.14	2.28	2.43	2.43	2.60	2.55	2.81	2.79	2.97	2.87	3.01	3.27
45074.1	2.00	2.14	2.28	2.43	2.43	2.60	2.55	2.81	2.79	2.97	2.87	3.00	3.25
45077.0	2.00	2.15	2.28	2.43	2.43	2.60	2.55	2.80	2.79	2.96	2.87	3.00	3.25
45079.9	2.01	2.15	2.29	2.43	2.43	2.60	2.55	2.80	2.79	2.96	2.87	3.00	3.24
45082.8	2.01	2.15	2.29	2.43	2.43	2.60	2.55	2.80	2.79	2.96	2.87	2.99	3.23
45085.7	2.02	2.16	2.29	2.44	2.43	2.60	2.55	2.80	2.79	2.95	2.86	2.98	3.22
45088.6	2.02	2.16	2.29	2.44	2.43	2.60	2.55	2.80	2.79	2.95	2.86	2.98	3.21
45091.5	2.03	2.17	2.30	2.44	2.43	2.60	2.55	2.80	2.79	2.95	2.86	2.97	3.21
45094.4	2.03	2.17	2.30	2.44	2.43	2.60	2.55	2.80	2.79	2.94	2.86	2.97	3.21
45097.3	2.04	2.17	2.30	2.44	2.43	2.60	2.56	2.80	2.79	2.94	2.86	2.97	3.21
45100.2	2.04	2.18	2.31	2.44	2.44	2.61	2.56	2.80	2.79	2.94	2.86	2.97	3.21
45103.1	2.05	2.18	2.31	2.44	2.44	2.61	2.56	2.81	2.79	2.94	2.86	2.98	3.22
45106.0	2.05	2.19	2.31	2.45	2.44	2.61	2.56	2.81	2.79	2.95	2.86	2.98	3.21
45109.0	2.06	2.19	2.31	2.45	2.44	2.61	2.56	2.81	2.79	2.95	2.86	2.98	3.22
45111.9	2.06	2.19	2.32	2.45	2.44	2.60	2.56	2.81	2.79	2.95	2.86	2.98	3.21
45114.8	2.07	2.20	2.32	2.45	2.44	2.60	2.56	2.81	2.79	2.95	2.86	2.98	3.22
45117.7	2.07	2.20	2.32	2.45	2.45	2.60	2.56	2.81	2.78	2.95	2.86	2.99	3.21
45120.6	2.08	2.21	2.33	2.45	2.45	2.60	2.56	2.80	2.78	2.95	2.86	2.98	3.22
45123.5	2.08	2.21	2.33	2.45	2.45	2.60	2.56	2.80	2.78	2.95	2.85	2.98	3.22
45126.4	2.09	2.22	2.33	2.46	2.45	2.60	2.56	2.80	2.78	2.94	2.85	2.98	3.21
45129.3	2.10	2.22	2.34	2.46	2.45	2.60	2.56	2.79	2.78	2.94	2.85	2.98	3.20
45132.2	2.10	2.23	2.34	2.46	2.45	2.60	2.56	2.79	2.78	2.94	2.85	2.97	3.20
45135.1	2.11	2.23	2.35	2.46	2.46	2.60	2.56	2.79	2.78	2.94	2.85	2.97	3.20
45138.0	2.11	2.24	2.35	2.46	2.46	2.60	2.56	2.79	2.78	2.94	2.84	2.97	3.19
45140.9	2.12	2.24	2.35	2.46	2.46	2.60	2.56	2.79	2.78	2.94	2.85	2.97	3.20
45143.8	2.12	2.24	2.36	2.47	2.46	2.60	2.56	2.79	2.78	2.94	2.85	2.97	3.19

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
45146.6	2.13	2.25	2.36	2.47	2.47	2.61	2.56	2.80	2.78	2.95	2.85	2.98	3.19
45149.5	2.13	2.25	2.36	2.47	2.47	2.61	2.57	2.80	2.78	2.95	2.85	2.98	3.19
45152.4	2.13	2.25	2.37	2.47	2.47	2.61	2.57	2.80	2.78	2.95	2.85	2.98	3.19
45155.3	2.14	2.26	2.37	2.48	2.47	2.61	2.57	2.80	2.78	2.95	2.85	2.98	3.19
45158.1	2.14	2.26	2.38	2.48	2.48	2.61	2.57	2.80	2.78	2.95	2.85	2.98	3.19
45161.0	2.15	2.27	2.38	2.48	2.48	2.61	2.57	2.80	2.79	2.95	2.85	2.98	3.19
45163.9	2.15	2.27	2.38	2.48	2.48	2.62	2.58	2.80	2.79	2.95	2.85	2.98	3.19
45166.8	2.15	2.27	2.39	2.49	2.48	2.62	2.58	2.81	2.79	2.95	2.85	2.98	3.19
45169.6	2.16	2.28	2.39	2.49	2.49	2.62	2.58	2.81	2.79	2.95	2.85	2.98	3.18
45172.5	2.16	2.28	2.39	2.49	2.49	2.62	2.58	2.81	2.79	2.94	2.85	2.97	3.18
45175.4	2.17	2.28	2.39	2.49	2.49	2.62	2.58	2.81	2.79	2.94	2.86	2.97	3.18
45178.3	2.17	2.29	2.40	2.50	2.49	2.63	2.59	2.81	2.79	2.93	2.86	2.96	3.18
45181.1	2.18	2.29	2.40	2.50	2.50	2.63	2.59	2.81	2.80	2.93	2.86	2.96	3.17
45184.0	2.18	2.29	2.40	2.50	2.50	2.63	2.59	2.82	2.80	2.92	2.86	2.95	3.17
45186.9	2.18	2.30	2.40	2.51	2.50	2.63	2.59	2.82	2.80	2.91	2.86	2.95	3.17
45189.8	2.19	2.30	2.41	2.51	2.51	2.64	2.60	2.82	2.80	2.92	2.86	2.95	3.17
45192.6	2.19	2.30	2.41	2.51	2.51	2.64	2.60	2.82	2.80	2.91	2.87	2.95	3.18
45195.5	2.20	2.31	2.41	2.51	2.51	2.64	2.60	2.82	2.81	2.92	2.87	2.95	3.18
45198.4	2.20	2.31	2.42	2.52	2.52	2.65	2.61	2.82	2.81	2.91	2.87	2.94	3.19
45201.3	2.20	2.31	2.42	2.52	2.52	2.65	2.61	2.83	2.81	2.92	2.87	2.95	3.18
45204.1	2.21	2.32	2.42	2.53	2.52	2.65	2.61	2.83	2.82	2.92	2.88	2.95	3.17
45207.0	2.21	2.32	2.43	2.53	2.53	2.66	2.62	2.83	2.82	2.92	2.88	2.95	3.17
45209.9	2.22	2.32	2.43	2.53	2.53	2.66	2.62	2.84	2.82	2.92	2.88	2.96	3.18
45212.8	2.27	2.33	2.44	2.54	2.53	2.66	2.63	2.84	2.83	2.93	2.89	2.96	3.17
45215.6	2.33	2.33	2.44	2.54	2.54	2.67	2.63	2.84	2.83	2.93	2.89	2.96	3.18
45218.5	2.39	2.37	2.44	2.54	2.54	2.67	2.63	2.85	2.84	2.93	2.89	2.96	3.18
45221.4	2.44	2.42	2.45	2.55	2.55	2.68	2.64	2.85	2.84	2.93	2.90	2.96	3.18
45224.3	2.52	2.50	2.53	2.55	2.55	2.68	2.64	2.86	2.84	2.94	2.90	2.97	3.18
45227.1	2.58	2.55	2.59	2.56	2.58	2.68	2.64	2.86	2.85	2.94	2.91	2.97	3.18
45230.0	2.66	2.65	2.68	2.62	2.66	2.69	2.67	2.86	2.85	2.94	2.91	2.97	3.18
45232.9	2.73	2.71	2.75	2.70	2.74	2.70	2.73	2.87	2.86	2.95	2.91	2.98	3.19
45235.8	2.82	2.81	2.86	2.79	2.84	2.81	2.85	2.87	2.86	2.95	2.95	2.98	3.19
45238.6	2.90	2.87	2.93	2.87	2.91	2.88	2.92	2.88	2.91	2.95	3.03	3.07	3.20
45241.5	3.00	2.99	3.04	2.98	3.02	3.00	3.04	3.01	3.02	2.97	3.16	3.18	3.26
45244.4	3.09	3.06	3.12	3.06	3.11	3.08	3.12	3.08	3.11	3.07	3.25	3.26	3.35
45247.3	3.21	3.17	3.24	3.18	3.23	3.20	3.24	3.21	3.22	3.17	3.34	3.42	3.44
45250.1	3.29	3.26	3.33	3.27	3.32	3.28	3.33	3.29	3.32	3.28	3.45	3.51	3.56
45253.0	3.40	3.37	3.45	3.39	3.44	3.41	3.45	3.42	3.44	3.39	3.57	3.63	3.72
45256.0	3.16	3.13	3.21	3.16	3.21	3.18	3.22	3.18	3.23	3.18	3.35	3.43	3.49
45259.0	3.03	2.99	3.08	3.04	3.09	3.07	3.11	3.08	3.11	3.05	3.25	3.30	3.37
45262.0	2.83	2.81	2.89	2.86	2.91	2.87	2.91	2.88	2.92	2.94	3.05	3.10	3.20
45265.0	2.70	2.68	2.78	2.75	2.80	2.76	2.82	2.84	2.83	2.92	2.93	3.00	3.15
45268.0	2.54	2.53	2.62	2.60	2.64	2.65	2.66	2.82	2.81	2.91	2.87	2.94	3.13
45271.0	2.44	2.44	2.53	2.51	2.56	2.63	2.59	2.81	2.80	2.90	2.86	2.93	3.13
45274.0	2.32	2.32	2.41	2.48	2.48	2.62	2.58	2.79	2.78	2.88	2.84	2.91	3.12
45277.0	2.25	2.25	2.36	2.47	2.46	2.60	2.56	2.78	2.77	2.88	2.83	2.90	3.11

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
45280.0	2.16	2.23	2.34	2.45	2.45	2.59	2.55	2.76	2.75	2.86	2.81	2.89	3.11
45283.0	2.10	2.21	2.33	2.44	2.43	2.57	2.53	2.75	2.74	2.85	2.80	2.88	3.09
45286.0	2.09	2.20	2.31	2.42	2.42	2.56	2.52	2.73	2.72	2.85	2.78	2.87	3.09
45289.0	2.07	2.18	2.29	2.41	2.40	2.55	2.50	2.72	2.71	2.83	2.77	2.86	3.08
45292.0	2.05	2.16	2.28	2.39	2.39	2.53	2.49	2.70	2.69	2.82	2.75	2.85	3.06
45295.0	2.03	2.15	2.26	2.38	2.37	2.52	2.48	2.69	2.68	2.81	2.74	2.83	3.05
45298.0	2.02	2.13	2.25	2.36	2.36	2.50	2.46	2.67	2.66	2.80	2.72	2.82	3.04
45301.0	2.00	2.12	2.23	2.35	2.35	2.49	2.45	2.66	2.65	2.78	2.71	2.81	3.03
45304.0	1.99	2.10	2.22	2.33	2.33	2.48	2.43	2.65	2.63	2.77	2.69	2.80	3.02
45307.0	1.97	2.09	2.20	2.32	2.32	2.46	2.42	2.63	2.62	2.76	2.68	2.79	3.01
45310.0	1.95	2.07	2.19	2.31	2.30	2.45	2.41	2.62	2.61	2.75	2.67	2.77	3.00
45313.0	1.94	2.06	2.17	2.29	2.29	2.44	2.39	2.60	2.59	2.74	2.65	2.76	2.99
45316.0	1.92	2.04	2.16	2.28	2.28	2.43	2.38	2.59	2.58	2.72	2.64	2.75	2.98
45319.0	1.91	2.03	2.15	2.27	2.26	2.41	2.37	2.58	2.56	2.71	2.62	2.74	2.98
45322.0	1.90	2.02	2.13	2.26	2.25	2.40	2.36	2.56	2.55	2.70	2.61	2.73	2.97
45325.0	1.88	2.00	2.12	2.24	2.24	2.39	2.34	2.55	2.54	2.69	2.60	2.72	2.97
45328.0	1.87	1.99	2.11	2.23	2.23	2.38	2.33	2.54	2.52	2.68	2.58	2.71	2.96
45331.0	1.85	1.98	2.09	2.22	2.21	2.36	2.32	2.52	2.51	2.67	2.57	2.70	2.94
45334.0	1.84	1.96	2.08	2.21	2.20	2.35	2.31	2.51	2.50	2.66	2.55	2.69	2.93
45337.0	1.83	1.95	2.07	2.19	2.19	2.34	2.29	2.50	2.49	2.65	2.55	2.68	2.92
45340.0	1.81	1.94	2.06	2.18	2.18	2.33	2.28	2.49	2.47	2.64	2.53	2.67	2.91
45343.0	1.80	1.93	2.05	2.17	2.16	2.32	2.27	2.48	2.47	2.63	2.52	2.66	2.90
45346.0	1.79	1.91	2.03	2.16	2.15	2.30	2.26	2.47	2.46	2.63	2.52	2.65	2.89
45349.0	1.78	1.90	2.02	2.15	2.14	2.29	2.25	2.46	2.45	2.61	2.50	2.64	2.88
45352.0	1.76	1.89	2.01	2.13	2.13	2.28	2.24	2.45	2.44	2.61	2.50	2.63	2.87
45355.0	1.75	1.88	2.00	2.12	2.12	2.27	2.22	2.44	2.42	2.59	2.48	2.62	2.86
45358.0	1.74	1.87	1.99	2.11	2.11	2.26	2.21	2.42	2.41	2.58	2.47	2.61	2.85
45361.0	1.73	1.85	1.97	2.10	2.09	2.25	2.20	2.41	2.40	2.57	2.46	2.59	2.84
45364.0	1.72	1.84	1.96	2.09	2.08	2.23	2.19	2.40	2.39	2.56	2.45	2.58	2.82
45367.0	1.71	1.83	1.95	2.08	2.07	2.22	2.18	2.39	2.38	2.55	2.44	2.57	2.81
45370.0	1.69	1.82	1.94	2.06	2.06	2.21	2.17	2.38	2.37	2.53	2.43	2.56	2.80
45373.0	1.68	1.81	1.93	2.05	2.05	2.20	2.16	2.37	2.36	2.52	2.42	2.55	2.79
45375.9	1.68	1.81	1.93	2.06	2.05	2.20	2.16	2.37	2.36	2.52	2.42	2.55	2.79
45378.9	1.69	1.81	1.93	2.06	2.05	2.20	2.16	2.38	2.36	2.53	2.42	2.55	2.79
45381.8	1.69	1.81	1.93	2.06	2.05	2.21	2.16	2.38	2.37	2.53	2.43	2.55	2.80
45384.8	1.69	1.82	1.94	2.06	2.06	2.21	2.16	2.38	2.37	2.53	2.43	2.56	2.80
45387.7	1.69	1.82	1.94	2.06	2.06	2.21	2.17	2.39	2.38	2.53	2.44	2.56	2.80
45390.7	1.69	1.82	1.94	2.07	2.06	2.21	2.17	2.39	2.38	2.54	2.44	2.56	2.80
45393.6	1.69	1.82	1.94	2.07	2.06	2.21	2.17	2.40	2.39	2.55	2.45	2.57	2.80
45396.6	1.69	1.82	1.95	2.07	2.06	2.22	2.17	2.40	2.39	2.55	2.45	2.57	2.81
45399.5	1.69	1.83	1.95	2.07	2.07	2.22	2.17	2.41	2.39	2.55	2.46	2.57	2.82
45402.5	1.69	1.83	1.95	2.07	2.07	2.22	2.18	2.41	2.40	2.55	2.46	2.58	2.82
45405.4	1.70	1.83	1.95	2.08	2.07	2.22	2.18	2.41	2.40	2.56	2.47	2.58	2.82
45408.4	1.70	1.83	1.95	2.08	2.07	2.22	2.18	2.42	2.40	2.56	2.47	2.58	2.83
45411.3	1.70	1.83	1.95	2.08	2.07	2.23	2.18	2.42	2.41	2.56	2.47	2.58	2.83
45414.3	1.70	1.83	1.96	2.08	2.08	2.23	2.18	2.42	2.41	2.56	2.47	2.59	2.83

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
45417.2	1.70	1.83	1.96	2.08	2.08	2.23	2.19	2.42	2.41	2.56	2.47	2.59	2.83
45420.2	1.70	1.83	1.96	2.08	2.08	2.23	2.19	2.43	2.41	2.56	2.48	2.59	2.83
45423.1	1.70	1.84	1.96	2.09	2.08	2.23	2.19	2.43	2.41	2.56	2.48	2.59	2.84
45426.1	1.70	1.84	1.96	2.09	2.08	2.24	2.19	2.43	2.42	2.57	2.48	2.59	2.84
45429.0	1.71	1.84	1.96	2.09	2.09	2.24	2.19	2.43	2.42	2.57	2.48	2.60	2.85
45431.9	1.71	1.84	1.97	2.09	2.09	2.24	2.19	2.43	2.42	2.58	2.49	2.60	2.85
45434.9	1.71	1.84	1.97	2.09	2.09	2.24	2.20	2.44	2.42	2.58	2.49	2.60	2.86
45437.8	1.71	1.84	1.97	2.10	2.09	2.24	2.20	2.44	2.43	2.58	2.49	2.61	2.86
45440.8	1.71	1.84	1.97	2.10	2.09	2.25	2.20	2.44	2.43	2.59	2.49	2.61	2.87
45443.7	1.71	1.85	1.97	2.10	2.09	2.25	2.20	2.44	2.43	2.59	2.50	2.62	2.87
45446.7	1.71	1.85	1.97	2.10	2.10	2.25	2.20	2.45	2.43	2.60	2.50	2.63	2.88
45449.6	1.71	1.85	1.97	2.10	2.10	2.25	2.21	2.45	2.44	2.61	2.50	2.63	2.89
45452.6	1.71	1.85	1.98	2.10	2.10	2.25	2.21	2.45	2.44	2.61	2.50	2.64	2.89
45455.5	1.72	1.85	1.98	2.11	2.10	2.26	2.21	2.45	2.44	2.62	2.51	2.65	2.91
45458.5	1.72	1.85	1.98	2.11	2.10	2.26	2.21	2.46	2.44	2.63	2.51	2.65	2.91
45461.4	1.72	1.85	1.98	2.11	2.11	2.26	2.22	2.46	2.45	2.64	2.51	2.67	2.93
45464.4	1.72	1.85	1.98	2.11	2.11	2.26	2.22	2.46	2.45	2.66	2.52	2.68	2.94
45467.3	1.72	1.86	1.98	2.11	2.11	2.27	2.22	2.47	2.45	2.66	2.52	2.69	2.95
45470.3	1.72	1.86	1.98	2.12	2.11	2.27	2.23	2.47	2.46	2.68	2.53	2.71	2.97
45473.2	1.72	1.86	1.99	2.12	2.11	2.27	2.23	2.48	2.46	2.68	2.53	2.71	2.97
45476.2	1.72	1.86	1.99	2.12	2.12	2.28	2.23	2.49	2.46	2.69	2.55	2.72	2.99
45479.1	1.73	1.86	1.99	2.12	2.12	2.28	2.23	2.48	2.47	2.70	2.55	2.74	3.00
45482.1	1.73	1.86	1.99	2.12	2.12	2.29	2.24	2.49	2.47	2.72	2.56	2.75	3.01
45485.0	1.73	1.86	1.99	2.13	2.12	2.29	2.24	2.50	2.48	2.72	2.57	2.76	3.03
45487.9	1.72	1.85	1.99	2.11	2.11	2.26	2.24	2.47	2.48	2.73	2.54	2.75	3.02
45490.7	1.71	1.84	1.98	2.11	2.10	2.27	2.22	2.47	2.46	2.70	2.54	2.73	3.00
45493.6	1.70	1.83	1.97	2.10	2.10	2.26	2.20	2.47	2.44	2.68	2.52	2.72	2.96
45496.4	1.69	1.82	1.96	2.09	2.09	2.25	2.21	2.46	2.44	2.67	2.52	2.70	2.97
45499.3	1.68	1.81	1.95	2.09	2.08	2.25	2.21	2.45	2.45	2.67	2.53	2.69	2.95
45502.1	1.67	1.80	1.94	2.08	2.07	2.24	2.19	2.44	2.43	2.65	2.50	2.68	2.94
45505.0	1.66	1.79	1.92	2.07	2.06	2.23	2.18	2.43	2.41	2.62	2.49	2.66	2.92
45507.9	1.64	1.78	1.91	2.05	2.05	2.21	2.16	2.41	2.40	2.61	2.47	2.64	2.90
45510.7	1.63	1.77	1.90	2.04	2.03	2.20	2.15	2.40	2.38	2.59	2.45	2.62	2.89
45513.6	1.62	1.76	1.88	2.02	2.02	2.18	2.14	2.38	2.37	2.57	2.44	2.60	2.86
45516.4	1.61	1.75	1.87	2.01	2.00	2.17	2.12	2.36	2.35	2.55	2.43	2.58	2.85
45519.3	1.60	1.73	1.86	1.99	1.99	2.15	2.10	2.35	2.33	2.53	2.41	2.56	2.83
45522.1	1.59	1.72	1.84	1.98	1.97	2.14	2.09	2.33	2.32	2.52	2.39	2.54	2.80
45525.0	1.58	1.71	1.83	1.96	1.96	2.12	2.07	2.31	2.30	2.50	2.37	2.53	2.78
45527.9	1.57	1.69	1.82	1.95	1.94	2.10	2.06	2.30	2.28	2.48	2.36	2.51	2.76
45530.7	1.56	1.68	1.80	1.93	1.93	2.09	2.04	2.28	2.27	2.46	2.34	2.49	2.75
45533.6	1.55	1.67	1.79	1.92	1.91	2.07	2.03	2.26	2.25	2.45	2.32	2.47	2.73
45536.4	1.54	1.66	1.77	1.91	1.90	2.06	2.02	2.25	2.24	2.44	2.31	2.46	2.72
45539.3	1.53	1.64	1.76	1.89	1.88	2.05	2.00	2.24	2.23	2.43	2.30	2.44	2.70
45542.1	1.52	1.63	1.74	1.88	1.87	2.03	1.99	2.22	2.21	2.41	2.28	2.43	2.69
45545.0	1.51	1.62	1.73	1.86	1.85	2.02	1.97	2.21	2.19	2.39	2.26	2.41	2.67
45547.9	1.49	1.60	1.72	1.85	1.84	2.00	1.96	2.19	2.18	2.37	2.25	2.39	2.65

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
45550.7	1.48	1.59	1.70	1.83	1.82	1.99	1.94	2.17	2.16	2.35	2.23	2.37	2.63
45553.6	1.47	1.58	1.69	1.82	1.81	1.97	1.92	2.16	2.14	2.34	2.21	2.35	2.61
45556.4	1.46	1.57	1.67	1.80	1.79	1.95	1.91	2.14	2.12	2.32	2.20	2.34	2.59
45559.3	1.45	1.55	1.66	1.79	1.78	1.94	1.89	2.12	2.11	2.30	2.18	2.32	2.57
45562.1	1.43	1.54	1.65	1.77	1.76	1.92	1.88	2.10	2.09	2.28	2.16	2.30	2.54
45565.0	1.42	1.53	1.63	1.76	1.75	1.91	1.86	2.08	2.07	2.26	2.14	2.28	2.52
45565.0	1.42	1.53	1.63	1.76	1.75	1.91	1.86	2.08	2.07	2.26	2.14	2.28	2.52
45571.6	1.44	1.54	1.65	1.77	1.77	1.92	1.88	2.10	2.09	2.28	2.16	2.29	2.54
45578.3	1.45	1.56	1.67	1.79	1.78	1.94	1.89	2.12	2.11	2.29	2.17	2.31	2.55
45584.9	1.47	1.57	1.68	1.81	1.80	1.96	1.91	2.14	2.12	2.31	2.19	2.33	2.57
45591.5	1.49	1.59	1.70	1.82	1.82	1.97	1.93	2.16	2.14	2.33	2.21	2.35	2.59
45599.0	2.28	2.43	2.59	2.78	2.77	3.00	2.94	3.19	3.16	3.46	3.29	3.69	4.03
45606.5	1.66	1.76	1.88	2.01	2.00	2.16	2.12	2.32	2.30	2.50	2.38	2.60	2.85
45613.1	1.66	1.78	1.90	2.03	2.02	2.18	2.14	2.34	2.32	2.53	2.40	2.63	2.87
45619.8	1.66	1.79	1.93	2.05	2.04	2.20	2.16	2.36	2.34	2.55	2.43	2.65	2.90
45626.4	1.72	1.84	1.97	2.10	2.09	2.25	2.21	2.41	2.39	2.59	2.47	2.69	2.93
45633.0	1.78	1.89	2.01	2.15	2.15	2.30	2.26	2.45	2.44	2.63	2.52	2.73	2.96
45633.0	1.78	1.89	2.01	2.15	2.15	2.30	2.26	2.45	2.44	2.63	2.52	2.73	2.96
45636.0	1.78	1.89	2.01	2.15	2.15	2.31	2.26	2.45	2.44	2.63	2.52	2.73	2.96
45639.0	1.78	1.89	2.02	2.15	2.15	2.31	2.26	2.45	2.44	2.63	2.52	2.73	2.96
45642.0	1.78	1.89	2.02	2.15	2.15	2.31	2.26	2.45	2.44	2.63	2.52	2.73	2.96
45645.0	1.78	1.90	2.02	2.15	2.15	2.31	2.26	2.45	2.44	2.63	2.52	2.72	2.96
45648.0	1.78	1.90	2.02	2.16	2.15	2.31	2.27	2.45	2.44	2.63	2.52	2.72	2.96
45651.0	1.78	1.90	2.02	2.16	2.15	2.31	2.27	2.45	2.44	2.63	2.52	2.72	2.96
45654.0	1.78	1.90	2.02	2.16	2.15	2.31	2.27	2.45	2.44	2.63	2.52	2.72	2.95
45657.0	1.78	1.90	2.02	2.16	2.15	2.31	2.27	2.45	2.44	2.63	2.52	2.72	2.95
45660.0	1.78	1.90	2.02	2.16	2.15	2.31	2.27	2.45	2.44	2.63	2.52	2.72	2.95
45663.0	1.78	1.90	2.03	2.16	2.16	2.31	2.27	2.46	2.44	2.63	2.52	2.72	2.95
45666.0	1.78	1.90	2.03	2.16	2.16	2.31	2.27	2.46	2.44	2.63	2.52	2.72	2.95
45669.0	1.78	1.90	2.03	2.16	2.16	2.31	2.27	2.46	2.44	2.63	2.52	2.72	3.02
45672.0	1.78	1.91	2.03	2.16	2.16	2.31	2.27	2.46	2.44	2.63	2.52	2.72	2.99
45675.0	1.79	1.91	2.03	2.16	2.16	2.31	2.27	2.46	2.44	2.63	2.52	2.72	3.10
45678.0	1.79	1.91	2.03	2.17	2.16	2.31	2.27	2.46	2.44	2.63	2.52	2.72	3.07
45681.0	1.79	1.91	2.03	2.17	2.16	2.31	2.27	2.46	2.44	2.63	2.52	2.72	3.19
45684.0	1.79	1.91	2.04	2.17	2.16	2.31	2.27	2.46	2.44	2.63	2.52	2.72	3.15
45687.0	1.79	1.91	2.04	2.17	2.16	2.31	2.28	2.46	2.44	2.63	2.52	2.72	3.26
45690.0	1.79	1.91	2.04	2.17	2.17	2.32	2.28	2.46	2.44	2.63	2.52	2.72	3.23
45693.0	1.79	1.91	2.04	2.17	2.17	2.32	2.28	2.46	2.44	2.63	2.52	2.72	3.33
45696.0	1.79	1.91	2.04	2.17	2.17	2.32	2.28	2.46	2.44	2.63	2.52	2.72	3.30
45699.0	1.79	1.92	2.04	2.17	2.17	2.32	2.28	2.46	2.44	2.63	2.52	2.72	3.39
45702.0	1.79	1.92	2.04	2.17	2.17	2.32	2.28	2.46	2.44	2.63	2.52	2.72	3.36
45705.0	1.79	1.92	2.05	2.18	2.17	2.32	2.28	2.46	2.44	2.63	2.52	2.72	3.44
45708.0	1.79	1.92	2.05	2.18	2.17	2.32	2.28	2.46	2.44	2.63	2.52	2.72	3.42
45711.0	1.79	1.92	2.05	2.18	2.17	2.32	2.28	2.46	2.44	2.63	2.52	2.72	3.49
45714.0	1.79	1.92	2.05	2.18	2.17	2.32	2.28	2.46	2.44	2.63	2.52	2.72	3.47
45717.0	1.79	1.92	2.05	2.18	2.18	2.32	2.28	2.46	2.44	2.63	2.52	2.72	3.54

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
45720.0	1.79	1.92	2.05	2.18	2.18	2.32	2.29	2.46	2.45	2.63	2.52	2.72	3.52
45723.0	1.79	1.93	2.05	2.18	2.18	2.32	2.29	2.46	2.45	2.63	2.52	2.72	3.58
45726.0	1.79	1.93	2.06	2.18	2.18	2.33	2.29	2.46	2.45	2.63	2.52	2.72	3.56
45729.0	1.79	1.93	2.06	2.19	2.18	2.33	2.29	2.46	2.45	2.63	2.52	2.72	3.61
45732.0	1.80	1.93	2.06	2.19	2.18	2.33	2.29	2.46	2.45	2.63	2.52	2.72	3.60
45735.0	1.80	1.93	2.06	2.19	2.18	2.33	2.29	2.46	2.45	2.63	2.52	2.72	3.63
45738.0	1.80	1.93	2.06	2.19	2.19	2.33	2.29	2.46	2.45	2.63	2.52	2.72	3.63
45741.0	1.80	1.93	2.06	2.19	2.19	2.33	2.29	2.47	2.45	2.63	2.52	2.72	3.65
45743.9	1.80	1.94	2.07	2.19	2.19	2.33	2.30	2.47	2.45	2.63	2.52	2.71	3.65
45746.8	1.80	1.94	2.07	2.20	2.19	2.33	2.30	2.47	2.45	2.63	2.52	2.71	3.64
45749.6	1.81	1.94	2.07	2.20	2.20	2.34	2.30	2.47	2.45	2.63	2.52	2.71	3.65
45752.5	1.81	1.95	2.08	2.20	2.20	2.34	2.30	2.47	2.45	2.63	2.52	2.71	3.62
45755.4	1.81	1.95	2.08	2.21	2.20	2.34	2.30	2.47	2.45	2.63	2.52	2.71	3.63
45758.3	1.82	1.95	2.08	2.21	2.20	2.34	2.31	2.47	2.46	2.63	2.52	2.71	3.58
45761.2	1.82	1.96	2.09	2.21	2.21	2.34	2.31	2.47	2.46	2.62	2.52	2.71	3.60
45764.0	1.82	1.96	2.09	2.21	2.21	2.34	2.31	2.47	2.46	2.62	2.53	2.71	3.52
45766.9	1.83	1.96	2.09	2.22	2.21	2.35	2.31	2.47	2.46	2.62	2.53	2.70	3.55
45769.8	1.83	1.97	2.10	2.22	2.22	2.35	2.31	2.47	2.46	2.62	2.53	2.70	3.45
45772.7	1.83	1.97	2.10	2.22	2.22	2.35	2.32	2.47	2.46	2.62	2.53	2.70	3.49
45775.6	1.84	1.97	2.10	2.22	2.22	2.35	2.32	2.47	2.46	2.62	2.53	2.70	3.37
45778.5	1.84	1.98	2.11	2.23	2.22	2.35	2.32	2.47	2.46	2.62	2.53	2.70	3.41
45781.3	1.85	1.98	2.11	2.23	2.23	2.35	2.32	2.47	2.46	2.62	2.53	2.70	3.28
45784.2	1.85	1.98	2.11	2.23	2.23	2.36	2.32	2.47	2.46	2.62	2.53	2.69	3.32
45787.1	1.85	1.99	2.11	2.23	2.23	2.36	2.33	2.47	2.46	2.62	2.53	2.69	3.19
45790.0	1.86	1.99	2.12	2.24	2.23	2.36	2.33	2.48	2.46	2.62	2.53	2.69	3.22
45792.9	1.86	1.99	2.12	2.24	2.24	2.36	2.33	2.48	2.46	2.62	2.53	2.69	3.09
45795.7	1.86	2.00	2.12	2.24	2.24	2.36	2.33	2.48	2.46	2.62	2.52	2.69	3.13
45798.6	1.87	2.00	2.13	2.25	2.24	2.36	2.33	2.48	2.46	2.61	2.52	2.69	3.01
45801.5	1.87	2.01	2.13	2.25	2.25	2.37	2.34	2.48	2.47	2.61	2.52	2.68	3.03
45804.4	1.88	2.01	2.13	2.25	2.25	2.37	2.34	2.48	2.47	2.61	2.52	2.68	2.93
45807.3	1.88	2.01	2.14	2.25	2.25	2.37	2.34	2.48	2.47	2.61	2.52	2.68	2.95
45810.1	1.89	2.02	2.14	2.26	2.25	2.37	2.34	2.48	2.47	2.61	2.52	2.68	2.86
45813.0	1.89	2.02	2.15	2.26	2.26	2.37	2.34	2.48	2.47	2.61	2.52	2.68	2.88
45815.9	1.89	2.02	2.15	2.26	2.26	2.37	2.35	2.48	2.47	2.61	2.52	2.68	2.85
45818.8	1.90	2.03	2.15	2.26	2.26	2.37	2.35	2.48	2.47	2.61	2.52	2.67	2.85
45821.7	1.90	2.03	2.16	2.27	2.27	2.37	2.35	2.48	2.47	2.61	2.52	2.67	2.85
45824.5	1.91	2.04	2.16	2.27	2.27	2.38	2.35	2.48	2.47	2.60	2.52	2.67	2.85
45827.4	1.91	2.04	2.16	2.27	2.27	2.38	2.35	2.48	2.47	2.60	2.52	2.67	2.84
45830.3	1.91	2.04	2.17	2.28	2.27	2.38	2.35	2.48	2.47	2.60	2.52	2.67	2.84
45833.2	1.92	2.05	2.17	2.28	2.28	2.38	2.36	2.48	2.47	2.60	2.52	2.67	2.84
45836.1	1.92	2.05	2.18	2.28	2.28	2.38	2.36	2.48	2.47	2.60	2.52	2.66	2.83
45839.0	1.93	2.06	2.18	2.28	2.28	2.38	2.36	2.48	2.47	2.60	2.52	2.66	2.83
45841.8	1.93	2.06	2.18	2.29	2.29	2.38	2.36	2.48	2.47	2.60	2.52	2.66	2.83
45844.7	1.94	2.06	2.19	2.29	2.29	2.39	2.36	2.48	2.47	2.60	2.52	2.66	2.82
45847.6	1.94	2.07	2.19	2.29	2.29	2.39	2.37	2.48	2.47	2.59	2.52	2.66	2.82
45850.5	1.95	2.07	2.19	2.29	2.29	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.82

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
45853.4	1.95	2.08	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.82
45856.2	1.96	2.08	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45859.1	1.96	2.09	2.21	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45862.0	1.96	2.09	2.21	2.31	2.31	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45864.9	1.96	2.09	2.21	2.30	2.31	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45867.8	1.96	2.09	2.21	2.30	2.31	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45870.7	1.96	2.09	2.21	2.30	2.31	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45873.6	1.96	2.09	2.21	2.30	2.31	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45876.5	1.97	2.09	2.21	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45879.4	1.97	2.09	2.21	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45882.3	1.97	2.09	2.21	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45885.2	1.97	2.09	2.21	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45888.1	1.97	2.09	2.21	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45891.0	1.97	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45893.9	1.97	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45896.8	1.97	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45899.7	1.97	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45902.6	1.97	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45905.5	1.97	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45908.4	1.98	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45911.3	1.98	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45914.2	1.98	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45917.1	1.98	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45920.0	1.98	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.52	2.65	2.81
45922.9	1.98	2.09	2.20	2.30	2.30	2.39	2.37	2.48	2.47	2.59	2.51	2.65	2.81
45925.8	1.99	2.09	2.20	2.30	2.30	2.39	2.37	2.47	2.47	2.59	2.51	2.65	2.81
45928.7	1.99	2.09	2.21	2.30	2.30	2.39	2.37	2.47	2.47	2.59	2.51	2.65	2.81
45931.6	1.99	2.10	2.21	2.30	2.30	2.39	2.37	2.47	2.47	2.59	2.51	2.65	2.81
45934.5	1.99	2.10	2.21	2.29	2.30	2.39	2.37	2.47	2.47	2.59	2.51	2.65	2.81
45937.4	2.00	2.10	2.21	2.29	2.30	2.39	2.37	2.47	2.47	2.58	2.51	2.65	2.81
45940.3	2.00	2.10	2.21	2.29	2.29	2.39	2.37	2.47	2.47	2.58	2.51	2.65	2.81
45943.2	2.00	2.10	2.21	2.29	2.29	2.39	2.37	2.47	2.47	2.58	2.51	2.65	2.81
45946.1	2.00	2.10	2.21	2.29	2.29	2.39	2.37	2.47	2.47	2.58	2.51	2.65	2.81
45949.0	2.01	2.11	2.21	2.29	2.29	2.39	2.37	2.47	2.46	2.58	2.51	2.65	2.81
45951.9	2.01	2.11	2.21	2.29	2.29	2.38	2.37	2.47	2.46	2.58	2.51	2.65	2.81
45954.8	2.01	2.11	2.21	2.29	2.29	2.38	2.37	2.47	2.46	2.58	2.51	2.65	2.81
45957.7	2.02	2.11	2.21	2.29	2.29	2.38	2.36	2.47	2.46	2.58	2.51	2.65	2.81
45960.6	2.02	2.12	2.22	2.29	2.29	2.38	2.36	2.47	2.46	2.58	2.51	2.64	2.81
45963.5	2.02	2.12	2.22	2.29	2.29	2.38	2.36	2.47	2.46	2.58	2.51	2.64	2.81
45966.4	2.03	2.12	2.22	2.29	2.30	2.38	2.36	2.47	2.46	2.58	2.51	2.64	2.81
45969.3	2.03	2.12	2.22	2.29	2.30	2.38	2.36	2.47	2.46	2.58	2.51	2.64	2.81
45972.2	2.04	2.13	2.22	2.29	2.30	2.38	2.36	2.47	2.46	2.58	2.51	2.64	2.81
45975.1	2.04	2.13	2.22	2.29	2.30	2.38	2.36	2.47	2.46	2.58	2.51	2.64	2.81
45978.0	2.05	2.13	2.23	2.29	2.30	2.38	2.36	2.47	2.46	2.58	2.51	2.64	2.81
45981.0	2.04	2.13	2.22	2.29	2.29	2.38	2.36	2.47	2.46	2.58	2.51	2.65	2.82
45983.9	2.04	2.12	2.22	2.28	2.29	2.37	2.36	2.47	2.46	2.58	2.51	2.65	2.82

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
45986.9	2.03	2.12	2.21	2.28	2.28	2.37	2.35	2.47	2.46	2.59	2.51	2.65	2.83
45989.9	2.03	2.11	2.21	2.28	2.28	2.37	2.35	2.47	2.46	2.59	2.51	2.65	2.83
45992.9	2.02	2.11	2.20	2.27	2.28	2.37	2.35	2.47	2.46	2.59	2.51	2.66	2.84
45995.8	2.02	2.10	2.20	2.27	2.27	2.37	2.35	2.47	2.46	2.59	2.51	2.66	2.84
45998.8	2.01	2.10	2.19	2.27	2.27	2.37	2.35	2.47	2.46	2.59	2.51	2.66	2.84
46001.8	2.01	2.09	2.19	2.26	2.27	2.37	2.34	2.47	2.46	2.59	2.51	2.66	2.85
46004.8	2.00	2.08	2.18	2.26	2.26	2.37	2.34	2.47	2.46	2.60	2.51	2.67	2.85
46007.7	2.00	2.08	2.18	2.26	2.26	2.36	2.34	2.47	2.46	2.60	2.51	2.67	2.86
46010.7	1.99	2.07	2.17	2.26	2.26	2.36	2.34	2.47	2.46	2.60	2.52	2.67	2.86
46013.7	1.99	2.07	2.17	2.25	2.25	2.36	2.34	2.47	2.46	2.60	2.52	2.68	2.87
46016.7	1.98	2.06	2.16	2.25	2.25	2.36	2.34	2.47	2.46	2.61	2.52	2.68	2.87
46019.6	1.98	2.06	2.16	2.25	2.25	2.36	2.34	2.47	2.46	2.61	2.52	2.68	2.88
46022.6	1.97	2.05	2.15	2.25	2.25	2.36	2.34	2.47	2.46	2.61	2.52	2.69	2.88
46025.6	1.97	2.05	2.15	2.24	2.24	2.36	2.33	2.47	2.46	2.61	2.52	2.69	2.89
46028.6	1.97	2.04	2.15	2.24	2.24	2.36	2.33	2.47	2.46	2.62	2.52	2.69	2.89
46031.5	1.96	2.04	2.14	2.24	2.24	2.36	2.33	2.48	2.46	2.62	2.53	2.70	2.90
46034.5	1.96	2.03	2.14	2.24	2.24	2.36	2.33	2.48	2.46	2.62	2.53	2.70	2.90
46037.5	1.95	2.03	2.13	2.24	2.23	2.36	2.33	2.48	2.47	2.62	2.53	2.70	2.91
46040.4	1.95	2.02	2.13	2.23	2.23	2.36	2.33	2.48	2.47	2.63	2.53	2.71	2.91
46043.4	1.94	2.02	2.13	2.23	2.23	2.36	2.33	2.48	2.47	2.63	2.53	2.71	2.92
46046.4	1.94	2.02	2.12	2.23	2.23	2.36	2.33	2.48	2.47	2.63	2.54	2.71	2.93
46049.4	1.93	2.01	2.12	2.23	2.23	2.36	2.33	2.48	2.47	2.64	2.54	2.72	2.93
46052.3	1.93	2.01	2.12	2.23	2.23	2.36	2.33	2.49	2.47	2.64	2.54	2.72	2.94
46055.3	1.92	2.00	2.11	2.23	2.22	2.36	2.33	2.49	2.47	2.64	2.54	2.73	2.94
46058.3	1.92	2.00	2.11	2.23	2.22	2.36	2.33	2.49	2.48	2.64	2.55	2.73	2.95
46061.3	1.91	1.99	2.11	2.23	2.22	2.36	2.33	2.49	2.48	2.65	2.55	2.73	2.95
46064.2	1.91	1.99	2.10	2.22	2.22	2.36	2.33	2.49	2.48	2.65	2.55	2.74	2.96
46067.2	1.90	1.99	2.10	2.22	2.22	2.36	2.33	2.49	2.48	2.65	2.55	2.74	2.97
46070.2	1.90	1.98	2.10	2.22	2.22	2.36	2.33	2.50	2.48	2.66	2.56	2.75	2.97
46073.2	1.89	1.98	2.10	2.22	2.22	2.37	2.33	2.50	2.48	2.66	2.56	2.75	2.98
46076.1	1.89	1.98	2.09	2.22	2.22	2.37	2.33	2.50	2.49	2.67	2.56	2.76	2.99
46079.1	1.88	1.97	2.09	2.22	2.22	2.37	2.33	2.50	2.49	2.67	2.56	2.76	2.99
46082.1	1.88	1.97	2.09	2.22	2.22	2.37	2.33	2.51	2.49	2.67	2.57	2.77	3.00
46085.1	1.87	1.96	2.09	2.22	2.22	2.37	2.33	2.51	2.49	2.68	2.57	2.77	3.01
46088.0	1.87	1.96	2.09	2.22	2.22	2.37	2.33	2.51	2.50	2.68	2.57	2.77	3.01
46091.0	1.86	1.96	2.08	2.22	2.21	2.37	2.33	2.51	2.50	2.68	2.58	2.78	3.02
46093.9	1.87	1.96	2.09	2.22	2.22	2.38	2.34	2.52	2.50	2.69	2.58	2.78	3.02
46096.8	1.87	1.97	2.09	2.23	2.22	2.38	2.34	2.52	2.51	2.69	2.58	2.79	3.03
46099.8	1.87	1.97	2.10	2.23	2.23	2.38	2.35	2.53	2.51	2.70	2.59	2.79	3.03
46102.7	1.88	1.97	2.10	2.23	2.23	2.39	2.35	2.53	2.51	2.70	2.59	2.80	3.04
46105.6	1.88	1.98	2.10	2.24	2.23	2.39	2.35	2.53	2.52	2.71	2.60	2.80	3.04
46108.5	1.88	1.98	2.11	2.24	2.24	2.40	2.36	2.54	2.52	2.71	2.60	2.81	3.05
46111.4	1.89	1.98	2.11	2.24	2.24	2.40	2.36	2.54	2.53	2.72	2.61	2.81	3.06
46114.4	1.89	1.99	2.11	2.25	2.24	2.40	2.37	2.55	2.53	2.72	2.61	2.82	3.06
46117.3	1.89	1.99	2.12	2.25	2.25	2.41	2.37	2.55	2.53	2.72	2.61	2.82	3.07
46120.2	1.90	1.99	2.12	2.26	2.25	2.41	2.37	2.55	2.54	2.73	2.62	2.83	3.07

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
46123.1	1.90	2.00	2.12	2.26	2.26	2.41	2.38	2.56	2.54	2.73	2.62	2.83	3.08
46126.1	1.90	2.00	2.13	2.26	2.26	2.42	2.38	2.56	2.55	2.74	2.63	2.83	3.08
46129.0	1.91	2.00	2.13	2.27	2.26	2.42	2.39	2.57	2.55	2.74	2.63	2.84	3.09
46131.9	1.91	2.01	2.13	2.27	2.27	2.43	2.39	2.57	2.56	2.75	2.64	2.84	3.09
46134.8	1.91	2.01	2.14	2.27	2.27	2.43	2.39	2.58	2.56	2.75	2.64	2.85	3.10
46137.7	1.92	2.01	2.14	2.28	2.27	2.43	2.40	2.58	2.56	2.76	2.64	2.85	3.10
46140.7	1.92	2.02	2.14	2.28	2.28	2.44	2.40	2.58	2.57	2.76	2.65	2.86	3.11
46143.6	1.92	2.02	2.15	2.29	2.28	2.44	2.40	2.59	2.57	2.77	2.65	2.86	3.11
46146.5	1.93	2.02	2.15	2.29	2.29	2.45	2.41	2.59	2.58	2.77	2.66	2.87	3.12
46149.4	1.93	2.03	2.16	2.29	2.29	2.45	2.41	2.60	2.58	2.77	2.66	2.87	3.13
46152.3	1.93	2.03	2.16	2.30	2.29	2.45	2.42	2.60	2.59	2.78	2.67	2.88	3.13
46155.3	1.94	2.03	2.16	2.30	2.30	2.46	2.42	2.61	2.59	2.78	2.67	2.88	3.14
46158.2	1.94	2.04	2.17	2.30	2.30	2.46	2.42	2.61	2.59	2.79	2.68	2.89	3.14
46161.1	1.94	2.04	2.17	2.31	2.30	2.47	2.43	2.61	2.60	2.79	2.68	2.89	3.15
46164.0	1.95	2.04	2.17	2.31	2.31	2.47	2.43	2.62	2.60	2.80	2.68	2.90	3.15
46166.9	1.95	2.05	2.18	2.32	2.31	2.48	2.44	2.62	2.61	2.80	2.69	2.90	3.16
46169.9	1.95	2.05	2.18	2.32	2.32	2.48	2.44	2.63	2.61	2.81	2.69	2.91	3.16
46172.8	1.96	2.05	2.18	2.32	2.32	2.48	2.44	2.63	2.62	2.81	2.70	2.91	3.17
46175.7	1.96	2.06	2.19	2.33	2.32	2.49	2.45	2.64	2.62	2.82	2.70	2.92	3.18
46178.6	1.96	2.06	2.19	2.33	2.33	2.49	2.45	2.64	2.62	2.82	2.71	2.92	3.18
46181.6	1.96	2.06	2.19	2.34	2.33	2.50	2.46	2.65	2.63	2.83	2.71	2.93	3.19
46184.5	1.97	2.06	2.20	2.34	2.34	2.50	2.46	2.65	2.63	2.83	2.72	2.93	3.19
46187.4	1.97	2.07	2.20	2.34	2.34	2.50	2.47	2.65	2.64	2.84	2.72	2.94	3.20
46190.3	1.97	2.07	2.21	2.35	2.34	2.51	2.47	2.66	2.64	2.84	2.73	2.94	3.21
46193.2	1.98	2.07	2.21	2.35	2.35	2.51	2.47	2.66	2.65	2.85	2.73	2.95	3.21
46196.2	1.98	2.08	2.21	2.35	2.35	2.52	2.48	2.67	2.65	2.85	2.73	2.95	3.22
46199.1	1.98	2.08	2.22	2.36	2.35	2.52	2.48	2.67	2.66	2.86	2.74	2.96	3.22
46202.0	1.99	2.08	2.22	2.36	2.36	2.52	2.49	2.68	2.66	2.86	2.74	2.96	3.23
46204.9	1.98	2.08	2.22	2.36	2.36	2.52	2.48	2.67	2.66	2.86	2.74	2.96	3.22
46207.9	1.98	2.08	2.22	2.36	2.35	2.52	2.48	2.67	2.65	2.85	2.73	2.95	3.21
46210.8	1.98	2.08	2.22	2.36	2.35	2.52	2.48	2.66	2.65	2.85	2.73	2.95	3.21
46213.8	1.98	2.08	2.22	2.35	2.35	2.51	2.47	2.66	2.64	2.84	2.73	2.94	3.20
46216.7	1.98	2.08	2.22	2.35	2.35	2.51	2.47	2.66	2.64	2.83	2.72	2.93	3.19
46219.7	1.98	2.08	2.21	2.35	2.35	2.51	2.47	2.65	2.64	2.83	2.72	2.93	3.19
46222.6	1.98	2.08	2.21	2.35	2.34	2.50	2.47	2.65	2.63	2.82	2.71	2.92	3.18
46225.6	1.98	2.08	2.21	2.35	2.34	2.50	2.46	2.64	2.63	2.82	2.71	2.92	3.20
46228.5	1.97	2.08	2.21	2.34	2.34	2.50	2.46	2.64	2.62	2.81	2.70	2.91	3.18
46231.5	1.97	2.08	2.21	2.34	2.34	2.49	2.46	2.63	2.62	2.81	2.70	2.90	3.22
46234.4	1.97	2.08	2.21	2.34	2.34	2.49	2.45	2.63	2.62	2.80	2.69	2.90	3.20
46237.4	1.97	2.08	2.21	2.34	2.33	2.49	2.45	2.63	2.61	2.80	2.69	2.89	3.24
46240.3	1.97	2.08	2.21	2.33	2.33	2.48	2.45	2.62	2.61	2.79	2.68	2.89	3.22
46243.3	1.97	2.08	2.20	2.33	2.33	2.48	2.45	2.62	2.60	2.79	2.68	2.88	3.25
46246.2	1.97	2.08	2.20	2.33	2.33	2.48	2.44	2.61	2.60	2.78	2.67	2.87	3.24
46249.2	1.97	2.08	2.20	2.33	2.33	2.47	2.44	2.61	2.59	2.78	2.67	2.87	3.27
46252.1	1.97	2.08	2.20	2.32	2.32	2.47	2.44	2.60	2.59	2.77	2.66	2.86	3.25
46255.1	1.97	2.08	2.20	2.32	2.32	2.47	2.43	2.60	2.59	2.76	2.66	2.86	3.28

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
46258.0	1.97	2.08	2.20	2.32	2.32	2.46	2.43	2.60	2.58	2.76	2.66	2.85	3.27
46260.9	1.97	2.07	2.20	2.32	2.32	2.46	2.43	2.59	2.58	2.75	2.65	2.84	3.30
46263.9	1.97	2.07	2.20	2.31	2.31	2.45	2.42	2.59	2.57	2.75	2.65	2.84	3.28
46266.8	1.97	2.07	2.19	2.31	2.31	2.45	2.42	2.58	2.57	2.74	2.64	2.83	3.31
46269.8	1.97	2.07	2.19	2.31	2.31	2.45	2.42	2.58	2.57	2.74	2.64	2.83	3.29
46272.7	1.97	2.07	2.19	2.31	2.31	2.44	2.41	2.57	2.56	2.73	2.63	2.82	3.31
46275.7	1.97	2.07	2.19	2.30	2.30	2.44	2.41	2.57	2.56	2.73	2.63	2.81	3.30
46278.6	1.97	2.07	2.19	2.30	2.30	2.44	2.41	2.56	2.55	2.72	2.62	2.81	3.32
46281.6	1.97	2.07	2.19	2.30	2.30	2.43	2.40	2.56	2.55	2.72	2.62	2.80	3.30
46284.5	1.97	2.07	2.18	2.30	2.30	2.43	2.40	2.56	2.54	2.71	2.61	2.80	3.32
46287.5	1.97	2.07	2.18	2.29	2.29	2.43	2.40	2.55	2.54	2.71	2.61	2.79	3.30
46290.4	1.97	2.07	2.18	2.29	2.29	2.42	2.39	2.55	2.54	2.70	2.60	2.79	3.31
46293.4	1.97	2.07	2.18	2.29	2.29	2.42	2.39	2.54	2.53	2.70	2.60	2.78	3.30
46296.3	1.97	2.06	2.18	2.29	2.29	2.42	2.39	2.54	2.53	2.69	2.59	2.77	3.30
46299.3	1.97	2.06	2.18	2.28	2.28	2.41	2.38	2.53	2.52	2.69	2.59	2.77	3.29
46302.2	1.97	2.06	2.17	2.28	2.28	2.41	2.38	2.53	2.52	2.68	2.59	2.76	3.28
46305.2	1.97	2.06	2.17	2.28	2.28	2.41	2.38	2.53	2.51	2.67	2.58	2.76	3.27
46308.1	1.97	2.06	2.17	2.28	2.28	2.40	2.37	2.52	2.51	2.67	2.58	2.75	3.25
46311.1	1.97	2.06	2.17	2.27	2.27	2.40	2.37	2.52	2.51	2.66	2.57	2.75	3.25
46314.0	1.97	2.06	2.17	2.27	2.27	2.39	2.37	2.51	2.50	2.66	2.57	2.74	3.22
46316.9	1.98	2.07	2.18	2.28	2.28	2.41	2.38	2.52	2.51	2.67	2.58	2.75	3.25
46319.9	1.98	2.07	2.19	2.29	2.29	2.42	2.39	2.54	2.53	2.69	2.59	2.77	3.24
46322.8	1.99	2.08	2.19	2.30	2.30	2.43	2.40	2.55	2.54	2.70	2.61	2.78	3.26
46325.8	2.00	2.09	2.20	2.31	2.31	2.44	2.41	2.56	2.55	2.71	2.62	2.80	3.24
46328.7	2.01	2.10	2.21	2.32	2.32	2.45	2.42	2.58	2.56	2.73	2.63	2.81	3.27
46331.7	2.02	2.11	2.22	2.33	2.33	2.46	2.44	2.59	2.58	2.74	2.64	2.83	3.24
46334.6	2.03	2.12	2.23	2.34	2.34	2.48	2.45	2.60	2.59	2.76	2.66	2.84	3.27
46337.6	2.04	2.13	2.24	2.36	2.36	2.49	2.46	2.61	2.60	2.77	2.67	2.86	3.24
46340.5	2.05	2.14	2.25	2.37	2.37	2.50	2.47	2.63	2.62	2.79	2.69	2.87	3.27
46343.5	2.06	2.14	2.26	2.38	2.38	2.51	2.48	2.64	2.63	2.80	2.70	2.89	3.24
46346.4	2.06	2.15	2.28	2.39	2.39	2.53	2.50	2.66	2.64	2.82	2.71	2.90	3.27
46349.4	2.07	2.16	2.29	2.40	2.40	2.54	2.51	2.67	2.66	2.83	2.73	2.92	3.23
46352.3	2.08	2.17	2.30	2.41	2.41	2.55	2.52	2.68	2.67	2.85	2.74	2.94	3.27
46355.3	2.09	2.18	2.31	2.43	2.43	2.57	2.54	2.70	2.69	2.86	2.76	2.95	3.23
46358.2	2.11	2.20	2.32	2.44	2.44	2.58	2.55	2.71	2.70	2.88	2.77	2.97	3.26
46361.2	2.12	2.21	2.33	2.45	2.45	2.59	2.56	2.73	2.72	2.89	2.79	2.99	3.22
46364.1	2.13	2.22	2.34	2.46	2.46	2.61	2.58	2.74	2.73	2.91	2.81	3.00	3.26
46367.1	2.14	2.23	2.36	2.48	2.48	2.62	2.59	2.76	2.75	2.93	2.82	3.02	3.25
46370.0	2.15	2.24	2.37	2.49	2.49	2.64	2.61	2.77	2.76	2.94	2.84	3.04	3.27
46372.9	2.16	2.25	2.38	2.50	2.51	2.65	2.62	2.79	2.78	2.96	2.85	3.05	3.29
46375.9	2.17	2.26	2.39	2.52	2.52	2.67	2.64	2.81	2.79	2.98	2.87	3.07	3.31
46378.8	2.18	2.27	2.41	2.53	2.53	2.68	2.65	2.82	2.81	3.00	2.89	3.09	3.33
46381.8	2.19	2.29	2.42	2.55	2.55	2.70	2.67	2.84	2.83	3.01	2.90	3.11	3.35
46384.7	2.21	2.30	2.43	2.56	2.56	2.71	2.68	2.86	2.84	3.03	2.92	3.13	3.37
46387.7	2.22	2.31	2.45	2.58	2.58	2.73	2.70	2.87	2.86	3.05	2.94	3.15	3.39
46390.6	2.23	2.32	2.46	2.59	2.59	2.75	2.71	2.89	2.88	3.07	2.96	3.17	3.41

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
46393.6	2.24	2.34	2.48	2.61	2.61	2.76	2.73	2.91	2.90	3.09	2.97	3.19	3.44
46396.5	2.26	2.35	2.49	2.62	2.62	2.78	2.75	2.93	2.91	3.11	2.99	3.21	3.46
46399.5	2.27	2.36	2.51	2.64	2.64	2.80	2.76	2.94	2.93	3.13	3.01	3.23	3.48
46402.4	2.28	2.38	2.52	2.65	2.66	2.81	2.78	2.96	2.95	3.15	3.03	3.25	3.50
46405.4	2.30	2.39	2.54	2.67	2.67	2.83	2.80	2.98	2.97	3.17	3.05	3.27	3.52
46408.3	2.31	2.41	2.55	2.69	2.69	2.85	2.82	3.00	2.99	3.19	3.07	3.29	3.55
46411.3	2.33	2.42	2.57	2.71	2.71	2.87	2.83	3.02	3.01	3.21	3.09	3.31	3.57
46414.2	2.34	2.44	2.59	2.72	2.72	2.89	2.85	3.04	3.03	3.23	3.11	3.33	3.59
46417.2	2.36	2.45	2.60	2.74	2.74	2.90	2.87	3.06	3.05	3.25	3.13	3.35	3.62
46420.1	2.37	2.47	2.62	2.76	2.76	2.92	2.89	3.08	3.07	3.27	3.15	3.38	3.64
46423.1	2.39	2.49	2.64	2.78	2.78	2.94	2.91	3.10	3.09	3.29	3.17	3.40	3.67
46426.0	2.40	2.50	2.66	2.80	2.80	2.96	2.93	3.12	3.11	3.32	3.19	3.42	3.69
46429.0	2.39	2.49	2.64	2.78	2.79	2.95	2.92	3.11	3.10	3.31	3.19	3.42	3.69
46432.0	2.37	2.47	2.63	2.77	2.77	2.94	2.91	3.10	3.09	3.30	3.18	3.41	3.68
46435.0	2.36	2.46	2.62	2.76	2.76	2.93	2.90	3.09	3.08	3.29	3.17	3.40	3.67
46438.0	2.34	2.45	2.60	2.75	2.75	2.92	2.89	3.08	3.07	3.28	3.16	3.39	3.66
46441.0	2.33	2.43	2.59	2.74	2.74	2.91	2.88	3.07	3.06	3.27	3.15	3.38	3.66
46444.0	2.31	2.42	2.58	2.73	2.73	2.90	2.87	3.07	3.05	3.26	3.14	3.37	3.65
46447.0	2.30	2.41	2.57	2.72	2.72	2.89	2.86	3.06	3.04	3.26	3.13	3.37	3.64
46450.0	2.28	2.39	2.55	2.71	2.71	2.88	2.85	3.05	3.03	3.25	3.12	3.36	3.64
46453.0	2.27	2.38	2.54	2.70	2.70	2.87	2.84	3.04	3.02	3.24	3.11	3.35	3.63
46456.0	2.25	2.37	2.53	2.68	2.69	2.86	2.83	3.03	3.02	3.23	3.11	3.34	3.62
46459.0	2.24	2.35	2.52	2.67	2.67	2.85	2.82	3.02	3.01	3.22	3.10	3.34	3.61
46462.0	2.23	2.34	2.51	2.66	2.66	2.84	2.81	3.01	3.00	3.21	3.09	3.33	3.61
46465.0	2.21	2.33	2.50	2.65	2.65	2.83	2.80	3.00	2.99	3.21	3.08	3.32	3.60
46468.0	2.20	2.32	2.48	2.64	2.64	2.83	2.79	2.99	2.98	3.20	3.07	3.31	3.59
46471.0	2.19	2.31	2.47	2.63	2.63	2.82	2.78	2.98	2.97	3.19	3.06	3.30	3.59
46474.0	2.17	2.29	2.46	2.62	2.62	2.81	2.77	2.98	2.96	3.18	3.05	3.30	3.58
46477.0	2.16	2.28	2.45	2.61	2.61	2.80	2.76	2.97	2.95	3.17	3.05	3.29	3.57
46480.0	2.15	2.27	2.44	2.60	2.60	2.79	2.75	2.96	2.94	3.17	3.04	3.28	3.56
46483.0	2.14	2.26	2.43	2.59	2.59	2.78	2.74	2.95	2.94	3.16	3.03	3.27	3.56
46486.0	2.12	2.25	2.42	2.58	2.58	2.77	2.73	2.94	2.93	3.15	3.02	3.27	3.55
46489.0	2.11	2.24	2.41	2.57	2.57	2.76	2.72	2.93	2.92	3.14	3.01	3.26	3.54
46492.0	2.10	2.23	2.40	2.56	2.56	2.75	2.71	2.92	2.91	3.13	3.00	3.25	3.53
46495.0	2.09	2.22	2.39	2.55	2.55	2.74	2.70	2.92	2.90	3.13	3.00	3.24	3.53
46498.0	2.08	2.20	2.38	2.54	2.54	2.73	2.69	2.91	2.89	3.12	2.99	3.24	3.52
46501.0	2.06	2.19	2.37	2.53	2.53	2.72	2.68	2.90	2.88	3.11	2.98	3.23	3.51
46504.0	2.05	2.18	2.36	2.52	2.52	2.72	2.67	2.89	2.88	3.10	2.97	3.22	3.50
46507.0	2.04	2.17	2.35	2.52	2.51	2.71	2.66	2.88	2.87	3.10	2.96	3.21	3.49
46510.0	2.03	2.16	2.34	2.51	2.50	2.70	2.66	2.88	2.86	3.09	2.96	3.21	3.49
46513.0	2.02	2.15	2.33	2.50	2.50	2.69	2.65	2.87	2.85	3.08	2.95	3.20	3.48
46516.0	2.01	2.14	2.32	2.49	2.49	2.68	2.64	2.86	2.84	3.07	2.94	3.19	3.47
46519.0	2.00	2.13	2.31	2.48	2.48	2.67	2.63	2.85	2.83	3.07	2.93	3.18	3.46
46522.0	1.99	2.12	2.30	2.47	2.47	2.66	2.62	2.84	2.83	3.06	2.92	3.18	3.45
46525.0	1.98	2.11	2.29	2.46	2.46	2.66	2.61	2.84	2.82	3.05	2.92	3.17	3.45
46528.0	1.97	2.10	2.28	2.45	2.45	2.65	2.60	2.83	2.81	3.04	2.91	3.16	3.44

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
46531.0	1.96	2.09	2.27	2.44	2.44	2.64	2.60	2.82	2.80	3.04	2.90	3.16	3.43
46534.0	1.95	2.08	2.26	2.43	2.43	2.63	2.59	2.81	2.79	3.03	2.89	3.15	3.42
46537.0	1.94	2.07	2.25	2.43	2.42	2.62	2.58	2.80	2.79	3.02	2.88	3.14	3.42
46540.0	1.93	2.06	2.24	2.42	2.41	2.62	2.57	2.80	2.78	3.01	2.88	3.13	3.41
46542.9	1.93	2.07	2.25	2.42	2.42	2.62	2.58	2.80	2.79	3.02	2.89	3.14	3.42
46545.8	1.94	2.08	2.25	2.43	2.43	2.63	2.58	2.81	2.79	3.03	2.89	3.15	3.42
46548.7	1.94	2.08	2.26	2.44	2.43	2.64	2.59	2.82	2.80	3.04	2.90	3.16	3.43
46551.6	1.95	2.09	2.27	2.44	2.44	2.64	2.60	2.83	2.81	3.05	2.91	3.17	3.44
46554.5	1.95	2.09	2.27	2.45	2.45	2.65	2.61	2.84	2.82	3.06	2.92	3.18	3.45
46557.4	1.96	2.10	2.28	2.46	2.46	2.66	2.61	2.84	2.83	3.06	2.93	3.19	3.46
46560.3	1.96	2.10	2.28	2.46	2.46	2.67	2.62	2.85	2.83	3.07	2.93	3.20	3.47
46563.2	1.97	2.11	2.29	2.47	2.47	2.67	2.63	2.86	2.84	3.08	2.94	3.21	3.48
46566.1	1.97	2.11	2.30	2.48	2.48	2.68	2.64	2.87	2.85	3.09	2.95	3.21	3.49
46568.9	1.98	2.12	2.30	2.48	2.48	2.69	2.64	2.88	2.86	3.10	2.96	3.22	3.50
46571.8	1.98	2.13	2.31	2.49	2.49	2.70	2.65	2.88	2.87	3.11	2.97	3.23	3.51
46574.7	1.99	2.13	2.32	2.50	2.50	2.70	2.66	2.89	2.87	3.12	2.98	3.24	3.52
46577.6	1.99	2.14	2.32	2.51	2.50	2.71	2.67	2.90	2.88	3.13	2.99	3.25	3.53
46580.5	2.00	2.14	2.33	2.51	2.51	2.72	2.67	2.91	2.89	3.13	2.99	3.26	3.54
46583.4	2.00	2.15	2.33	2.52	2.52	2.73	2.68	2.92	2.90	3.14	3.00	3.27	3.55
46586.3	2.01	2.15	2.34	2.53	2.52	2.73	2.69	2.92	2.91	3.15	3.01	3.28	3.55
46589.2	2.02	2.16	2.35	2.53	2.53	2.74	2.70	2.93	2.92	3.16	3.02	3.29	3.56
46592.1	2.02	2.17	2.35	2.54	2.54	2.75	2.70	2.94	2.92	3.17	3.03	3.30	3.57
46595.0	2.03	2.17	2.36	2.55	2.55	2.76	2.71	2.95	2.93	3.18	3.04	3.31	3.58
46597.9	2.03	2.18	2.37	2.55	2.55	2.77	2.72	2.96	2.94	3.19	3.05	3.32	3.59
46600.8	2.04	2.18	2.37	2.56	2.56	2.77	2.73	2.97	2.95	3.20	3.05	3.33	3.60
46603.7	2.04	2.19	2.38	2.57	2.57	2.78	2.73	2.98	2.96	3.21	3.06	3.34	3.61
46606.6	2.05	2.19	2.39	2.58	2.57	2.79	2.74	2.98	2.97	3.22	3.07	3.35	3.62
46609.5	2.05	2.20	2.39	2.58	2.58	2.80	2.75	2.99	2.98	3.23	3.08	3.36	3.63
46612.4	2.06	2.21	2.40	2.59	2.59	2.81	2.76	3.00	2.98	3.24	3.09	3.37	3.64
46615.3	2.06	2.21	2.41	2.60	2.60	2.81	2.77	3.01	2.99	3.25	3.10	3.38	3.65
46618.2	2.07	2.22	2.41	2.60	2.60	2.82	2.77	3.02	3.00	3.26	3.11	3.39	3.66
46621.1	2.07	2.22	2.42	2.61	2.61	2.83	2.78	3.03	3.01	3.27	3.12	3.40	3.68
46623.9	2.08	2.23	2.43	2.62	2.62	2.84	2.79	3.04	3.02	3.28	3.13	3.41	3.69
46626.8	2.08	2.23	2.43	2.63	2.62	2.85	2.80	3.05	3.03	3.29	3.14	3.42	3.70
46629.7	2.09	2.24	2.44	2.63	2.63	2.85	2.81	3.05	3.04	3.30	3.15	3.43	3.71
46632.6	2.09	2.25	2.44	2.64	2.64	2.86	2.81	3.06	3.05	3.31	3.16	3.44	3.72
46635.5	2.10	2.25	2.45	2.65	2.65	2.87	2.82	3.07	3.06	3.32	3.17	3.45	3.73
46638.4	2.10	2.26	2.46	2.65	2.65	2.88	2.83	3.08	3.06	3.33	3.17	3.46	3.74
46641.3	2.11	2.26	2.46	2.66	2.66	2.89	2.84	3.09	3.07	3.34	3.18	3.47	3.75
46644.2	2.12	2.27	2.47	2.67	2.67	2.89	2.85	3.10	3.08	3.35	3.19	3.48	3.76
46647.1	2.12	2.27	2.48	2.68	2.68	2.90	2.85	3.11	3.09	3.36	3.20	3.49	3.78
46650.0	2.13	2.28	2.48	2.68	2.68	2.91	2.86	3.12	3.10	3.37	3.21	3.51	3.79
46652.9	2.13	2.28	2.48	2.68	2.68	2.91	2.86	3.12	3.10	3.36	3.21	3.50	3.78
46655.8	2.12	2.28	2.48	2.68	2.68	2.91	2.86	3.11	3.10	3.36	3.21	3.50	3.78
46658.7	2.12	2.28	2.48	2.68	2.68	2.90	2.85	3.11	3.09	3.35	3.20	3.49	3.77
46661.6	2.12	2.27	2.48	2.68	2.67	2.90	2.85	3.11	3.09	3.35	3.20	3.49	3.77

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
46664.5	2.12	2.27	2.48	2.67	2.67	2.90	2.85	3.10	3.09	3.35	3.20	3.48	3.76
46667.4	2.12	2.27	2.47	2.67	2.67	2.90	2.85	3.10	3.08	3.34	3.19	3.48	3.76
46670.3	2.12	2.27	2.47	2.67	2.67	2.89	2.85	3.10	3.08	3.34	3.19	3.48	3.75
46673.2	2.12	2.27	2.47	2.67	2.67	2.89	2.84	3.09	3.08	3.34	3.19	3.47	3.75
46676.1	2.12	2.27	2.47	2.66	2.66	2.89	2.84	3.09	3.07	3.33	3.18	3.47	3.74
46678.9	2.11	2.26	2.47	2.66	2.66	2.89	2.84	3.09	3.07	3.33	3.18	3.46	3.73
46681.8	2.11	2.26	2.47	2.66	2.66	2.88	2.84	3.08	3.07	3.32	3.18	3.46	3.73
46684.7	2.11	2.26	2.46	2.66	2.66	2.88	2.83	3.08	3.07	3.32	3.17	3.45	3.72
46687.6	2.11	2.26	2.46	2.66	2.66	2.88	2.83	3.08	3.06	3.32	3.17	3.45	3.72
46690.5	2.11	2.26	2.46	2.65	2.65	2.87	2.83	3.07	3.06	3.31	3.17	3.44	3.71
46693.4	2.11	2.26	2.46	2.65	2.65	2.87	2.83	3.07	3.06	3.31	3.16	3.44	3.70
46696.3	2.11	2.26	2.46	2.65	2.65	2.87	2.82	3.07	3.05	3.30	3.16	3.44	3.70
46699.2	2.11	2.25	2.45	2.65	2.65	2.87	2.82	3.07	3.05	3.30	3.16	3.43	3.69
46702.1	2.10	2.25	2.45	2.64	2.65	2.86	2.82	3.06	3.05	3.30	3.15	3.43	3.69
46705.0	2.10	2.25	2.45	2.64	2.64	2.86	2.82	3.06	3.04	3.29	3.15	3.42	3.68
46707.9	2.10	2.25	2.45	2.64	2.64	2.86	2.81	3.06	3.04	3.29	3.15	3.42	3.68
46710.8	2.10	2.25	2.45	2.64	2.64	2.85	2.81	3.05	3.04	3.28	3.14	3.41	3.67
46713.7	2.10	2.25	2.44	2.64	2.64	2.85	2.81	3.05	3.03	3.28	3.14	3.41	3.66
46716.6	2.10	2.24	2.44	2.63	2.63	2.85	2.80	3.05	3.03	3.28	3.14	3.40	3.66
46719.5	2.10	2.24	2.44	2.63	2.63	2.85	2.80	3.04	3.03	3.27	3.13	3.40	3.65
46722.4	2.10	2.24	2.44	2.63	2.63	2.84	2.80	3.04	3.02	3.27	3.13	3.40	3.65
46725.3	2.09	2.24	2.44	2.63	2.63	2.84	2.80	3.04	3.02	3.26	3.12	3.39	3.64
46728.2	2.09	2.24	2.44	2.62	2.62	2.84	2.79	3.03	3.02	3.26	3.12	3.39	3.64
46731.1	2.09	2.23	2.43	2.62	2.62	2.83	2.79	3.03	3.02	3.25	3.12	3.38	3.63
46733.9	2.09	2.23	2.43	2.62	2.62	2.83	2.79	3.03	3.01	3.25	3.11	3.38	3.62
46736.8	2.09	2.23	2.43	2.62	2.62	2.83	2.79	3.02	3.01	3.25	3.11	3.37	3.62
46739.7	2.09	2.23	2.43	2.61	2.62	2.83	2.78	3.02	3.01	3.24	3.11	3.37	3.61
46742.6	2.09	2.23	2.43	2.61	2.61	2.82	2.78	3.02	3.00	3.24	3.10	3.36	3.61
46745.5	2.08	2.23	2.42	2.61	2.61	2.82	2.78	3.01	3.00	3.23	3.10	3.36	3.60
46748.4	2.08	2.22	2.42	2.61	2.61	2.82	2.77	3.01	3.00	3.23	3.10	3.35	3.59
46751.3	2.08	2.22	2.42	2.60	2.61	2.81	2.77	3.00	2.99	3.23	3.09	3.35	3.59
46754.2	2.08	2.22	2.42	2.60	2.60	2.81	2.77	3.00	2.99	3.22	3.09	3.34	3.58
46757.1	2.08	2.22	2.41	2.60	2.60	2.81	2.77	3.00	2.99	3.22	3.08	3.34	3.58
46760.0	2.08	2.22	2.41	2.60	2.60	2.81	2.76	2.99	2.98	3.21	3.08	3.34	3.57
46762.9	2.07	2.21	2.41	2.59	2.59	2.80	2.76	2.99	2.98	3.21	3.07	3.33	3.57
46765.8	2.07	2.21	2.40	2.59	2.59	2.79	2.75	2.98	2.97	3.20	3.07	3.32	3.56
46768.7	2.06	2.20	2.40	2.58	2.58	2.79	2.75	2.98	2.96	3.19	3.06	3.32	3.55
46771.5	2.06	2.20	2.39	2.58	2.58	2.78	2.74	2.97	2.96	3.19	3.06	3.31	3.55
46774.4	2.06	2.19	2.39	2.57	2.57	2.78	2.74	2.97	2.95	3.18	3.05	3.31	3.54
46777.3	2.05	2.19	2.38	2.57	2.57	2.77	2.73	2.96	2.95	3.18	3.05	3.30	3.54
46780.2	2.05	2.19	2.38	2.56	2.56	2.77	2.73	2.95	2.94	3.17	3.04	3.29	3.53
46783.1	2.04	2.18	2.38	2.56	2.56	2.76	2.72	2.95	2.94	3.17	3.03	3.29	3.52
46786.0	2.04	2.18	2.37	2.55	2.55	2.76	2.72	2.94	2.93	3.16	3.03	3.28	3.52
46788.8	2.04	2.17	2.37	2.55	2.55	2.75	2.71	2.94	2.93	3.16	3.02	3.28	3.51
46791.7	2.03	2.17	2.36	2.54	2.54	2.75	2.71	2.93	2.92	3.15	3.02	3.27	3.51
46794.6	2.03	2.16	2.36	2.54	2.54	2.74	2.70	2.93	2.91	3.14	3.01	3.27	3.50

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
46797.5	2.03	2.16	2.35	2.53	2.54	2.74	2.70	2.92	2.91	3.14	3.01	3.26	3.49
46800.4	2.02	2.16	2.35	2.53	2.53	2.73	2.69	2.92	2.90	3.13	3.00	3.26	3.49
46803.3	2.02	2.15	2.35	2.52	2.53	2.73	2.69	2.91	2.90	3.13	3.00	3.25	3.48
46806.2	2.01	2.15	2.34	2.52	2.52	2.72	2.68	2.91	2.89	3.12	2.99	3.25	3.48
46809.0	2.01	2.14	2.34	2.51	2.52	2.72	2.68	2.90	2.89	3.12	2.99	3.24	3.47
46811.9	2.01	2.14	2.33	2.51	2.51	2.71	2.67	2.90	2.88	3.11	2.98	3.23	3.48
46814.8	2.00	2.14	2.33	2.51	2.51	2.71	2.67	2.89	2.88	3.11	2.98	3.23	3.47
46817.7	2.00	2.13	2.32	2.50	2.51	2.70	2.66	2.89	2.87	3.10	2.97	3.22	3.48
46820.6	2.00	2.13	2.32	2.50	2.50	2.70	2.66	2.88	2.87	3.10	2.97	3.22	3.47
46823.5	1.99	2.13	2.32	2.49	2.50	2.69	2.66	2.87	2.86	3.09	2.96	3.21	3.48
46826.3	1.99	2.12	2.31	2.49	2.49	2.69	2.65	2.87	2.86	3.09	2.96	3.21	3.47
46829.2	1.99	2.12	2.31	2.48	2.49	2.68	2.65	2.87	2.85	3.08	2.95	3.20	3.48
46832.1	1.98	2.11	2.31	2.48	2.48	2.68	2.64	2.86	2.85	3.08	2.95	3.20	3.48
46835.0	1.98	2.11	2.30	2.48	2.48	2.68	2.64	2.86	2.84	3.07	2.94	3.19	3.49
46835.0	1.98	2.11	2.30	2.48	2.48	2.68	2.64	2.86	2.84	3.07	2.94	3.19	3.49
46846.0	1.92	2.08	2.29	2.48	2.48	2.69	2.65	2.88	2.87	3.10	2.97	3.23	3.55
46857.0	1.87	2.06	2.28	2.48	2.48	2.71	2.67	2.90	2.89	3.13	2.99	3.26	3.59
46868.0	1.96	2.13	2.34	2.54	2.54	2.76	2.72	2.95	2.93	3.18	3.04	3.31	3.64
46879.0	2.06	2.21	2.41	2.59	2.60	2.81	2.77	3.00	2.98	3.22	3.09	3.35	3.64
46891.0	2.41	2.58	2.84	3.05	3.07	3.32	3.27	3.55	3.54	3.83	3.67	4.00	4.32
46903.0	2.19	2.35	2.59	2.77	2.78	3.00	2.96	3.21	3.20	3.46	3.31	3.60	3.85
46916.0	2.06	2.24	2.48	2.68	2.69	2.92	2.88	3.12	3.11	3.37	3.22	3.52	3.78
46929.0	1.95	2.14	2.38	2.60	2.60	2.83	2.80	3.04	3.03	3.29	3.14	3.44	3.70
46942.0	1.85	2.04	2.28	2.51	2.52	2.76	2.72	2.98	2.97	3.23	3.09	3.37	3.63
46955.0	1.76	1.95	2.19	2.44	2.44	2.69	2.65	2.92	2.91	3.16	3.03	3.30	3.57
46968.0	1.87	2.03	2.26	2.46	2.47	2.70	2.66	2.90	2.89	3.14	3.00	3.27	3.52
46981.0	1.99	2.12	2.32	2.49	2.50	2.70	2.67	2.89	2.88	3.11	2.98	3.24	3.48
46981.0	1.99	2.12	2.32	2.49	2.50	2.70	2.67	2.89	2.88	3.11	2.98	3.24	3.48
46983.9	1.98	2.11	2.32	2.48	2.50	2.69	2.66	2.88	2.87	3.10	2.97	3.23	3.46
46986.8	1.98	2.10	2.31	2.47	2.49	2.68	2.65	2.87	2.86	3.09	2.96	3.22	3.45
46989.7	1.97	2.10	2.30	2.46	2.48	2.67	2.64	2.86	2.85	3.08	2.95	3.21	3.44
46992.6	1.96	2.09	2.29	2.46	2.47	2.66	2.63	2.85	2.84	3.07	2.94	3.20	3.42
46995.4	1.96	2.08	2.29	2.45	2.47	2.65	2.62	2.84	2.83	3.06	2.93	3.19	3.41
46998.3	1.95	2.08	2.28	2.44	2.46	2.65	2.62	2.83	2.82	3.05	2.92	3.17	3.40
47001.2	1.95	2.07	2.27	2.43	2.45	2.64	2.61	2.82	2.81	3.04	2.91	3.16	3.39
47004.1	1.94	2.06	2.27	2.43	2.44	2.63	2.60	2.81	2.80	3.02	2.90	3.15	3.37
47007.0	1.94	2.06	2.26	2.42	2.44	2.62	2.59	2.80	2.79	3.01	2.89	3.14	3.36
47009.9	1.93	2.05	2.25	2.41	2.43	2.61	2.58	2.79	2.79	3.00	2.88	3.13	3.35
47012.8	1.93	2.05	2.25	2.40	2.42	2.60	2.58	2.78	2.78	2.99	2.87	3.12	3.34
47015.7	1.92	2.04	2.24	2.40	2.41	2.60	2.57	2.77	2.77	2.98	2.86	3.11	3.32
47018.6	1.92	2.04	2.24	2.39	2.41	2.59	2.56	2.76	2.76	2.97	2.85	3.10	3.31
47021.4	1.91	2.03	2.23	2.38	2.40	2.58	2.55	2.75	2.75	2.96	2.84	3.09	3.30
47024.3	1.91	2.02	2.22	2.37	2.39	2.57	2.54	2.74	2.74	2.95	2.83	3.08	3.29
47027.2	1.90	2.02	2.22	2.37	2.39	2.56	2.54	2.74	2.73	2.94	2.82	3.07	3.28
47030.1	1.90	2.01	2.21	2.36	2.38	2.56	2.53	2.73	2.72	2.93	2.82	3.06	3.27
47033.0	1.90	2.01	2.21	2.35	2.37	2.55	2.52	2.72	2.72	2.92	2.81	3.05	3.25

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
47035.9	1.89	2.00	2.20	2.35	2.37	2.54	2.51	2.71	2.71	2.91	2.80	3.04	3.24
47038.8	1.89	2.00	2.19	2.34	2.36	2.53	2.51	2.70	2.70	2.91	2.79	3.03	3.23
47041.7	1.88	1.99	2.19	2.33	2.35	2.53	2.50	2.69	2.69	2.90	2.78	3.02	3.22
47044.6	1.88	1.99	2.18	2.33	2.35	2.52	2.49	2.69	2.68	2.89	2.77	3.01	3.21
47047.4	1.88	1.98	2.18	2.32	2.34	2.51	2.49	2.68	2.67	2.88	2.76	3.00	3.20
47050.3	1.87	1.98	2.17	2.32	2.34	2.50	2.48	2.67	2.67	2.87	2.75	2.99	3.19
47053.2	1.87	1.97	2.17	2.31	2.33	2.50	2.47	2.66	2.66	2.86	2.75	2.98	3.18
47056.1	1.87	1.97	2.16	2.30	2.32	2.49	2.47	2.65	2.65	2.85	2.74	2.97	3.17
47059.0	1.87	1.97	2.16	2.30	2.32	2.48	2.46	2.65	2.64	2.84	2.73	2.96	3.15
47061.9	1.86	1.96	2.15	2.29	2.31	2.48	2.45	2.64	2.64	2.83	2.72	2.95	3.14
47064.8	1.86	1.96	2.15	2.29	2.31	2.47	2.45	2.63	2.63	2.82	2.71	2.94	3.13
47067.7	1.86	1.95	2.14	2.28	2.30	2.46	2.44	2.62	2.62	2.82	2.71	2.93	3.12
47070.6	1.86	1.95	2.14	2.27	2.30	2.46	2.43	2.61	2.61	2.81	2.70	2.92	3.11
47073.4	1.85	1.95	2.13	2.27	2.29	2.45	2.43	2.61	2.61	2.80	2.69	2.91	3.10
47076.3	1.85	1.94	2.13	2.26	2.28	2.44	2.42	2.60	2.60	2.79	2.68	2.90	3.09
47079.2	1.85	1.94	2.13	2.26	2.28	2.44	2.42	2.59	2.59	2.78	2.68	2.89	3.08
47082.1	1.85	1.93	2.12	2.25	2.27	2.43	2.41	2.59	2.59	2.77	2.67	2.89	3.07
47085.0	1.85	1.93	2.12	2.25	2.27	2.42	2.40	2.58	2.58	2.77	2.66	2.88	3.06
47087.9	1.84	1.93	2.12	2.25	2.27	2.42	2.40	2.58	2.58	2.76	2.66	2.87	3.06
47090.9	1.84	1.93	2.12	2.25	2.27	2.42	2.40	2.58	2.58	2.76	2.66	2.87	3.05
47093.8	1.84	1.93	2.12	2.25	2.27	2.42	2.40	2.57	2.57	2.76	2.65	2.87	3.05
47096.8	1.83	1.93	2.12	2.25	2.27	2.42	2.40	2.57	2.57	2.76	2.65	2.87	3.05
47099.7	1.83	1.93	2.12	2.25	2.27	2.42	2.40	2.57	2.57	2.75	2.65	2.86	3.04
47102.7	1.83	1.93	2.12	2.25	2.27	2.42	2.40	2.57	2.57	2.75	2.65	2.86	3.04
47105.6	1.83	1.93	2.12	2.24	2.27	2.42	2.40	2.57	2.57	2.75	2.65	2.86	3.03
47108.6	1.83	1.93	2.12	2.24	2.27	2.41	2.40	2.56	2.57	2.74	2.64	2.85	3.03
47111.5	1.83	1.93	2.12	2.24	2.27	2.41	2.40	2.56	2.56	2.74	2.64	2.85	3.03
47114.4	1.83	1.93	2.12	2.24	2.27	2.41	2.40	2.56	2.56	2.74	2.64	2.85	3.02
47117.4	1.84	1.93	2.12	2.24	2.27	2.41	2.39	2.56	2.56	2.74	2.64	2.84	3.02
47120.3	1.84	1.93	2.12	2.24	2.26	2.41	2.39	2.56	2.56	2.73	2.64	2.84	3.01
47123.3	1.84	1.94	2.12	2.24	2.26	2.41	2.39	2.55	2.56	2.73	2.63	2.84	3.01
47126.2	1.84	1.94	2.12	2.24	2.26	2.41	2.39	2.55	2.55	2.73	2.63	2.83	3.00
47129.2	1.85	1.93	2.12	2.24	2.26	2.40	2.39	2.55	2.55	2.72	2.63	2.83	3.00
47132.1	1.85	1.93	2.12	2.24	2.26	2.40	2.39	2.55	2.55	2.72	2.63	2.83	3.00
47135.1	1.85	1.93	2.12	2.23	2.26	2.40	2.39	2.54	2.55	2.72	2.62	2.82	2.99
47138.0	1.85	1.93	2.12	2.23	2.26	2.40	2.38	2.54	2.54	2.71	2.62	2.82	2.99
47140.9	1.85	1.93	2.12	2.23	2.26	2.40	2.38	2.54	2.54	2.71	2.62	2.82	2.98
47143.9	1.86	1.93	2.12	2.23	2.26	2.39	2.38	2.54	2.54	2.71	2.61	2.81	2.98
47146.8	1.86	1.93	2.11	2.23	2.25	2.39	2.38	2.53	2.54	2.71	2.61	2.81	2.97
47149.8	1.86	1.93	2.11	2.23	2.25	2.39	2.38	2.53	2.53	2.70	2.61	2.81	2.97
47152.7	1.86	1.93	2.11	2.22	2.25	2.39	2.37	2.53	2.53	2.70	2.61	2.80	2.97
47155.7	1.86	1.93	2.11	2.22	2.25	2.38	2.37	2.52	2.53	2.69	2.60	2.80	2.96
47158.6	1.86	1.93	2.11	2.22	2.25	2.38	2.37	2.52	2.53	2.69	2.60	2.79	2.96
47161.6	1.86	1.93	2.11	2.22	2.25	2.38	2.37	2.52	2.52	2.69	2.60	2.79	2.95
47164.5	1.86	1.93	2.11	2.22	2.24	2.38	2.37	2.52	2.52	2.68	2.59	2.79	2.95
47167.4	1.86	1.93	2.11	2.21	2.24	2.37	2.36	2.51	2.52	2.68	2.59	2.78	2.94

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
47170.4	1.86	1.92	2.11	2.21	2.24	2.37	2.36	2.51	2.52	2.68	2.59	2.78	2.94
47173.3	1.86	1.92	2.10	2.21	2.24	2.37	2.36	2.51	2.51	2.67	2.58	2.78	2.93
47176.3	1.86	1.92	2.10	2.21	2.24	2.37	2.36	2.50	2.51	2.67	2.58	2.77	2.93
47179.2	1.86	1.92	2.10	2.21	2.24	2.36	2.35	2.50	2.51	2.67	2.58	2.77	2.92
47182.2	1.86	1.92	2.10	2.20	2.23	2.36	2.35	2.50	2.50	2.66	2.57	2.76	2.92
47185.1	1.86	1.92	2.10	2.20	2.23	2.36	2.35	2.49	2.50	2.66	2.57	2.76	2.92
47188.1	1.86	1.92	2.10	2.20	2.23	2.36	2.35	2.49	2.50	2.66	2.57	2.76	2.91
47191.0	1.86	1.91	2.09	2.20	2.23	2.35	2.34	2.49	2.49	2.65	2.56	2.75	2.91
47193.9	1.85	1.91	2.09	2.20	2.23	2.35	2.35	2.49	2.50	2.65	2.57	2.76	2.91
47196.8	1.83	1.90	2.09	2.20	2.23	2.36	2.35	2.49	2.50	2.66	2.57	2.76	2.91
47199.7	1.82	1.90	2.09	2.20	2.23	2.36	2.35	2.49	2.50	2.66	2.57	2.76	2.92
47202.6	1.81	1.89	2.09	2.20	2.23	2.36	2.35	2.50	2.50	2.66	2.57	2.76	2.92
47205.4	1.81	1.89	2.09	2.20	2.23	2.36	2.35	2.50	2.51	2.67	2.58	2.77	2.93
47208.3	1.80	1.89	2.09	2.20	2.24	2.36	2.36	2.50	2.51	2.67	2.58	2.77	2.93
47211.2	1.80	1.89	2.09	2.21	2.24	2.37	2.36	2.50	2.51	2.67	2.58	2.78	2.93
47214.1	1.80	1.90	2.10	2.21	2.24	2.37	2.36	2.51	2.51	2.68	2.59	2.78	2.94
47217.0	1.80	1.90	2.10	2.21	2.24	2.37	2.36	2.51	2.52	2.68	2.59	2.78	2.94
47219.9	1.80	1.90	2.10	2.21	2.24	2.37	2.37	2.51	2.52	2.68	2.59	2.79	2.95
47222.8	1.80	1.91	2.11	2.22	2.25	2.38	2.37	2.52	2.52	2.69	2.60	2.79	2.95
47225.7	1.80	1.91	2.11	2.22	2.25	2.38	2.37	2.52	2.53	2.69	2.60	2.79	2.95
47228.6	1.80	1.91	2.11	2.22	2.25	2.38	2.38	2.52	2.53	2.69	2.60	2.80	2.96
47231.4	1.81	1.92	2.12	2.22	2.26	2.39	2.38	2.53	2.53	2.70	2.61	2.80	2.96
47234.3	1.82	1.92	2.12	2.23	2.26	2.39	2.38	2.53	2.54	2.70	2.61	2.81	2.97
47237.2	1.82	1.92	2.12	2.23	2.26	2.39	2.39	2.53	2.54	2.71	2.62	2.81	2.97
47240.1	1.83	1.93	2.13	2.23	2.27	2.40	2.39	2.54	2.55	2.71	2.62	2.82	2.98
47243.0	1.84	1.93	2.13	2.24	2.27	2.40	2.39	2.54	2.55	2.71	2.62	2.82	2.98
47245.9	1.85	1.94	2.13	2.24	2.27	2.40	2.40	2.55	2.56	2.72	2.63	2.83	2.99
47248.8	1.86	1.94	2.14	2.24	2.28	2.41	2.40	2.55	2.56	2.72	2.63	2.83	2.99
47251.7	1.86	1.94	2.14	2.25	2.28	2.41	2.41	2.56	2.56	2.73	2.64	2.84	3.00
47254.6	1.87	1.95	2.15	2.25	2.29	2.42	2.41	2.56	2.57	2.73	2.64	2.84	3.00
47257.4	1.87	1.95	2.15	2.26	2.29	2.42	2.42	2.56	2.57	2.74	2.65	2.84	3.01
47260.3	1.88	1.95	2.15	2.26	2.30	2.43	2.42	2.57	2.58	2.74	2.65	2.85	3.01
47263.2	1.89	1.96	2.16	2.26	2.30	2.43	2.43	2.57	2.58	2.75	2.66	2.86	3.02
47266.1	1.89	1.96	2.16	2.27	2.31	2.43	2.43	2.58	2.59	2.75	2.66	2.86	3.02
47269.0	1.90	1.97	2.17	2.27	2.31	2.44	2.44	2.58	2.59	2.76	2.67	2.87	3.03
47271.9	1.91	1.97	2.17	2.28	2.32	2.44	2.44	2.59	2.60	2.76	2.67	2.87	3.03
47274.8	1.91	1.97	2.18	2.28	2.32	2.45	2.45	2.59	2.60	2.77	2.68	2.88	3.04
47277.7	1.92	1.98	2.18	2.29	2.33	2.45	2.45	2.60	2.61	2.77	2.68	2.88	3.04
47280.6	1.92	1.98	2.19	2.29	2.33	2.46	2.46	2.60	2.61	2.78	2.69	2.89	3.05
47283.4	1.93	1.99	2.20	2.30	2.34	2.46	2.46	2.61	2.62	2.78	2.69	2.89	3.05
47286.3	1.94	1.99	2.20	2.30	2.34	2.47	2.47	2.61	2.63	2.79	2.70	2.90	3.06
47289.2	1.94	2.00	2.21	2.31	2.35	2.48	2.47	2.62	2.63	2.80	2.71	2.90	3.06
47292.1	1.95	2.00	2.21	2.31	2.36	2.48	2.48	2.62	2.64	2.80	2.71	2.91	3.07
47295.0	1.96	2.01	2.22	2.32	2.36	2.49	2.49	2.63	2.64	2.81	2.72	2.92	3.08
47297.9	1.95	2.01	2.22	2.32	2.36	2.49	2.49	2.63	2.64	2.81	2.72	2.92	3.08
47300.8	1.95	2.01	2.22	2.32	2.36	2.49	2.49	2.63	2.65	2.81	2.72	2.92	3.08

Notes

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2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
47303.7	1.95	2.01	2.22	2.32	2.36	2.49	2.49	2.63	2.65	2.81	2.72	2.92	3.08
47306.6	1.95	2.01	2.22	2.32	2.36	2.49	2.49	2.63	2.65	2.81	2.72	2.92	3.08
47309.4	1.95	2.01	2.22	2.32	2.37	2.49	2.49	2.64	2.65	2.81	2.72	2.92	3.08
47312.3	1.95	2.01	2.22	2.32	2.37	2.49	2.49	2.64	2.65	2.81	2.72	2.92	3.09
47315.2	1.95	2.01	2.22	2.32	2.37	2.49	2.49	2.64	2.65	2.82	2.72	2.93	3.09
47318.1	1.95	2.01	2.22	2.32	2.37	2.49	2.49	2.64	2.65	2.82	2.73	2.93	3.09
47321.0	1.95	2.01	2.22	2.32	2.37	2.49	2.49	2.64	2.65	2.82	2.73	2.93	3.09
47323.9	1.95	2.01	2.22	2.32	2.37	2.49	2.50	2.64	2.65	2.82	2.73	2.93	3.09
47326.8	1.95	2.01	2.23	2.32	2.37	2.49	2.50	2.64	2.66	2.82	2.73	2.93	3.09
47329.7	1.95	2.01	2.23	2.32	2.37	2.50	2.50	2.64	2.66	2.82	2.73	2.93	3.10
47332.6	1.95	2.01	2.23	2.33	2.37	2.50	2.50	2.64	2.66	2.82	2.73	2.94	3.10
47335.4	1.95	2.01	2.23	2.33	2.37	2.50	2.50	2.64	2.66	2.82	2.73	2.94	3.11
47338.3	1.95	2.01	2.23	2.33	2.37	2.50	2.50	2.65	2.66	2.83	2.74	2.94	3.10
47341.2	1.95	2.01	2.23	2.33	2.37	2.50	2.50	2.65	2.66	2.83	2.74	2.94	3.12
47344.1	1.95	2.01	2.23	2.33	2.38	2.50	2.50	2.65	2.66	2.83	2.74	2.94	3.12
47347.0	1.95	2.01	2.23	2.33	2.38	2.50	2.51	2.65	2.66	2.83	2.74	2.94	3.13
47349.9	1.95	2.01	2.23	2.33	2.38	2.50	2.51	2.65	2.67	2.83	2.74	2.95	3.13
47352.8	1.96	2.01	2.23	2.33	2.38	2.50	2.51	2.65	2.67	2.83	2.74	2.95	3.14
47355.7	1.96	2.01	2.23	2.33	2.38	2.50	2.51	2.65	2.67	2.84	2.74	2.95	3.14
47358.6	1.96	2.01	2.23	2.33	2.38	2.51	2.51	2.65	2.67	2.84	2.75	2.95	3.15
47361.4	1.96	2.01	2.23	2.33	2.38	2.51	2.51	2.66	2.67	2.84	2.75	2.95	3.15
47364.3	1.96	2.01	2.24	2.33	2.38	2.51	2.51	2.66	2.67	2.84	2.75	2.96	3.15
47367.2	1.96	2.01	2.24	2.33	2.38	2.51	2.51	2.66	2.67	2.84	2.75	2.96	3.16
47370.1	1.96	2.01	2.24	2.34	2.39	2.51	2.52	2.66	2.68	2.84	2.75	2.96	3.16
47373.0	1.96	2.01	2.24	2.34	2.39	2.51	2.52	2.66	2.68	2.85	2.75	2.96	3.16
47375.9	1.96	2.01	2.24	2.34	2.39	2.51	2.52	2.66	2.68	2.85	2.76	2.96	3.17
47378.8	1.96	2.01	2.24	2.34	2.39	2.51	2.52	2.66	2.68	2.85	2.76	2.97	3.17
47381.7	1.96	2.01	2.24	2.34	2.39	2.52	2.52	2.67	2.68	2.85	2.76	2.97	3.17
47384.6	1.96	2.01	2.24	2.34	2.39	2.52	2.52	2.67	2.68	2.85	2.76	2.97	3.18
47387.4	1.96	2.01	2.25	2.34	2.39	2.52	2.52	2.67	2.69	2.85	2.76	2.97	3.18
47390.3	1.97	2.01	2.25	2.34	2.40	2.52	2.53	2.67	2.69	2.86	2.76	2.97	3.18
47393.2	1.97	2.01	2.25	2.34	2.40	2.52	2.53	2.67	2.69	2.86	2.77	2.98	3.18
47396.1	1.97	2.01	2.25	2.35	2.40	2.52	2.53	2.67	2.69	2.86	2.77	2.98	3.18
47399.0	1.97	2.01	2.25	2.35	2.40	2.52	2.53	2.67	2.69	2.86	2.77	2.98	3.18
47402.0	1.97	2.01	2.25	2.35	2.40	2.52	2.53	2.67	2.69	2.86	2.77	2.97	3.18
47405.0	1.97	2.01	2.25	2.34	2.40	2.52	2.53	2.67	2.69	2.85	2.76	2.97	3.16
47408.0	1.98	2.01	2.25	2.34	2.40	2.52	2.53	2.66	2.69	2.85	2.76	2.96	3.16
47411.0	1.98	2.01	2.26	2.34	2.40	2.51	2.53	2.66	2.68	2.84	2.76	2.96	3.15
47414.0	1.99	2.02	2.26	2.34	2.40	2.51	2.53	2.66	2.68	2.84	2.75	2.96	3.15
47417.0	1.99	2.02	2.26	2.34	2.40	2.51	2.52	2.66	2.68	2.84	2.75	2.95	3.13
47420.0	1.99	2.02	2.26	2.34	2.40	2.51	2.52	2.65	2.68	2.83	2.75	2.95	3.13
47423.0	2.00	2.02	2.26	2.34	2.40	2.51	2.52	2.65	2.67	2.83	2.74	2.94	3.11
47426.0	2.00	2.02	2.26	2.34	2.40	2.51	2.52	2.65	2.67	2.82	2.74	2.94	3.11
47429.0	2.01	2.02	2.27	2.34	2.40	2.50	2.52	2.64	2.67	2.82	2.74	2.93	3.09
47432.0	2.01	2.02	2.27	2.34	2.40	2.50	2.52	2.64	2.67	2.82	2.74	2.93	3.09
47435.0	2.02	2.03	2.27	2.34	2.40	2.50	2.52	2.64	2.66	2.81	2.73	2.92	3.07

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
47438.0	2.03	2.03	2.27	2.34	2.40	2.50	2.52	2.64	2.66	2.81	2.73	2.92	3.07
47441.0	2.03	2.03	2.28	2.34	2.41	2.50	2.52	2.63	2.66	2.80	2.73	2.91	3.06
47444.0	2.04	2.03	2.28	2.34	2.41	2.50	2.52	2.63	2.66	2.80	2.72	2.91	3.05
47447.0	2.05	2.04	2.28	2.34	2.41	2.50	2.52	2.63	2.66	2.80	2.72	2.91	3.05
47450.0	2.05	2.04	2.29	2.34	2.41	2.50	2.52	2.63	2.66	2.79	2.72	2.90	3.04
47453.0	2.06	2.04	2.29	2.34	2.41	2.50	2.52	2.63	2.65	2.79	2.72	2.90	3.04
47456.0	2.07	2.05	2.29	2.34	2.42	2.49	2.52	2.62	2.65	2.79	2.71	2.89	3.03
47459.0	2.08	2.05	2.30	2.34	2.42	2.49	2.52	2.62	2.65	2.78	2.71	2.89	3.03
47462.0	2.09	2.05	2.30	2.34	2.42	2.49	2.53	2.62	2.65	2.78	2.71	2.89	3.02
47465.0	2.09	2.06	2.31	2.35	2.42	2.49	2.53	2.62	2.65	2.78	2.71	2.88	3.01
47468.0	2.10	2.06	2.31	2.35	2.43	2.49	2.53	2.62	2.65	2.77	2.71	2.88	3.01
47471.0	2.11	2.06	2.32	2.35	2.43	2.49	2.53	2.61	2.65	2.77	2.71	2.88	3.00
47474.0	2.12	2.07	2.32	2.35	2.43	2.49	2.53	2.61	2.65	2.77	2.70	2.87	3.00
47477.0	2.14	2.07	2.33	2.35	2.44	2.49	2.53	2.61	2.65	2.76	2.70	2.87	2.99
47480.0	2.15	2.08	2.34	2.35	2.44	2.49	2.53	2.61	2.65	2.76	2.70	2.86	2.99
47483.0	2.19	2.08	2.34	2.36	2.44	2.49	2.54	2.61	2.65	2.76	2.70	2.86	2.98
47486.0	2.21	2.09	2.35	2.36	2.45	2.50	2.54	2.61	2.65	2.76	2.70	2.86	2.98
47489.0	2.25	2.10	2.36	2.36	2.45	2.50	2.54	2.61	2.65	2.75	2.70	2.85	2.97
47492.0	2.27	2.10	2.37	2.37	2.46	2.50	2.54	2.61	2.65	2.75	2.70	2.85	2.97
47495.0	2.31	2.11	2.38	2.37	2.46	2.50	2.55	2.61	2.65	2.75	2.69	2.85	2.96
47498.0	2.33	2.12	2.40	2.37	2.47	2.50	2.55	2.61	2.65	2.75	2.69	2.84	2.96
47501.0	2.38	2.12	2.44	2.38	2.47	2.50	2.55	2.60	2.65	2.74	2.69	2.84	2.96
47503.9	2.35	2.11	2.41	2.36	2.46	2.49	2.54	2.59	2.63	2.73	2.68	2.83	2.94
47506.8	2.32	2.10	2.39	2.35	2.45	2.47	2.52	2.58	2.62	2.72	2.66	2.81	2.93
47509.8	2.30	2.09	2.36	2.34	2.43	2.46	2.51	2.56	2.60	2.70	2.65	2.80	2.91
47512.7	2.28	2.07	2.34	2.32	2.42	2.45	2.50	2.55	2.59	2.69	2.64	2.78	2.90
47515.6	2.25	2.06	2.33	2.31	2.41	2.43	2.48	2.54	2.58	2.67	2.62	2.77	2.88
47518.5	2.24	2.05	2.32	2.30	2.39	2.42	2.47	2.52	2.56	2.66	2.61	2.76	2.87
47521.4	2.21	2.04	2.31	2.28	2.38	2.41	2.46	2.51	2.55	2.65	2.59	2.74	2.85
47524.4	2.20	2.02	2.29	2.27	2.37	2.39	2.44	2.50	2.54	2.63	2.58	2.73	2.84
47527.3	2.18	2.01	2.28	2.26	2.35	2.38	2.43	2.48	2.52	2.62	2.57	2.71	2.82
47530.2	2.16	2.00	2.27	2.25	2.34	2.37	2.42	2.47	2.51	2.61	2.56	2.70	2.81
47533.1	2.15	1.99	2.26	2.23	2.33	2.36	2.41	2.46	2.50	2.59	2.54	2.69	2.80
47536.1	2.13	1.98	2.25	2.22	2.32	2.34	2.40	2.44	2.49	2.58	2.53	2.67	2.78
47539.0	2.12	1.97	2.24	2.21	2.31	2.33	2.38	2.43	2.47	2.57	2.52	2.66	2.77
47541.9	2.10	1.96	2.23	2.20	2.30	2.32	2.37	2.42	2.46	2.55	2.50	2.65	2.76
47544.8	2.09	1.95	2.22	2.19	2.28	2.31	2.36	2.41	2.45	2.54	2.49	2.64	2.74
47547.7	2.08	1.94	2.21	2.18	2.27	2.30	2.35	2.40	2.44	2.53	2.48	2.62	2.73
47550.7	2.07	1.93	2.19	2.17	2.26	2.28	2.34	2.38	2.42	2.52	2.47	2.61	2.72
47553.6	2.06	1.92	2.18	2.16	2.25	2.27	2.32	2.37	2.41	2.51	2.46	2.60	2.70
47556.5	2.05	1.91	2.17	2.14	2.24	2.26	2.31	2.36	2.40	2.49	2.44	2.59	2.69
47559.4	2.04	1.90	2.16	2.13	2.23	2.25	2.30	2.35	2.39	2.48	2.43	2.57	2.68
47562.3	2.03	1.89	2.15	2.12	2.22	2.24	2.29	2.34	2.38	2.47	2.42	2.56	2.67
47565.3	2.03	1.88	2.14	2.11	2.21	2.23	2.28	2.33	2.37	2.46	2.41	2.55	2.65
47568.2	2.03	1.87	2.14	2.10	2.20	2.22	2.27	2.32	2.36	2.45	2.40	2.54	2.64
47571.1	2.04	1.86	2.13	2.09	2.19	2.21	2.26	2.31	2.35	2.44	2.39	2.53	2.63

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
47574.0	2.04	1.85	2.12	2.08	2.18	2.20	2.25	2.30	2.33	2.42	2.38	2.52	2.62
47576.9	2.04	1.84	2.11	2.07	2.17	2.19	2.24	2.28	2.32	2.41	2.37	2.50	2.61
47579.9	2.04	1.83	2.11	2.06	2.16	2.18	2.23	2.27	2.31	2.40	2.36	2.49	2.59
47582.8	2.05	1.83	2.12	2.05	2.15	2.17	2.22	2.26	2.30	2.39	2.34	2.48	2.58
47585.7	2.05	1.82	2.12	2.05	2.15	2.16	2.21	2.25	2.29	2.38	2.33	2.47	2.57
47588.6	2.06	1.81	2.13	2.04	2.16	2.15	2.20	2.24	2.28	2.37	2.32	2.46	2.56
47591.6	2.06	1.80	2.13	2.03	2.16	2.14	2.19	2.23	2.27	2.36	2.31	2.45	2.55
47594.5	2.07	1.79	2.14	2.02	2.17	2.13	2.18	2.22	2.26	2.35	2.30	2.44	2.54
47597.4	2.07	1.79	2.14	2.01	2.17	2.12	2.18	2.21	2.25	2.34	2.29	2.43	2.53
47600.3	2.08	1.78	2.16	2.00	2.18	2.11	2.20	2.20	2.24	2.33	2.28	2.42	2.52
47603.2	2.08	1.77	2.15	1.99	2.18	2.10	2.20	2.20	2.23	2.32	2.27	2.41	2.50
47606.2	2.09	1.76	2.17	1.98	2.19	2.09	2.21	2.19	2.24	2.31	2.26	2.40	2.49
47609.1	2.09	1.76	2.17	1.98	2.20	2.08	2.22	2.18	2.24	2.30	2.25	2.39	2.48
47612.0	2.11	1.75	2.19	1.97	2.22	2.08	2.23	2.17	2.25	2.29	2.26	2.38	2.47
47615.0	2.08	1.74	2.16	1.96	2.19	2.07	2.21	2.16	2.23	2.28	2.24	2.37	2.46
47618.0	2.07	1.74	2.15	1.95	2.17	2.06	2.19	2.15	2.22	2.27	2.23	2.35	2.45
47621.0	2.04	1.73	2.12	1.95	2.15	2.05	2.17	2.14	2.19	2.26	2.22	2.34	2.44
47624.0	2.03	1.72	2.11	1.94	2.14	2.04	2.15	2.13	2.17	2.25	2.21	2.33	2.43
47627.0	2.00	1.72	2.08	1.93	2.11	2.03	2.13	2.12	2.16	2.24	2.20	2.32	2.41
47630.0	1.98	1.71	2.06	1.93	2.09	2.03	2.11	2.11	2.15	2.23	2.19	2.31	2.40
47633.0	1.96	1.71	2.03	1.92	2.06	2.02	2.08	2.10	2.14	2.22	2.18	2.30	2.39
47636.0	1.94	1.70	2.01	1.91	2.05	2.01	2.07	2.09	2.13	2.21	2.17	2.29	2.38
47639.0	1.92	1.69	1.99	1.90	2.02	2.00	2.06	2.08	2.12	2.20	2.16	2.28	2.37
47642.0	1.90	1.69	1.98	1.90	2.00	1.99	2.05	2.07	2.11	2.19	2.15	2.27	2.36
47645.0	1.88	1.68	1.96	1.89	1.99	1.98	2.04	2.06	2.10	2.18	2.14	2.26	2.35
47648.0	1.87	1.67	1.94	1.88	1.98	1.97	2.03	2.06	2.10	2.17	2.13	2.25	2.34
47651.0	1.85	1.67	1.93	1.87	1.97	1.97	2.02	2.05	2.09	2.16	2.12	2.24	2.32
47654.0	1.85	1.66	1.92	1.86	1.97	1.96	2.01	2.04	2.08	2.15	2.11	2.23	2.31
47657.0	1.84	1.65	1.92	1.86	1.96	1.95	2.01	2.03	2.07	2.14	2.10	2.22	2.30
47660.0	1.83	1.65	1.91	1.85	1.95	1.94	2.00	2.02	2.06	2.13	2.09	2.21	2.29
47663.0	1.83	1.64	1.90	1.84	1.94	1.93	1.99	2.01	2.05	2.12	2.08	2.20	2.28
47666.0	1.82	1.64	1.90	1.83	1.93	1.92	1.98	2.00	2.04	2.11	2.07	2.19	2.27
47669.0	1.82	1.63	1.90	1.82	1.93	1.91	1.97	1.99	2.03	2.10	2.06	2.17	2.26
47672.0	1.81	1.62	1.89	1.82	1.92	1.90	1.96	1.98	2.02	2.09	2.05	2.16	2.25
47675.0	1.81	1.62	1.89	1.81	1.91	1.89	1.95	1.97	2.01	2.08	2.04	2.15	2.24
47678.0	1.81	1.61	1.89	1.80	1.91	1.89	1.94	1.96	2.00	2.07	2.03	2.14	2.23
47681.0	1.80	1.60	1.88	1.79	1.91	1.88	1.94	1.95	1.99	2.06	2.02	2.13	2.22
47684.0	1.80	1.60	1.88	1.78	1.91	1.87	1.93	1.94	1.98	2.05	2.01	2.12	2.21
47687.0	1.79	1.59	1.87	1.77	1.90	1.86	1.92	1.93	1.97	2.04	2.00	2.11	2.20
47690.0	1.79	1.58	1.87	1.77	1.90	1.85	1.92	1.92	1.96	2.03	1.99	2.10	2.19
47693.0	1.79	1.57	1.86	1.76	1.89	1.84	1.91	1.92	1.95	2.02	1.98	2.09	2.18
47696.0	1.79	1.57	1.86	1.75	1.89	1.83	1.91	1.91	1.94	2.01	1.98	2.08	2.17
47699.0	1.78	1.56	1.86	1.74	1.89	1.82	1.90	1.90	1.93	2.00	1.97	2.08	2.16
47702.0	1.78	1.55	1.86	1.73	1.89	1.81	1.91	1.89	1.93	1.99	1.96	2.07	2.15
47705.0	1.77	1.54	1.85	1.72	1.88	1.81	1.90	1.88	1.92	1.98	1.95	2.06	2.14
47708.0	1.77	1.54	1.85	1.71	1.88	1.80	1.89	1.87	1.91	1.97	1.94	2.05	2.13

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
47711.0	1.76	1.53	1.84	1.71	1.87	1.79	1.89	1.86	1.90	1.96	1.93	2.04	2.12
47714.0	1.76	1.52	1.84	1.70	1.87	1.78	1.89	1.85	1.91	1.95	1.92	2.03	2.11
47717.0	1.75	1.51	1.83	1.69	1.86	1.77	1.88	1.84	1.90	1.94	1.91	2.02	2.10
47720.0	1.75	1.51	1.83	1.68	1.86	1.76	1.87	1.84	1.89	1.94	1.91	2.01	2.09
47723.0	1.74	1.50	1.82	1.67	1.85	1.75	1.87	1.83	1.88	1.93	1.89	2.00	2.08
47726.0	1.74	1.49	1.82	1.66	1.84	1.75	1.87	1.82	1.89	1.92	1.90	1.99	2.07
47729.0	1.70	1.49	1.78	1.66	1.81	1.74	1.83	1.82	1.85	1.92	1.88	1.99	2.07
47732.0	1.69	1.49	1.76	1.66	1.79	1.74	1.81	1.82	1.85	1.92	1.88	1.99	2.07
47735.0	1.66	1.48	1.74	1.66	1.76	1.74	1.80	1.82	1.85	1.92	1.88	1.99	2.07
47738.0	1.64	1.48	1.74	1.66	1.76	1.74	1.80	1.82	1.85	1.92	1.88	1.99	2.07
47741.0	1.63	1.48	1.73	1.66	1.76	1.74	1.80	1.82	1.85	1.92	1.88	1.99	2.07
47744.0	1.62	1.48	1.73	1.66	1.76	1.74	1.80	1.82	1.85	1.92	1.88	1.99	2.07
47747.0	1.61	1.47	1.73	1.66	1.76	1.74	1.80	1.82	1.85	1.92	1.88	1.99	2.07
47750.0	1.61	1.47	1.73	1.66	1.76	1.74	1.80	1.82	1.85	1.92	1.88	1.99	2.07
47753.0	1.60	1.47	1.72	1.66	1.76	1.74	1.79	1.81	1.85	1.92	1.88	1.99	2.07
47756.0	1.59	1.47	1.71	1.65	1.75	1.74	1.79	1.81	1.85	1.92	1.88	1.99	2.07
47759.0	1.58	1.46	1.71	1.65	1.75	1.74	1.79	1.81	1.85	1.92	1.88	1.99	2.07
47762.0	1.57	1.46	1.70	1.65	1.75	1.74	1.79	1.81	1.85	1.92	1.88	1.99	2.07
47765.0	1.57	1.45	1.70	1.65	1.75	1.74	1.79	1.81	1.85	1.91	1.88	1.99	2.07
47768.0	1.56	1.45	1.69	1.65	1.75	1.73	1.79	1.81	1.85	1.91	1.88	1.99	2.07
47771.0	1.55	1.44	1.69	1.65	1.74	1.73	1.79	1.81	1.84	1.91	1.88	1.99	2.07
47774.0	1.54	1.44	1.69	1.64	1.74	1.73	1.79	1.81	1.84	1.91	1.88	1.99	2.07
47777.0	1.53	1.44	1.68	1.64	1.74	1.73	1.79	1.81	1.84	1.91	1.88	1.99	2.07
47780.0	1.52	1.43	1.67	1.64	1.74	1.73	1.78	1.81	1.84	1.91	1.88	1.99	2.07
47783.0	1.51	1.43	1.67	1.64	1.73	1.73	1.78	1.81	1.84	1.91	1.88	1.99	2.07
47786.0	1.50	1.42	1.66	1.64	1.73	1.73	1.78	1.81	1.84	1.91	1.87	1.99	2.07
47789.0	1.49	1.42	1.66	1.63	1.73	1.73	1.78	1.81	1.84	1.91	1.87	1.99	2.07
47792.0	1.48	1.41	1.65	1.63	1.72	1.72	1.78	1.80	1.84	1.91	1.87	1.99	2.07
47795.0	1.47	1.41	1.65	1.63	1.72	1.72	1.77	1.80	1.84	1.91	1.87	1.99	2.07
47798.0	1.46	1.40	1.65	1.63	1.71	1.72	1.77	1.80	1.83	1.91	1.87	1.99	2.08
47801.0	1.46	1.40	1.64	1.62	1.71	1.72	1.77	1.80	1.83	1.91	1.87	1.99	2.07
47804.0	1.45	1.40	1.64	1.62	1.71	1.72	1.77	1.80	1.83	1.91	1.87	1.98	2.08
47807.0	1.45	1.39	1.63	1.62	1.70	1.72	1.77	1.80	1.83	1.91	1.87	1.98	2.07
47810.0	1.45	1.39	1.63	1.61	1.70	1.71	1.76	1.80	1.83	1.91	1.87	1.98	2.08
47813.0	1.45	1.39	1.63	1.61	1.70	1.71	1.76	1.80	1.83	1.90	1.86	1.98	2.07
47816.0	1.44	1.39	1.63	1.61	1.69	1.71	1.76	1.79	1.83	1.90	1.86	1.98	2.08
47819.0	1.44	1.38	1.62	1.61	1.69	1.71	1.75	1.79	1.82	1.90	1.86	1.98	2.08
47822.0	1.44	1.38	1.62	1.60	1.69	1.71	1.75	1.79	1.82	1.90	1.86	1.98	2.08
47825.0	1.44	1.38	1.62	1.60	1.69	1.70	1.75	1.79	1.82	1.90	1.86	1.98	2.08
47828.0	1.44	1.38	1.62	1.60	1.69	1.70	1.75	1.79	1.82	1.90	1.86	1.98	2.08
47831.0	1.44	1.38	1.62	1.60	1.68	1.70	1.74	1.79	1.82	1.90	1.86	1.98	2.07
47834.0	1.45	1.38	1.63	1.59	1.68	1.70	1.74	1.78	1.81	1.90	1.85	1.98	2.08
47837.0	1.46	1.40	1.65	1.62	1.71	1.72	1.76	1.81	1.84	1.92	1.88	2.00	2.10
47839.9	1.48	1.42	1.67	1.64	1.73	1.74	1.79	1.83	1.86	1.94	1.90	2.03	2.13
47842.9	1.50	1.44	1.69	1.66	1.75	1.76	1.81	1.85	1.89	1.97	1.93	2.05	2.15
47845.8	1.51	1.46	1.72	1.68	1.78	1.79	1.84	1.88	1.91	2.00	1.95	2.08	2.18

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
47848.8	1.53	1.47	1.73	1.70	1.80	1.81	1.86	1.90	1.94	2.02	1.98	2.11	2.21
47851.7	1.55	1.49	1.75	1.72	1.83	1.83	1.89	1.93	1.96	2.05	2.00	2.13	2.24
47854.7	1.57	1.50	1.77	1.75	1.85	1.86	1.91	1.95	1.99	2.08	2.03	2.16	2.27
47857.6	1.59	1.52	1.79	1.77	1.87	1.88	1.94	1.98	2.01	2.10	2.06	2.19	2.30
47860.6	1.60	1.53	1.81	1.79	1.90	1.91	1.96	2.01	2.04	2.13	2.09	2.23	2.33
47863.5	1.62	1.55	1.83	1.81	1.92	1.93	1.99	2.03	2.07	2.17	2.12	2.26	2.36
47866.5	1.64	1.56	1.85	1.84	1.95	1.96	2.02	2.06	2.10	2.20	2.15	2.29	2.40
47869.5	1.66	1.58	1.87	1.86	1.97	1.98	2.04	2.09	2.13	2.23	2.18	2.33	2.43
47872.4	1.67	1.59	1.88	1.88	1.99	2.01	2.07	2.12	2.16	2.26	2.21	2.36	2.47
47875.4	1.69	1.61	1.90	1.90	2.01	2.03	2.09	2.15	2.18	2.29	2.24	2.39	2.50
47878.3	1.71	1.62	1.92	1.93	2.03	2.06	2.12	2.17	2.21	2.32	2.27	2.43	2.54
47881.3	1.72	1.64	1.94	1.95	2.05	2.08	2.14	2.20	2.24	2.35	2.30	2.46	2.58
47884.2	1.73	1.65	1.96	1.97	2.07	2.11	2.17	2.23	2.27	2.39	2.33	2.50	2.61
47887.2	1.75	1.67	1.98	1.99	2.09	2.13	2.19	2.26	2.30	2.42	2.36	2.53	2.65
47890.1	1.76	1.68	2.00	2.01	2.11	2.16	2.21	2.29	2.33	2.45	2.39	2.57	2.70
47893.1	1.78	1.70	2.02	2.02	2.13	2.18	2.24	2.32	2.35	2.49	2.42	2.60	2.74
47896.0	1.79	1.71	2.04	2.04	2.15	2.20	2.26	2.34	2.38	2.52	2.45	2.64	2.78
47899.0	1.81	1.73	2.06	2.06	2.17	2.23	2.28	2.37	2.41	2.56	2.48	2.68	2.83
47899.0	1.81	1.73	2.06	2.06	2.17	2.23	2.28	2.37	2.41	2.56	2.48	2.68	2.83
47908.4	1.86	1.76	2.10	2.10	2.21	2.26	2.32	2.41	2.45	2.61	2.52	2.73	2.90
47917.9	1.91	1.79	2.14	2.13	2.26	2.30	2.36	2.45	2.49	2.66	2.56	2.78	2.99
47927.3	1.96	1.83	2.20	2.18	2.31	2.36	2.42	2.52	2.57	2.75	2.64	2.89	3.10
47936.8	2.02	1.88	2.25	2.23	2.36	2.43	2.48	2.60	2.65	2.84	2.72	3.00	3.22
47946.2	2.08	1.94	2.33	2.33	2.46	2.54	2.59	2.72	2.77	2.98	2.86	3.14	3.36
47955.6	2.15	2.00	2.42	2.44	2.56	2.66	2.73	2.87	2.90	3.12	3.01	3.30	3.52
47965.1	2.28	2.14	2.59	2.60	2.75	2.83	2.91	3.04	3.09	3.31	3.20	3.49	3.70
47974.5	2.43	2.29	2.79	2.78	2.96	3.03	3.12	3.24	3.31	3.51	3.41	3.71	3.91
47982.0	1.75	1.72	2.07	2.12	2.23	2.41	2.37	2.80	2.74	3.30	2.97	3.59	4.28
47989.5	2.69	2.48	3.15	3.07	3.34	3.38	3.52	3.66	3.78	3.96	3.90	4.21	4.51
47999.1	2.60	2.37	3.03	2.94	3.19	3.24	3.37	3.52	3.63	3.82	3.75	4.07	4.38
48008.7	2.52	2.27	2.92	2.81	3.06	3.12	3.23	3.39	3.49	3.69	3.62	3.94	4.25
48018.3	2.44	2.21	2.83	2.72	2.96	3.01	3.12	3.28	3.37	3.57	3.50	3.82	4.13
48027.9	2.36	2.14	2.75	2.63	2.87	2.90	3.02	3.17	3.26	3.46	3.39	3.70	4.02
48037.5	2.29	2.09	2.67	2.56	2.81	2.83	2.94	3.08	3.16	3.36	3.28	3.59	3.91
48047.1	2.22	2.04	2.60	2.50	2.74	2.75	2.87	2.98	3.07	3.27	3.18	3.49	3.81
48056.8	2.15	1.99	2.54	2.44	2.68	2.69	2.81	2.92	3.01	3.18	3.11	3.41	3.71
48066.4	2.09	1.95	2.48	2.39	2.62	2.63	2.75	2.85	2.94	3.11	3.05	3.32	3.62
48076.0	2.03	1.91	2.43	2.35	2.57	2.58	2.69	2.80	2.89	3.05	2.99	3.25	3.54
48085.6	1.97	1.86	2.37	2.30	2.51	2.53	2.64	2.74	2.83	2.99	2.93	3.18	3.45
48095.2	1.92	1.83	2.32	2.26	2.46	2.49	2.59	2.70	2.78	2.93	2.88	3.13	3.38
48104.8	1.87	1.79	2.26	2.21	2.41	2.44	2.54	2.64	2.72	2.87	2.82	3.06	3.29
48114.4	1.83	1.75	2.21	2.17	2.36	2.39	2.48	2.59	2.67	2.81	2.76	3.00	3.22
48124.0	1.78	1.72	2.16	2.13	2.31	2.35	2.44	2.55	2.62	2.75	2.72	2.93	3.14
48124.0	1.78	1.72	2.16	2.13	2.31	2.35	2.44	2.55	2.62	2.75	2.72	2.93	3.14
48126.9	1.78	1.72	2.16	2.13	2.31	2.35	2.44	2.55	2.62	2.75	2.72	2.93	3.12
48129.8	1.79	1.72	2.17	2.14	2.32	2.35	2.44	2.55	2.62	2.74	2.71	2.92	3.12

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
48132.8	1.79	1.73	2.17	2.14	2.32	2.35	2.44	2.55	2.62	2.74	2.71	2.91	3.12
48135.7	1.80	1.73	2.17	2.14	2.32	2.35	2.45	2.55	2.62	2.74	2.71	2.92	3.12
48138.6	1.80	1.73	2.18	2.14	2.33	2.35	2.45	2.55	2.63	2.74	2.72	2.92	3.12
48141.5	1.81	1.73	2.18	2.15	2.33	2.36	2.46	2.55	2.63	2.75	2.72	2.93	3.13
48144.4	1.81	1.74	2.19	2.15	2.34	2.36	2.46	2.55	2.64	2.75	2.72	2.93	3.13
48147.3	1.81	1.74	2.19	2.15	2.34	2.36	2.47	2.56	2.64	2.76	2.73	2.94	3.14
48150.3	1.82	1.74	2.20	2.16	2.35	2.37	2.47	2.56	2.64	2.76	2.73	2.94	3.14
48153.2	1.82	1.74	2.20	2.16	2.35	2.37	2.48	2.56	2.65	2.76	2.73	2.94	3.15
48156.1	1.83	1.75	2.21	2.16	2.36	2.37	2.48	2.56	2.65	2.77	2.74	2.95	3.15
48159.0	1.83	1.75	2.21	2.17	2.36	2.38	2.48	2.57	2.65	2.77	2.74	2.95	3.16
48161.9	1.84	1.75	2.22	2.17	2.37	2.38	2.49	2.57	2.66	2.78	2.74	2.96	3.16
48164.8	1.84	1.75	2.22	2.17	2.37	2.39	2.50	2.57	2.66	2.78	2.75	2.96	3.16
48167.8	1.85	1.76	2.22	2.18	2.38	2.39	2.50	2.58	2.67	2.78	2.75	2.96	3.17
48170.7	1.85	1.76	2.23	2.18	2.38	2.39	2.51	2.58	2.68	2.78	2.76	2.97	3.17
48173.6	1.86	1.76	2.23	2.18	2.39	2.40	2.51	2.59	2.68	2.78	2.76	2.97	3.17
48176.5	1.86	1.76	2.24	2.19	2.39	2.40	2.52	2.59	2.69	2.79	2.77	2.98	3.18
48179.4	1.87	1.77	2.24	2.19	2.40	2.41	2.52	2.59	2.69	2.80	2.77	2.98	3.19
48182.3	1.87	1.77	2.25	2.20	2.40	2.41	2.53	2.60	2.70	2.80	2.78	2.99	3.19
48185.3	1.88	1.77	2.26	2.20	2.41	2.42	2.53	2.60	2.70	2.81	2.79	2.99	3.20
48188.2	1.88	1.78	2.26	2.20	2.41	2.42	2.54	2.61	2.71	2.81	2.79	3.00	3.21
48191.1	1.89	1.78	2.27	2.21	2.42	2.42	2.54	2.61	2.72	2.82	2.80	3.00	3.21
48194.0	1.89	1.78	2.27	2.21	2.43	2.43	2.55	2.62	2.72	2.82	2.80	3.01	3.22
48196.9	1.90	1.78	2.28	2.21	2.43	2.43	2.56	2.62	2.73	2.83	2.81	3.02	3.23
48199.8	1.90	1.79	2.28	2.22	2.44	2.44	2.56	2.63	2.73	2.83	2.82	3.03	3.23
48202.8	1.91	1.79	2.29	2.22	2.44	2.44	2.57	2.63	2.74	2.84	2.82	3.03	3.24
48205.7	1.91	1.79	2.29	2.23	2.45	2.45	2.57	2.64	2.75	2.85	2.83	3.04	3.24
48208.6	1.92	1.80	2.30	2.23	2.45	2.45	2.58	2.64	2.75	2.85	2.83	3.05	3.25
48211.5	1.92	1.80	2.31	2.24	2.46	2.46	2.59	2.65	2.76	2.86	2.84	3.05	3.26
48214.4	1.93	1.80	2.31	2.24	2.47	2.46	2.59	2.65	2.76	2.86	2.85	3.06	3.26
48217.3	1.94	1.80	2.32	2.24	2.47	2.47	2.60	2.66	2.77	2.87	2.85	3.07	3.27
48220.3	1.94	1.81	2.33	2.25	2.48	2.47	2.61	2.67	2.78	2.87	2.86	3.07	3.28
48223.2	1.95	1.81	2.33	2.25	2.49	2.48	2.61	2.67	2.78	2.88	2.87	3.08	3.29
48226.1	1.95	1.81	2.34	2.26	2.49	2.48	2.62	2.68	2.79	2.89	2.87	3.09	3.29
48229.0	1.96	1.82	2.34	2.26	2.50	2.49	2.63	2.68	2.80	2.89	2.88	3.09	3.30
48232.0	1.95	1.81	2.33	2.25	2.49	2.48	2.62	2.67	2.79	2.88	2.87	3.08	3.29
48234.9	1.94	1.80	2.32	2.24	2.48	2.46	2.60	2.66	2.78	2.87	2.86	3.07	3.27
48237.9	1.92	1.79	2.31	2.23	2.46	2.45	2.59	2.65	2.76	2.86	2.85	3.06	3.26
48240.9	1.91	1.78	2.30	2.22	2.45	2.44	2.58	2.64	2.75	2.85	2.84	3.05	3.25
48243.9	1.90	1.77	2.29	2.21	2.44	2.43	2.57	2.63	2.74	2.83	2.82	3.03	3.24
48246.9	1.89	1.76	2.27	2.20	2.43	2.42	2.56	2.62	2.73	2.82	2.81	3.02	3.22
48249.8	1.88	1.75	2.26	2.19	2.42	2.41	2.55	2.60	2.72	2.81	2.80	3.01	3.21
48252.8	1.87	1.74	2.25	2.18	2.41	2.40	2.54	2.59	2.71	2.80	2.79	3.00	3.20
48255.8	1.86	1.74	2.24	2.17	2.40	2.39	2.53	2.58	2.70	2.79	2.78	2.99	3.19
48258.8	1.85	1.73	2.23	2.16	2.39	2.38	2.52	2.57	2.69	2.78	2.77	2.97	3.17
48261.7	1.83	1.72	2.22	2.15	2.37	2.37	2.50	2.56	2.68	2.77	2.76	2.96	3.16
48264.7	1.82	1.71	2.21	2.14	2.36	2.36	2.49	2.55	2.66	2.75	2.75	2.95	3.15

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
48267.7	1.81	1.70	2.20	2.13	2.35	2.35	2.48	2.54	2.65	2.74	2.74	2.94	3.14
48270.6	1.80	1.69	2.18	2.12	2.34	2.34	2.47	2.53	2.64	2.73	2.72	2.93	3.13
48273.6	1.79	1.68	2.17	2.11	2.33	2.33	2.46	2.52	2.63	2.72	2.71	2.92	3.11
48276.6	1.78	1.68	2.16	2.10	2.32	2.32	2.45	2.51	2.62	2.71	2.70	2.90	3.10
48279.6	1.77	1.67	2.15	2.09	2.31	2.31	2.44	2.50	2.61	2.70	2.69	2.89	3.09
48282.6	1.76	1.66	2.14	2.08	2.30	2.30	2.43	2.49	2.60	2.69	2.68	2.88	3.08
48285.5	1.75	1.65	2.13	2.07	2.29	2.29	2.42	2.48	2.59	2.68	2.67	2.87	3.07
48288.5	1.74	1.64	2.12	2.06	2.28	2.28	2.41	2.47	2.58	2.66	2.66	2.86	3.05
48291.5	1.73	1.64	2.11	2.06	2.27	2.27	2.40	2.45	2.57	2.65	2.65	2.85	3.04
48294.4	1.72	1.63	2.10	2.05	2.26	2.26	2.39	2.44	2.56	2.64	2.64	2.83	3.03
48297.4	1.71	1.62	2.09	2.04	2.25	2.25	2.38	2.43	2.55	2.63	2.63	2.82	3.02
48300.4	1.70	1.61	2.08	2.03	2.24	2.24	2.37	2.42	2.54	2.62	2.61	2.81	3.01
48303.4	1.70	1.60	2.07	2.02	2.23	2.23	2.36	2.41	2.53	2.61	2.60	2.80	2.99
48306.4	1.69	1.60	2.06	2.01	2.22	2.22	2.35	2.40	2.51	2.60	2.59	2.79	2.98
48309.3	1.68	1.59	2.05	2.00	2.21	2.21	2.34	2.39	2.50	2.59	2.58	2.78	2.97
48312.3	1.67	1.58	2.04	1.99	2.20	2.20	2.33	2.38	2.49	2.58	2.57	2.77	2.96
48315.3	1.66	1.57	2.03	1.99	2.19	2.19	2.32	2.37	2.48	2.57	2.56	2.76	2.95
48318.3	1.65	1.57	2.02	1.98	2.18	2.18	2.31	2.36	2.47	2.56	2.55	2.74	2.94
48321.2	1.64	1.56	2.02	1.97	2.17	2.17	2.30	2.35	2.46	2.55	2.54	2.73	2.93
48324.2	1.63	1.55	2.01	1.96	2.17	2.16	2.29	2.34	2.45	2.54	2.53	2.72	2.91
48327.2	1.62	1.55	2.00	1.95	2.16	2.16	2.28	2.33	2.44	2.53	2.52	2.71	2.90
48330.1	1.62	1.54	1.99	1.95	2.15	2.15	2.28	2.32	2.43	2.52	2.51	2.70	2.89
48333.1	1.61	1.53	1.98	1.94	2.14	2.14	2.27	2.31	2.43	2.51	2.50	2.69	2.88
48336.1	1.60	1.52	1.97	1.93	2.13	2.13	2.27	2.30	2.42	2.50	2.49	2.68	2.87
48339.1	1.59	1.52	1.97	1.92	2.12	2.12	2.26	2.30	2.41	2.49	2.48	2.67	2.86
48342.1	1.58	1.51	1.96	1.92	2.12	2.11	2.26	2.29	2.41	2.48	2.47	2.66	2.85
48345.0	1.57	1.50	1.95	1.91	2.11	2.11	2.25	2.28	2.40	2.47	2.46	2.65	2.84
48348.0	1.57	1.50	1.94	1.90	2.11	2.10	2.24	2.27	2.39	2.46	2.46	2.64	2.83
48351.0	1.57	1.50	1.95	1.91	2.12	2.11	2.26	2.28	2.41	2.47	2.48	2.65	2.84
48354.0	1.58	1.51	1.96	1.92	2.13	2.12	2.27	2.29	2.42	2.48	2.49	2.67	2.86
48357.0	1.58	1.51	1.96	1.93	2.14	2.13	2.28	2.31	2.44	2.50	2.50	2.68	2.87
48360.0	1.59	1.52	1.97	1.93	2.15	2.14	2.29	2.32	2.45	2.51	2.52	2.70	2.89
48363.0	1.59	1.52	1.98	1.94	2.16	2.15	2.30	2.33	2.46	2.52	2.53	2.71	2.91
48366.0	1.60	1.53	1.99	1.95	2.17	2.16	2.31	2.34	2.48	2.53	2.54	2.73	2.92
48369.0	1.60	1.54	2.00	1.96	2.18	2.17	2.32	2.35	2.49	2.55	2.56	2.74	2.94
48372.0	1.61	1.54	2.00	1.97	2.19	2.19	2.34	2.36	2.50	2.56	2.57	2.76	2.95
48375.0	1.62	1.55	2.01	1.98	2.20	2.20	2.35	2.38	2.52	2.57	2.59	2.77	2.97
48378.0	1.62	1.56	2.02	1.99	2.21	2.21	2.36	2.39	2.53	2.59	2.60	2.79	2.99
48381.0	1.63	1.56	2.03	2.00	2.22	2.22	2.37	2.40	2.55	2.60	2.62	2.81	3.01
48384.0	1.64	1.57	2.04	2.01	2.23	2.23	2.39	2.42	2.56	2.62	2.63	2.82	3.02
48387.0	1.64	1.58	2.05	2.02	2.25	2.25	2.40	2.43	2.58	2.63	2.65	2.84	3.04
48390.0	1.65	1.58	2.06	2.03	2.26	2.26	2.42	2.45	2.59	2.65	2.67	2.86	3.06
48393.0	1.66	1.59	2.07	2.04	2.27	2.27	2.43	2.46	2.61	2.67	2.68	2.88	3.08
48396.0	1.67	1.60	2.08	2.06	2.28	2.29	2.45	2.48	2.63	2.68	2.70	2.89	3.10
48399.0	1.67	1.61	2.10	2.07	2.30	2.30	2.46	2.49	2.65	2.70	2.72	2.92	3.12
48402.0	1.68	1.62	2.11	2.08	2.31	2.31	2.48	2.51	2.66	2.72	2.74	2.94	3.14

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
48405.0	1.69	1.63	2.12	2.09	2.33	2.33	2.49	2.53	2.68	2.74	2.76	2.96	3.16
48408.0	1.70	1.64	2.13	2.11	2.34	2.35	2.51	2.54	2.70	2.76	2.78	2.98	3.19
48411.0	1.71	1.64	2.15	2.12	2.36	2.36	2.53	2.56	2.72	2.78	2.80	3.00	3.21
48414.0	1.72	1.65	2.16	2.13	2.37	2.38	2.55	2.58	2.74	2.80	2.82	3.02	3.23
48417.0	1.73	1.66	2.17	2.15	2.39	2.40	2.57	2.60	2.76	2.82	2.84	3.05	3.25
48420.0	1.74	1.67	2.19	2.16	2.41	2.41	2.58	2.62	2.78	2.84	2.86	3.07	3.28
48423.0	1.75	1.69	2.20	2.18	2.42	2.43	2.60	2.64	2.81	2.86	2.89	3.10	3.31
48426.0	1.76	1.70	2.22	2.19	2.44	2.45	2.62	2.66	2.83	2.89	2.91	3.12	3.33
48429.0	1.77	1.71	2.23	2.21	2.46	2.47	2.65	2.68	2.85	2.91	2.94	3.15	3.36
48432.0	1.78	1.72	2.25	2.23	2.48	2.49	2.67	2.70	2.88	2.93	2.96	3.17	3.39
48435.0	1.79	1.73	2.27	2.24	2.50	2.51	2.69	2.72	2.90	2.96	2.99	3.20	3.41
48438.0	1.80	1.74	2.29	2.26	2.52	2.53	2.71	2.75	2.93	2.98	3.01	3.23	3.44
48441.0	1.82	1.76	2.30	2.28	2.54	2.55	2.74	2.77	2.95	3.01	3.04	3.26	3.47
48444.0	1.83	1.77	2.32	2.30	2.56	2.57	2.76	2.79	2.98	3.04	3.07	3.29	3.50
48447.0	1.84	1.78	2.34	2.32	2.59	2.59	2.79	2.82	3.01	3.07	3.10	3.32	3.54
48450.0	1.86	1.80	2.36	2.34	2.61	2.62	2.81	2.85	3.04	3.10	3.13	3.36	3.57
48453.0	1.87	1.81	2.38	2.36	2.63	2.64	2.84	2.87	3.07	3.13	3.16	3.39	3.61
48456.0	1.89	1.83	2.40	2.38	2.66	2.66	2.87	2.90	3.10	3.16	3.19	3.43	3.65
48459.0	1.90	1.84	2.43	2.40	2.69	2.69	2.90	2.93	3.13	3.19	3.22	3.47	3.69
48462.0	1.92	1.86	2.45	2.42	2.71	2.72	2.93	2.96	3.16	3.23	3.26	3.50	3.73
48465.0	1.93	1.87	2.47	2.45	2.74	2.74	2.96	2.99	3.20	3.26	3.29	3.54	3.77
48468.0	1.95	1.89	2.50	2.47	2.77	2.77	2.99	3.02	3.23	3.30	3.33	3.59	3.81
48470.9	1.95	1.89	2.50	2.47	2.77	2.77	2.99	3.02	3.23	3.30	3.33	3.59	3.81
48473.9	1.95	1.89	2.49	2.47	2.77	2.77	2.99	3.02	3.23	3.30	3.33	3.59	3.81
48476.9	1.94	1.88	2.49	2.46	2.76	2.77	2.99	3.02	3.23	3.30	3.33	3.59	3.81
48479.8	1.94	1.88	2.49	2.46	2.76	2.76	2.98	3.02	3.23	3.30	3.33	3.59	3.82
48482.8	1.94	1.88	2.49	2.46	2.76	2.76	2.98	3.02	3.23	3.30	3.33	3.59	3.82
48485.7	1.94	1.88	2.49	2.46	2.76	2.76	2.98	3.02	3.23	3.30	3.33	3.59	3.82
48488.6	1.93	1.88	2.48	2.45	2.76	2.76	2.98	3.02	3.23	3.30	3.33	3.59	3.82
48491.6	1.93	1.87	2.48	2.45	2.76	2.76	2.98	3.02	3.23	3.29	3.33	3.59	3.82
48494.6	1.93	1.87	2.48	2.45	2.76	2.76	2.98	3.02	3.23	3.29	3.33	3.59	3.83
48497.5	1.93	1.87	2.48	2.45	2.75	2.75	2.98	3.01	3.23	3.29	3.33	3.59	3.83
48500.4	1.92	1.87	2.48	2.45	2.75	2.75	2.97	3.01	3.23	3.29	3.33	3.59	3.83
48503.4	1.92	1.87	2.47	2.44	2.75	2.75	2.97	3.01	3.23	3.29	3.33	3.59	3.83
48506.4	1.92	1.86	2.47	2.44	2.75	2.75	2.97	3.01	3.22	3.29	3.33	3.59	3.83
48509.3	1.92	1.86	2.47	2.44	2.75	2.75	2.97	3.01	3.22	3.29	3.33	3.59	3.83
48512.3	1.92	1.86	2.47	2.44	2.75	2.75	2.97	3.01	3.22	3.29	3.33	3.59	3.83
48515.2	1.91	1.86	2.47	2.44	2.75	2.75	2.97	3.01	3.22	3.29	3.33	3.60	3.83
48518.1	1.91	1.86	2.47	2.43	2.74	2.74	2.97	3.01	3.22	3.29	3.33	3.60	3.84
48521.1	1.91	1.85	2.46	2.43	2.74	2.74	2.97	3.01	3.22	3.29	3.33	3.60	3.84
48524.1	1.91	1.85	2.46	2.43	2.74	2.74	2.96	3.01	3.22	3.29	3.33	3.60	3.84
48527.0	1.90	1.85	2.46	2.43	2.74	2.74	2.96	3.01	3.22	3.29	3.33	3.60	3.84
48529.9	1.90	1.85	2.46	2.43	2.74	2.74	2.96	3.00	3.22	3.29	3.33	3.60	3.84
48532.9	1.90	1.85	2.46	2.43	2.74	2.74	2.96	3.00	3.22	3.29	3.33	3.60	3.84
48535.9	1.90	1.84	2.45	2.42	2.73	2.74	2.96	3.00	3.22	3.29	3.33	3.60	3.84
48538.8	1.90	1.84	2.45	2.42	2.73	2.73	2.96	3.00	3.22	3.29	3.33	3.60	3.84

Notes

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Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
48541.8	1.89	1.84	2.45	2.42	2.73	2.73	2.96	3.00	3.21	3.29	3.33	3.60	3.84
48544.7	1.89	1.84	2.45	2.42	2.73	2.73	2.96	3.00	3.21	3.29	3.33	3.60	3.84
48547.6	1.89	1.84	2.45	2.42	2.73	2.73	2.95	3.00	3.21	3.29	3.33	3.60	3.85
48550.6	1.89	1.83	2.44	2.41	2.73	2.73	2.95	3.00	3.21	3.29	3.33	3.60	3.85
48553.6	1.89	1.83	2.44	2.41	2.72	2.73	2.95	3.00	3.21	3.29	3.33	3.60	3.85
48556.5	1.88	1.83	2.44	2.41	2.72	2.73	2.95	3.00	3.21	3.29	3.33	3.60	3.85
48559.4	1.88	1.83	2.44	2.41	2.72	2.73	2.95	3.00	3.21	3.29	3.33	3.60	3.85
48562.4	1.88	1.83	2.43	2.41	2.72	2.72	2.95	3.00	3.21	3.29	3.33	3.60	3.85
48565.4	1.88	1.82	2.43	2.41	2.72	2.72	2.95	2.99	3.21	3.29	3.33	3.60	3.85
48568.3	1.88	1.82	2.43	2.40	2.72	2.72	2.94	2.99	3.21	3.29	3.33	3.60	3.86
48571.3	1.87	1.82	2.43	2.40	2.71	2.72	2.94	2.99	3.21	3.29	3.33	3.60	3.86
48574.2	1.87	1.82	2.43	2.40	2.71	2.72	2.94	2.99	3.21	3.29	3.33	3.60	3.86
48577.1	1.87	1.82	2.43	2.40	2.71	2.72	2.94	2.99	3.21	3.29	3.33	3.60	3.86
48580.1	1.87	1.82	2.42	2.40	2.71	2.72	2.94	2.99	3.21	3.29	3.33	3.61	3.86
48583.1	1.87	1.81	2.42	2.40	2.71	2.72	2.94	2.99	3.21	3.29	3.33	3.61	3.87
48586.0	1.87	1.81	2.42	2.40	2.71	2.71	2.94	2.99	3.21	3.29	3.33	3.61	3.87
48589.0	1.85	1.80	2.40	2.38	2.69	2.69	2.92	2.96	3.19	3.26	3.30	3.58	3.83
48592.0	1.84	1.79	2.39	2.36	2.67	2.67	2.90	2.94	3.16	3.23	3.28	3.55	3.80
48595.0	1.83	1.77	2.37	2.34	2.65	2.65	2.87	2.92	3.14	3.20	3.25	3.52	3.77
48598.0	1.82	1.76	2.36	2.32	2.63	2.63	2.85	2.89	3.11	3.18	3.22	3.49	3.74
48601.0	1.81	1.75	2.34	2.30	2.61	2.61	2.83	2.87	3.09	3.15	3.20	3.46	3.70
48604.0	1.80	1.73	2.33	2.29	2.60	2.59	2.81	2.85	3.06	3.12	3.17	3.43	3.67
48607.0	1.79	1.72	2.31	2.27	2.58	2.57	2.79	2.82	3.04	3.10	3.15	3.40	3.64
48610.0	1.78	1.71	2.30	2.25	2.56	2.55	2.77	2.80	3.02	3.07	3.12	3.37	3.61
48613.0	1.77	1.70	2.28	2.23	2.54	2.53	2.75	2.78	2.99	3.05	3.10	3.35	3.58
48616.0	1.76	1.68	2.27	2.22	2.52	2.51	2.73	2.76	2.97	3.02	3.07	3.32	3.55
48619.0	1.75	1.67	2.25	2.20	2.51	2.49	2.71	2.73	2.95	3.00	3.05	3.29	3.52
48622.0	1.74	1.66	2.24	2.18	2.49	2.47	2.69	2.71	2.93	2.97	3.03	3.27	3.49
48625.0	1.73	1.65	2.22	2.17	2.47	2.45	2.67	2.69	2.90	2.95	3.00	3.24	3.46
48628.0	1.72	1.64	2.21	2.15	2.46	2.43	2.65	2.67	2.88	2.93	2.98	3.21	3.43
48631.0	1.71	1.62	2.19	2.14	2.44	2.41	2.63	2.65	2.86	2.90	2.96	3.19	3.40
48634.0	1.70	1.61	2.18	2.12	2.42	2.40	2.62	2.63	2.84	2.88	2.94	3.16	3.38
48637.0	1.69	1.60	2.17	2.10	2.41	2.38	2.60	2.61	2.82	2.86	2.91	3.14	3.35
48640.0	1.67	1.59	2.15	2.09	2.39	2.36	2.58	2.59	2.80	2.83	2.89	3.11	3.32
48643.0	1.66	1.58	2.14	2.07	2.37	2.34	2.56	2.57	2.78	2.81	2.87	3.09	3.30
48646.0	1.66	1.57	2.12	2.06	2.36	2.33	2.54	2.55	2.76	2.79	2.85	3.07	3.27
48649.0	1.65	1.56	2.11	2.04	2.34	2.31	2.52	2.53	2.74	2.77	2.83	3.04	3.24
48652.0	1.64	1.54	2.10	2.03	2.32	2.29	2.51	2.51	2.72	2.75	2.81	3.02	3.22
48655.0	1.63	1.53	2.08	2.01	2.31	2.27	2.49	2.49	2.70	2.73	2.79	3.00	3.19
48658.0	1.62	1.52	2.07	2.00	2.29	2.26	2.47	2.48	2.68	2.71	2.77	2.97	3.17
48661.0	1.61	1.51	2.06	1.99	2.28	2.24	2.45	2.46	2.66	2.69	2.75	2.95	3.15
48664.0	1.60	1.50	2.04	1.97	2.26	2.23	2.44	2.44	2.64	2.67	2.73	2.93	3.12
48667.0	1.59	1.49	2.03	1.96	2.25	2.21	2.42	2.42	2.62	2.65	2.71	2.91	3.10
48670.0	1.58	1.48	2.02	1.94	2.23	2.19	2.40	2.40	2.60	2.63	2.69	2.89	3.08
48673.0	1.57	1.47	2.00	1.93	2.22	2.18	2.39	2.39	2.58	2.61	2.67	2.86	3.05
48676.0	1.56	1.46	1.99	1.92	2.20	2.16	2.37	2.37	2.57	2.59	2.65	2.84	3.03

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
48679.0	1.55	1.45	1.98	1.90	2.19	2.15	2.35	2.35	2.55	2.57	2.63	2.82	3.01
48682.0	1.54	1.44	1.96	1.89	2.17	2.13	2.34	2.34	2.53	2.55	2.61	2.80	2.99
48685.0	1.53	1.43	1.95	1.88	2.16	2.12	2.32	2.32	2.51	2.53	2.59	2.78	2.97
48688.0	1.52	1.42	1.94	1.86	2.14	2.10	2.31	2.30	2.50	2.51	2.58	2.76	2.95
48691.0	1.51	1.41	1.93	1.85	2.13	2.09	2.29	2.29	2.48	2.50	2.56	2.74	2.93
48694.0	1.50	1.40	1.92	1.84	2.12	2.07	2.27	2.27	2.46	2.48	2.54	2.72	2.91
48697.0	1.49	1.39	1.90	1.82	2.10	2.06	2.26	2.25	2.44	2.46	2.52	2.70	2.89
48700.0	1.49	1.38	1.89	1.81	2.09	2.04	2.24	2.24	2.43	2.44	2.50	2.68	2.87
48703.0	1.48	1.37	1.88	1.80	2.07	2.03	2.23	2.22	2.41	2.42	2.49	2.66	2.84
48706.0	1.47	1.37	1.87	1.79	2.06	2.01	2.21	2.21	2.39	2.41	2.47	2.64	2.82
48708.9	1.48	1.37	1.88	1.80	2.07	2.03	2.23	2.22	2.41	2.43	2.49	2.66	2.84
48711.8	1.48	1.38	1.89	1.81	2.09	2.04	2.24	2.24	2.43	2.44	2.51	2.68	2.86
48714.6	1.49	1.39	1.90	1.82	2.10	2.06	2.26	2.25	2.45	2.46	2.52	2.71	2.88
48717.5	1.50	1.40	1.91	1.83	2.11	2.07	2.27	2.27	2.46	2.48	2.54	2.73	2.90
48720.4	1.51	1.41	1.92	1.85	2.13	2.08	2.29	2.29	2.48	2.50	2.56	2.75	2.92
48723.3	1.51	1.42	1.93	1.86	2.14	2.10	2.31	2.31	2.50	2.52	2.58	2.77	2.94
48726.2	1.52	1.42	1.95	1.87	2.16	2.12	2.32	2.32	2.52	2.54	2.61	2.80	2.97
48729.0	1.53	1.43	1.96	1.88	2.17	2.13	2.34	2.34	2.54	2.56	2.63	2.82	3.00
48731.9	1.54	1.44	1.97	1.90	2.19	2.15	2.36	2.36	2.56	2.58	2.65	2.84	3.02
48734.8	1.55	1.45	1.99	1.91	2.20	2.16	2.38	2.38	2.58	2.60	2.67	2.87	3.05
48737.7	1.56	1.46	2.00	1.93	2.22	2.18	2.39	2.40	2.60	2.63	2.69	2.90	3.08
48740.6	1.57	1.47	2.01	1.94	2.23	2.20	2.41	2.42	2.63	2.65	2.72	2.92	3.11
48743.5	1.58	1.48	2.03	1.96	2.25	2.22	2.43	2.44	2.65	2.67	2.74	2.95	3.13
48746.3	1.58	1.49	2.04	1.97	2.27	2.23	2.45	2.46	2.67	2.70	2.77	2.98	3.17
48749.2	1.59	1.50	2.06	1.99	2.29	2.25	2.47	2.48	2.70	2.72	2.79	3.00	3.20
48752.1	1.61	1.52	2.07	2.00	2.31	2.27	2.49	2.50	2.72	2.75	2.82	3.03	3.23
48755.0	1.62	1.53	2.09	2.02	2.32	2.29	2.52	2.53	2.75	2.77	2.84	3.06	3.27
48757.9	1.63	1.54	2.10	2.04	2.34	2.31	2.54	2.55	2.77	2.80	2.87	3.10	3.30
48760.7	1.64	1.55	2.12	2.05	2.36	2.33	2.56	2.57	2.80	2.83	2.90	3.13	3.34
48763.6	1.65	1.56	2.14	2.07	2.38	2.35	2.58	2.60	2.83	2.86	2.93	3.16	3.38
48766.5	1.66	1.57	2.15	2.09	2.40	2.38	2.61	2.62	2.85	2.88	2.96	3.19	3.41
48769.4	1.67	1.59	2.17	2.11	2.43	2.40	2.63	2.65	2.88	2.91	2.99	3.23	3.45
48772.3	1.69	1.60	2.19	2.13	2.45	2.42	2.66	2.68	2.91	2.95	3.03	3.27	3.50
48775.1	1.70	1.61	2.21	2.14	2.47	2.44	2.68	2.70	2.95	2.98	3.06	3.31	3.54
48778.0	1.71	1.63	2.23	2.16	2.49	2.47	2.71	2.73	2.98	3.01	3.10	3.35	3.59
48780.9	1.72	1.64	2.25	2.18	2.52	2.49	2.74	2.76	3.01	3.05	3.13	3.39	3.63
48783.8	1.74	1.66	2.27	2.21	2.54	2.52	2.77	2.79	3.04	3.08	3.17	3.44	3.68
48786.7	1.75	1.67	2.29	2.23	2.57	2.54	2.80	2.82	3.08	3.12	3.20	3.48	3.73
48789.5	1.77	1.69	2.31	2.25	2.59	2.57	2.83	2.86	3.11	3.16	3.24	3.53	3.78
48792.4	1.78	1.70	2.33	2.27	2.62	2.60	2.86	2.89	3.15	3.20	3.28	3.58	3.84
48795.3	1.80	1.72	2.36	2.30	2.65	2.63	2.89	2.93	3.19	3.25	3.33	3.63	3.90
48798.2	1.81	1.73	2.38	2.32	2.68	2.66	2.92	2.96	3.23	3.29	3.37	3.68	3.96
48801.1	1.83	1.75	2.41	2.34	2.70	2.69	2.95	3.00	3.27	3.33	3.41	3.73	4.01
48804.0	1.85	1.77	2.43	2.37	2.73	2.72	2.99	3.03	3.31	3.38	3.45	3.78	4.07
48806.8	1.86	1.78	2.46	2.39	2.77	2.75	3.02	3.07	3.35	3.42	3.50	3.84	4.13
48809.7	1.88	1.80	2.48	2.42	2.80	2.78	3.06	3.11	3.39	3.47	3.54	3.89	4.19

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
48812.6	1.90	1.82	2.51	2.45	2.83	2.82	3.10	3.15	3.44	3.51	3.59	3.94	4.26
48815.5	1.92	1.84	2.54	2.48	2.86	2.85	3.14	3.19	3.49	3.56	3.64	4.00	4.32
48818.4	1.94	1.86	2.57	2.51	2.90	2.89	3.18	3.23	3.53	3.61	3.69	4.06	4.39
48821.2	1.96	1.88	2.60	2.54	2.94	2.92	3.22	3.27	3.58	3.66	3.74	4.12	4.46
48824.1	1.98	1.90	2.63	2.57	2.97	2.96	3.26	3.32	3.63	3.71	3.80	4.18	4.53
48827.0	2.00	1.92	2.66	2.60	3.01	3.00	3.31	3.36	3.69	3.77	3.86	4.25	4.60
48830.0	1.98	1.91	2.64	2.58	2.99	2.97	3.28	3.33	3.65	3.73	3.82	4.21	4.56
48833.0	1.96	1.89	2.61	2.55	2.96	2.95	3.25	3.30	3.62	3.70	3.79	4.17	4.52
48835.9	1.95	1.87	2.59	2.53	2.93	2.92	3.22	3.27	3.59	3.67	3.76	4.14	4.48
48838.9	1.93	1.86	2.57	2.51	2.91	2.90	3.19	3.24	3.56	3.64	3.72	4.10	4.45
48841.9	1.92	1.84	2.55	2.49	2.89	2.87	3.17	3.22	3.53	3.61	3.69	4.07	4.41
48844.9	1.90	1.83	2.53	2.47	2.86	2.85	3.14	3.19	3.50	3.58	3.66	4.03	4.38
48847.8	1.89	1.81	2.51	2.45	2.84	2.82	3.12	3.16	3.47	3.55	3.63	4.00	4.34
48850.8	1.87	1.80	2.49	2.43	2.82	2.80	3.09	3.14	3.44	3.52	3.60	3.97	4.31
48853.8	1.86	1.78	2.47	2.41	2.79	2.78	3.07	3.11	3.42	3.49	3.57	3.93	4.27
48856.8	1.84	1.77	2.45	2.39	2.77	2.75	3.04	3.08	3.39	3.46	3.54	3.90	4.24
48859.8	1.83	1.76	2.43	2.37	2.75	2.73	3.02	3.06	3.36	3.43	3.51	3.87	4.20
48862.7	1.82	1.74	2.41	2.35	2.73	2.71	3.00	3.03	3.34	3.40	3.49	3.84	4.17
48865.7	1.80	1.73	2.40	2.33	2.71	2.69	2.97	3.01	3.31	3.37	3.46	3.81	4.13
48868.7	1.79	1.72	2.38	2.31	2.69	2.67	2.95	2.99	3.28	3.35	3.43	3.78	4.10
48871.7	1.78	1.70	2.36	2.30	2.67	2.65	2.93	2.96	3.26	3.32	3.41	3.75	4.07
48874.7	1.76	1.69	2.34	2.28	2.65	2.63	2.91	2.94	3.23	3.29	3.38	3.72	4.04
48877.6	1.75	1.68	2.33	2.26	2.63	2.61	2.89	2.92	3.21	3.27	3.35	3.69	4.01
48880.6	1.74	1.67	2.31	2.25	2.61	2.59	2.86	2.89	3.19	3.24	3.33	3.66	3.99
48883.6	1.73	1.65	2.29	2.23	2.59	2.57	2.84	2.87	3.16	3.22	3.31	3.63	3.96
48886.6	1.72	1.64	2.28	2.21	2.58	2.55	2.82	2.85	3.14	3.20	3.28	3.61	3.93
48889.5	1.71	1.63	2.26	2.20	2.56	2.53	2.80	2.83	3.12	3.17	3.26	3.58	3.90
48892.5	1.69	1.62	2.25	2.18	2.54	2.51	2.78	2.81	3.10	3.15	3.23	3.55	3.87
48895.5	1.68	1.61	2.23	2.16	2.52	2.49	2.77	2.79	3.07	3.12	3.21	3.53	3.84
48898.5	1.67	1.60	2.22	2.15	2.51	2.47	2.75	2.77	3.05	3.10	3.19	3.50	3.81
48901.5	1.66	1.59	2.20	2.13	2.49	2.46	2.73	2.75	3.03	3.08	3.17	3.48	3.78
48904.4	1.65	1.57	2.19	2.12	2.47	2.44	2.71	2.73	3.01	3.05	3.14	3.45	3.75
48907.4	1.64	1.56	2.18	2.10	2.46	2.42	2.69	2.71	2.99	3.03	3.12	3.43	3.72
48910.4	1.63	1.55	2.16	2.09	2.44	2.41	2.67	2.69	2.97	3.01	3.10	3.40	3.70
48913.4	1.62	1.54	2.15	2.08	2.43	2.39	2.66	2.67	2.95	2.99	3.08	3.38	3.67
48916.3	1.61	1.53	2.14	2.06	2.41	2.37	2.64	2.65	2.93	2.97	3.06	3.35	3.64
48919.3	1.60	1.52	2.12	2.05	2.40	2.36	2.62	2.63	2.91	2.95	3.04	3.33	3.62
48922.3	1.59	1.51	2.11	2.03	2.38	2.34	2.61	2.62	2.89	2.93	3.02	3.31	3.59
48925.3	1.58	1.50	2.10	2.02	2.37	2.32	2.59	2.60	2.87	2.91	3.00	3.29	3.57
48928.3	1.57	1.49	2.08	2.01	2.35	2.31	2.58	2.58	2.86	2.89	2.98	3.26	3.54
48931.2	1.56	1.48	2.07	1.99	2.34	2.29	2.56	2.56	2.84	2.87	2.96	3.24	3.52
48934.2	1.56	1.47	2.06	1.98	2.33	2.28	2.54	2.55	2.82	2.85	2.94	3.22	3.50
48937.2	1.55	1.47	2.05	1.97	2.31	2.26	2.53	2.53	2.80	2.83	2.92	3.20	3.48
48940.2	1.54	1.46	2.04	1.96	2.30	2.25	2.51	2.51	2.79	2.81	2.90	3.18	3.45
48943.2	1.53	1.45	2.03	1.94	2.29	2.23	2.50	2.50	2.77	2.79	2.89	3.16	3.43
48946.1	1.52	1.44	2.01	1.93	2.27	2.22	2.48	2.48	2.75	2.78	2.87	3.14	3.41

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
48949.1	1.51	1.43	2.00	1.92	2.26	2.21	2.47	2.47	2.74	2.76	2.85	3.12	3.38
48952.1	1.51	1.42	1.99	1.91	2.25	2.19	2.46	2.45	2.72	2.74	2.83	3.10	3.36
48955.1	1.50	1.41	1.98	1.90	2.23	2.18	2.44	2.43	2.70	2.72	2.82	3.08	3.34
48958.0	1.49	1.40	1.97	1.89	2.22	2.17	2.43	2.42	2.69	2.71	2.80	3.06	3.32
48961.0	1.48	1.40	1.96	1.87	2.21	2.15	2.42	2.40	2.67	2.69	2.78	3.04	3.30
48964.0	1.48	1.39	1.95	1.86	2.20	2.14	2.40	2.39	2.66	2.67	2.77	3.03	3.28
48967.0	1.47	1.39	1.95	1.86	2.19	2.14	2.40	2.39	2.65	2.67	2.76	3.02	3.28
48969.9	1.47	1.38	1.94	1.86	2.19	2.13	2.39	2.38	2.65	2.66	2.76	3.02	3.27
48972.9	1.46	1.38	1.94	1.85	2.19	2.13	2.39	2.38	2.64	2.66	2.76	3.02	3.27
48975.8	1.46	1.38	1.93	1.85	2.18	2.13	2.38	2.38	2.64	2.66	2.75	3.01	3.27
48978.8	1.46	1.37	1.93	1.85	2.18	2.12	2.38	2.37	2.64	2.66	2.75	3.01	3.27
48981.7	1.45	1.37	1.93	1.84	2.17	2.12	2.37	2.37	2.63	2.66	2.75	3.01	3.27
48984.7	1.45	1.37	1.92	1.84	2.17	2.12	2.37	2.37	2.63	2.65	2.74	3.01	3.27
48987.6	1.45	1.36	1.92	1.84	2.16	2.11	2.36	2.36	2.62	2.65	2.74	3.01	3.27
48990.6	1.44	1.36	1.91	1.83	2.16	2.11	2.36	2.36	2.62	2.65	2.74	3.00	3.26
48993.5	1.44	1.36	1.91	1.83	2.15	2.11	2.36	2.36	2.62	2.65	2.73	3.00	3.26
48996.5	1.43	1.36	1.90	1.83	2.15	2.10	2.36	2.36	2.62	2.65	2.73	3.00	3.26
48999.5	1.43	1.35	1.90	1.82	2.15	2.10	2.35	2.36	2.62	2.65	2.74	3.01	3.27
49002.4	1.43	1.35	1.90	1.82	2.14	2.10	2.35	2.36	2.62	2.65	2.74	3.01	3.27
49005.4	1.42	1.35	1.89	1.82	2.14	2.10	2.35	2.36	2.62	2.65	2.74	3.01	3.28
49008.3	1.42	1.35	1.89	1.82	2.14	2.10	2.35	2.36	2.62	2.65	2.74	3.02	3.28
49011.3	1.42	1.34	1.88	1.81	2.13	2.10	2.34	2.35	2.62	2.65	2.74	3.02	3.28
49014.2	1.41	1.34	1.88	1.81	2.13	2.09	2.34	2.35	2.61	2.64	2.74	3.02	3.28
49017.2	1.41	1.34	1.88	1.81	2.13	2.09	2.33	2.35	2.61	2.64	2.73	3.02	3.28
49020.1	1.41	1.33	1.87	1.81	2.12	2.09	2.33	2.35	2.60	2.64	2.73	3.02	3.28
49023.1	1.40	1.33	1.87	1.80	2.12	2.09	2.32	2.35	2.60	2.64	2.73	3.01	3.29
49026.0	1.40	1.33	1.86	1.80	2.11	2.08	2.32	2.34	2.60	2.64	2.72	3.01	3.29
49029.0	1.40	1.33	1.86	1.80	2.11	2.08	2.32	2.34	2.59	2.64	2.72	3.01	3.29
49032.0	1.39	1.32	1.86	1.79	2.10	2.08	2.31	2.34	2.59	2.64	2.72	3.01	3.28
49034.9	1.39	1.32	1.85	1.79	2.10	2.07	2.31	2.34	2.58	2.63	2.71	3.01	3.29
49037.9	1.38	1.32	1.85	1.79	2.09	2.07	2.30	2.33	2.58	2.63	2.71	3.01	3.29
49040.8	1.38	1.32	1.84	1.78	2.09	2.07	2.30	2.33	2.57	2.63	2.70	3.00	3.29
49043.8	1.38	1.31	1.84	1.78	2.09	2.06	2.29	2.33	2.57	2.63	2.70	3.00	3.28
49046.7	1.37	1.31	1.83	1.78	2.08	2.06	2.29	2.32	2.57	2.63	2.69	3.00	3.28
49049.7	1.37	1.31	1.83	1.77	2.08	2.06	2.28	2.32	2.56	2.62	2.69	2.99	3.28
49052.6	1.37	1.30	1.83	1.77	2.07	2.05	2.28	2.31	2.56	2.62	2.68	2.99	3.27
49055.6	1.36	1.30	1.82	1.77	2.07	2.05	2.28	2.31	2.55	2.62	2.68	2.98	3.26
49058.5	1.36	1.30	1.82	1.76	2.06	2.05	2.27	2.31	2.55	2.61	2.68	2.98	3.26
49061.5	1.36	1.30	1.81	1.76	2.06	2.04	2.27	2.30	2.54	2.61	2.67	2.98	3.26
49064.5	1.35	1.29	1.81	1.76	2.05	2.04	2.26	2.30	2.54	2.60	2.67	2.97	3.25
49067.4	1.35	1.29	1.81	1.75	2.05	2.04	2.26	2.30	2.53	2.60	2.66	2.97	3.25
49070.4	1.35	1.29	1.80	1.75	2.05	2.03	2.25	2.29	2.53	2.60	2.66	2.97	3.25
49073.3	1.34	1.29	1.80	1.75	2.04	2.03	2.25	2.29	2.53	2.59	2.66	2.96	3.25
49076.3	1.34	1.28	1.79	1.74	2.04	2.03	2.24	2.29	2.52	2.59	2.65	2.96	3.24
49079.2	1.34	1.28	1.79	1.74	2.03	2.02	2.24	2.28	2.52	2.59	2.65	2.96	3.24
49082.2	1.33	1.28	1.79	1.74	2.03	2.02	2.24	2.28	2.51	2.58	2.64	2.95	3.24

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
49085.1	1.33	1.28	1.78	1.73	2.03	2.02	2.23	2.28	2.51	2.58	2.64	2.95	3.24
49088.1	1.33	1.27	1.78	1.73	2.02	2.01	2.23	2.27	2.50	2.58	2.64	2.94	3.23
49091.0	1.32	1.27	1.77	1.73	2.02	2.01	2.22	2.27	2.50	2.57	2.63	2.94	3.23
49094.0	1.32	1.27	1.77	1.72	2.01	2.01	2.22	2.26	2.50	2.57	2.63	2.94	3.23
49094.0	1.32	1.27	1.77	1.72	2.01	2.01	2.22	2.26	2.50	2.57	2.63	2.94	3.23
49103.5	1.32	1.27	1.77	1.72	2.01	2.00	2.22	2.26	2.50	2.56	2.63	2.94	3.22
49113.0	1.31	1.26	1.77	1.72	2.01	2.00	2.22	2.26	2.51	2.57	2.64	2.95	3.23
49122.5	1.31	1.26	1.77	1.72	2.02	2.00	2.23	2.27	2.51	2.57	2.65	2.96	3.25
49132.0	1.32	1.26	1.77	1.71	2.01	2.00	2.23	2.26	2.52	2.57	2.65	2.96	3.25
49141.5	1.31	1.25	1.76	1.71	2.01	1.99	2.22	2.26	2.51	2.57	2.64	2.95	3.25
49151.0	1.31	1.24	1.76	1.70	2.01	1.98	2.22	2.25	2.50	2.56	2.63	2.95	3.24
49160.5	1.31	1.24	1.76	1.69	2.00	1.97	2.21	2.24	2.49	2.55	2.62	2.94	3.23
49170.0	1.31	1.23	1.75	1.68	1.99	1.96	2.20	2.23	2.48	2.54	2.61	2.93	3.22
49179.5	1.30	1.23	1.74	1.68	1.99	1.95	2.19	2.22	2.47	2.53	2.60	2.91	3.21
49189.0	1.29	1.22	1.73	1.67	1.98	1.95	2.18	2.21	2.46	2.52	2.59	2.90	3.20
49197.0	1.63	1.54	2.21	2.13	2.53	2.50	2.82	2.86	3.22	3.29	3.42	3.86	4.30
49205.0	1.35	1.24	1.82	1.71	2.09	2.01	2.32	2.29	2.62	2.63	2.77	3.11	3.44
49214.6	1.35	1.24	1.83	1.72	2.10	2.02	2.33	2.31	2.64	2.65	2.79	3.13	3.47
49224.2	1.36	1.25	1.84	1.73	2.11	2.03	2.34	2.32	2.66	2.66	2.80	3.15	3.48
49233.8	1.36	1.25	1.85	1.73	2.12	2.04	2.36	2.33	2.67	2.67	2.81	3.16	3.49
49243.4	1.36	1.26	1.85	1.74	2.13	2.05	2.37	2.34	2.68	2.68	2.83	3.17	3.49
49253.0	1.36	1.26	1.86	1.75	2.13	2.06	2.37	2.35	2.69	2.69	2.84	3.18	3.50
49262.6	1.36	1.27	1.86	1.76	2.14	2.07	2.38	2.36	2.71	2.71	2.86	3.20	3.51
49272.2	1.36	1.27	1.86	1.76	2.14	2.08	2.39	2.37	2.72	2.72	2.87	3.21	3.53
49281.8	1.36	1.27	1.86	1.77	2.14	2.08	2.39	2.38	2.72	2.74	2.88	3.23	3.55
49291.4	1.36	1.27	1.86	1.77	2.15	2.09	2.40	2.39	2.73	2.75	2.89	3.25	3.58
49301.0	1.36	1.28	1.87	1.77	2.15	2.09	2.40	2.40	2.74	2.76	2.90	3.26	3.60
49301.0	1.36	1.28	1.87	1.77	2.15	2.09	2.40	2.40	2.74	2.76	2.90	3.26	3.60
49304.0	1.36	1.27	1.86	1.77	2.15	2.09	2.40	2.39	2.73	2.75	2.89	3.25	3.59
49307.0	1.36	1.27	1.86	1.76	2.14	2.08	2.39	2.39	2.73	2.75	2.88	3.25	3.58
49310.0	1.35	1.26	1.85	1.76	2.13	2.08	2.38	2.38	2.72	2.74	2.88	3.24	3.58
49313.0	1.35	1.26	1.84	1.75	2.13	2.07	2.38	2.37	2.71	2.73	2.87	3.23	3.57
49316.0	1.34	1.26	1.84	1.75	2.12	2.06	2.37	2.37	2.70	2.73	2.86	3.22	3.56
49319.0	1.34	1.25	1.83	1.74	2.11	2.06	2.36	2.36	2.70	2.72	2.85	3.22	3.55
49322.0	1.33	1.25	1.83	1.74	2.11	2.05	2.36	2.35	2.69	2.71	2.85	3.21	3.54
49325.0	1.33	1.25	1.82	1.73	2.10	2.05	2.35	2.35	2.68	2.70	2.84	3.20	3.54
49328.0	1.32	1.24	1.81	1.73	2.09	2.04	2.34	2.34	2.68	2.70	2.83	3.19	3.53
49331.0	1.32	1.24	1.81	1.72	2.09	2.04	2.34	2.33	2.67	2.69	2.83	3.19	3.52
49334.0	1.31	1.23	1.80	1.72	2.08	2.03	2.33	2.33	2.66	2.68	2.82	3.18	3.51
49337.0	1.31	1.23	1.80	1.71	2.08	2.02	2.32	2.32	2.66	2.68	2.81	3.17	3.51
49340.0	1.31	1.23	1.79	1.71	2.07	2.02	2.32	2.31	2.65	2.67	2.81	3.17	3.50
49343.0	1.30	1.22	1.79	1.70	2.06	2.01	2.31	2.31	2.64	2.66	2.80	3.16	3.49
49346.0	1.30	1.22	1.78	1.70	2.06	2.01	2.30	2.30	2.64	2.66	2.79	3.15	3.49
49349.0	1.29	1.22	1.78	1.69	2.05	2.00	2.30	2.30	2.63	2.65	2.79	3.15	3.48
49352.0	1.29	1.21	1.77	1.69	2.04	2.00	2.29	2.29	2.62	2.64	2.78	3.14	3.47
49355.0	1.28	1.21	1.76	1.68	2.04	1.99	2.28	2.28	2.62	2.64	2.77	3.13	3.47

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
49358.0	1.28	1.21	1.76	1.68	2.03	1.99	2.28	2.28	2.61	2.63	2.77	3.13	3.47
49361.0	1.28	1.20	1.75	1.68	2.03	1.98	2.27	2.27	2.60	2.62	2.76	3.12	3.46
49364.0	1.27	1.20	1.75	1.67	2.02	1.97	2.27	2.26	2.60	2.62	2.76	3.12	3.46
49367.0	1.27	1.20	1.74	1.67	2.01	1.97	2.26	2.26	2.59	2.61	2.75	3.12	3.45
49370.0	1.26	1.19	1.74	1.66	2.01	1.96	2.25	2.25	2.59	2.60	2.74	3.11	3.45
49373.0	1.26	1.19	1.73	1.66	2.00	1.96	2.25	2.25	2.58	2.60	2.74	3.11	3.44
49376.0	1.26	1.19	1.73	1.65	2.00	1.95	2.24	2.24	2.57	2.59	2.73	3.10	3.43
49379.0	1.25	1.18	1.72	1.65	1.99	1.95	2.23	2.23	2.56	2.58	2.72	3.09	3.43
49382.0	1.25	1.18	1.71	1.64	1.98	1.94	2.23	2.23	2.56	2.58	2.71	3.09	3.43
49385.0	1.24	1.18	1.71	1.64	1.98	1.94	2.22	2.22	2.55	2.57	2.71	3.08	3.42
49388.0	1.24	1.17	1.70	1.63	1.97	1.93	2.21	2.22	2.54	2.56	2.70	3.07	3.41
49391.0	1.23	1.17	1.70	1.63	1.97	1.93	2.21	2.21	2.54	2.56	2.69	3.06	3.41
49394.0	1.23	1.17	1.69	1.62	1.96	1.92	2.20	2.20	2.53	2.55	2.68	3.06	3.40
49397.0	1.23	1.16	1.69	1.62	1.95	1.91	2.19	2.20	2.52	2.54	2.68	3.05	3.39
49399.9	1.22	1.16	1.68	1.61	1.94	1.90	2.18	2.19	2.51	2.53	2.66	3.03	3.37
49402.9	1.21	1.15	1.67	1.60	1.93	1.89	2.17	2.17	2.49	2.52	2.65	3.02	3.36
49405.8	1.21	1.14	1.66	1.59	1.92	1.88	2.16	2.16	2.48	2.50	2.64	3.00	3.34
49408.8	1.20	1.14	1.65	1.59	1.91	1.88	2.15	2.15	2.47	2.49	2.62	2.99	3.32
49411.7	1.20	1.13	1.65	1.58	1.91	1.87	2.14	2.14	2.46	2.48	2.61	2.97	3.31
49414.6	1.19	1.13	1.64	1.57	1.90	1.86	2.13	2.13	2.45	2.47	2.60	2.96	3.29
49417.6	1.19	1.12	1.63	1.56	1.89	1.85	2.12	2.12	2.44	2.46	2.59	2.95	3.28
49420.5	1.18	1.12	1.62	1.56	1.88	1.84	2.11	2.11	2.43	2.45	2.58	2.94	3.27
49423.5	1.18	1.11	1.62	1.55	1.87	1.83	2.10	2.10	2.42	2.44	2.57	2.92	3.25
49426.4	1.17	1.11	1.61	1.54	1.86	1.83	2.09	2.10	2.41	2.43	2.56	2.91	3.24
49429.4	1.17	1.10	1.60	1.54	1.86	1.82	2.08	2.09	2.40	2.42	2.55	2.90	3.23
49432.3	1.16	1.10	1.60	1.53	1.85	1.81	2.08	2.08	2.39	2.41	2.54	2.89	3.22
49435.2	1.16	1.10	1.59	1.53	1.84	1.80	2.07	2.07	2.38	2.40	2.53	2.88	3.20
49438.2	1.15	1.09	1.59	1.52	1.84	1.80	2.06	2.06	2.37	2.39	2.52	2.87	3.19
49441.1	1.15	1.09	1.58	1.52	1.83	1.79	2.05	2.06	2.36	2.38	2.51	2.86	3.18
49444.1	1.15	1.08	1.58	1.51	1.82	1.78	2.05	2.05	2.35	2.37	2.50	2.85	3.17
49447.0	1.14	1.08	1.57	1.50	1.82	1.78	2.04	2.04	2.35	2.37	2.50	2.85	3.17
49449.9	1.14	1.08	1.57	1.50	1.81	1.77	2.04	2.03	2.34	2.36	2.49	2.84	3.16
49452.9	1.14	1.07	1.56	1.49	1.81	1.77	2.03	2.03	2.33	2.35	2.48	2.83	3.15
49455.8	1.13	1.07	1.56	1.49	1.80	1.76	2.02	2.02	2.33	2.34	2.47	2.82	3.14
49458.8	1.13	1.07	1.55	1.49	1.80	1.76	2.02	2.02	2.32	2.34	2.47	2.82	3.13
49461.7	1.13	1.06	1.55	1.48	1.79	1.75	2.01	2.01	2.32	2.33	2.46	2.81	3.13
49464.6	1.12	1.06	1.54	1.48	1.79	1.75	2.01	2.00	2.31	2.32	2.46	2.80	3.12
49467.6	1.12	1.06	1.54	1.47	1.78	1.74	2.00	2.00	2.30	2.32	2.45	2.80	3.12
49470.5	1.12	1.05	1.54	1.47	1.78	1.74	2.00	1.99	2.30	2.31	2.45	2.79	3.11
49473.5	1.11	1.05	1.53	1.46	1.78	1.73	1.99	1.99	2.30	2.30	2.44	2.79	3.11
49476.4	1.11	1.05	1.53	1.46	1.77	1.73	1.99	1.98	2.29	2.30	2.44	2.78	3.10
49479.4	1.11	1.05	1.53	1.46	1.77	1.72	1.99	1.98	2.29	2.29	2.43	2.78	3.10
49482.3	1.11	1.04	1.52	1.45	1.77	1.72	1.98	1.97	2.28	2.29	2.43	2.77	3.09
49485.2	1.11	1.04	1.52	1.45	1.76	1.71	1.98	1.97	2.28	2.28	2.42	2.77	3.09
49488.2	1.10	1.04	1.52	1.45	1.76	1.71	1.98	1.96	2.27	2.28	2.42	2.76	3.09
49491.1	1.10	1.04	1.52	1.44	1.76	1.71	1.97	1.96	2.27	2.27	2.41	2.76	3.08

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
49494.1	1.10	1.03	1.51	1.44	1.75	1.70	1.97	1.96	2.27	2.27	2.41	2.75	3.07
49497.0	1.10	1.03	1.51	1.44	1.75	1.70	1.97	1.95	2.26	2.26	2.41	2.75	3.07
49499.9	1.10	1.04	1.52	1.44	1.76	1.71	1.97	1.96	2.27	2.27	2.42	2.76	3.08
49502.8	1.11	1.04	1.52	1.45	1.76	1.71	1.98	1.97	2.28	2.28	2.43	2.78	3.10
49505.6	1.11	1.04	1.53	1.45	1.77	1.72	1.99	1.98	2.29	2.29	2.44	2.79	3.11
49508.5	1.11	1.05	1.54	1.46	1.78	1.73	2.00	1.98	2.30	2.30	2.45	2.80	3.13
49511.4	1.12	1.05	1.54	1.47	1.79	1.73	2.01	1.99	2.32	2.31	2.46	2.82	3.15
49514.3	1.12	1.06	1.55	1.47	1.79	1.74	2.02	2.00	2.33	2.32	2.48	2.83	3.16
49517.2	1.13	1.06	1.55	1.48	1.80	1.75	2.03	2.01	2.34	2.33	2.49	2.85	3.18
49520.1	1.13	1.06	1.56	1.48	1.81	1.76	2.04	2.02	2.35	2.34	2.50	2.86	3.20
49522.9	1.13	1.07	1.57	1.49	1.82	1.76	2.04	2.03	2.36	2.35	2.51	2.88	3.21
49525.8	1.14	1.07	1.57	1.49	1.82	1.77	2.05	2.03	2.37	2.36	2.52	2.89	3.23
49528.7	1.14	1.08	1.58	1.50	1.83	1.78	2.06	2.04	2.38	2.37	2.54	2.91	3.25
49531.6	1.15	1.08	1.58	1.51	1.84	1.78	2.07	2.05	2.39	2.39	2.55	2.92	3.27
49534.5	1.15	1.08	1.59	1.51	1.85	1.79	2.08	2.06	2.40	2.40	2.56	2.94	3.28
49537.4	1.16	1.09	1.60	1.52	1.85	1.80	2.09	2.07	2.41	2.41	2.57	2.95	3.30
49540.2	1.16	1.09	1.60	1.52	1.86	1.81	2.10	2.08	2.43	2.42	2.59	2.97	3.32
49543.1	1.16	1.10	1.61	1.53	1.87	1.81	2.11	2.09	2.44	2.43	2.60	2.98	3.34
49546.0	1.17	1.10	1.62	1.54	1.88	1.82	2.12	2.10	2.45	2.44	2.61	3.00	3.36
49548.9	1.17	1.10	1.62	1.54	1.89	1.83	2.13	2.10	2.46	2.45	2.62	3.01	3.38
49551.8	1.18	1.11	1.63	1.55	1.89	1.84	2.13	2.11	2.47	2.46	2.64	3.03	3.39
49554.6	1.18	1.11	1.63	1.55	1.90	1.84	2.14	2.12	2.48	2.47	2.65	3.04	3.41
49557.5	1.19	1.12	1.64	1.56	1.91	1.85	2.15	2.13	2.49	2.48	2.66	3.06	3.43
49560.4	1.19	1.12	1.65	1.57	1.92	1.86	2.16	2.14	2.51	2.49	2.67	3.08	3.45
49563.3	1.19	1.12	1.65	1.57	1.92	1.87	2.17	2.15	2.52	2.51	2.69	3.09	3.47
49566.2	1.20	1.13	1.66	1.58	1.93	1.87	2.18	2.16	2.53	2.52	2.70	3.11	3.49
49569.1	1.20	1.13	1.67	1.58	1.94	1.88	2.19	2.17	2.54	2.53	2.71	3.13	3.51
49571.9	1.21	1.14	1.67	1.59	1.95	1.89	2.20	2.18	2.55	2.54	2.73	3.14	3.53
49574.8	1.21	1.14	1.68	1.60	1.96	1.90	2.21	2.19	2.56	2.55	2.74	3.16	3.55
49577.7	1.22	1.15	1.69	1.60	1.96	1.90	2.22	2.20	2.58	2.56	2.75	3.18	3.57
49580.6	1.22	1.15	1.69	1.61	1.97	1.91	2.23	2.20	2.59	2.58	2.77	3.19	3.59
49583.5	1.22	1.15	1.70	1.62	1.98	1.92	2.24	2.21	2.60	2.59	2.78	3.21	3.61
49586.4	1.23	1.16	1.71	1.62	1.99	1.93	2.25	2.22	2.61	2.60	2.79	3.23	3.63
49589.2	1.23	1.16	1.71	1.63	2.00	1.93	2.26	2.23	2.63	2.61	2.81	3.24	3.66
49592.1	1.24	1.17	1.72	1.63	2.00	1.94	2.27	2.24	2.64	2.62	2.82	3.26	3.68
49595.0	1.24	1.17	1.73	1.64	2.01	1.95	2.28	2.25	2.65	2.64	2.83	3.28	3.70
49597.9	1.24	1.17	1.73	1.64	2.01	1.95	2.28	2.25	2.65	2.63	2.83	3.28	3.70
49600.8	1.24	1.17	1.72	1.64	2.01	1.95	2.28	2.25	2.65	2.63	2.83	3.28	3.70
49603.7	1.24	1.17	1.72	1.63	2.01	1.94	2.28	2.24	2.65	2.63	2.83	3.28	3.70
49606.6	1.24	1.17	1.72	1.63	2.01	1.94	2.28	2.24	2.65	2.62	2.83	3.28	3.70
49609.5	1.24	1.16	1.72	1.63	2.01	1.94	2.28	2.24	2.65	2.62	2.84	3.28	3.71
49612.4	1.24	1.16	1.72	1.63	2.01	1.94	2.28	2.24	2.65	2.62	2.84	3.28	3.71
49615.3	1.24	1.16	1.73	1.63	2.01	1.94	2.28	2.24	2.65	2.62	2.84	3.28	3.71
49618.2	1.24	1.16	1.73	1.63	2.01	1.93	2.28	2.24	2.65	2.62	2.84	3.29	3.71
49621.1	1.24	1.16	1.73	1.63	2.02	1.93	2.28	2.23	2.66	2.62	2.84	3.29	3.71
49623.9	1.24	1.16	1.73	1.62	2.02	1.93	2.28	2.23	2.66	2.62	2.84	3.29	3.72

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
49626.8	1.24	1.16	1.73	1.62	2.02	1.93	2.28	2.23	2.66	2.61	2.85	3.29	3.72
49629.7	1.24	1.16	1.73	1.62	2.02	1.93	2.29	2.23	2.66	2.61	2.85	3.30	3.72
49632.6	1.24	1.16	1.73	1.62	2.02	1.93	2.29	2.23	2.66	2.61	2.85	3.30	3.73
49635.5	1.24	1.16	1.73	1.62	2.02	1.93	2.29	2.23	2.67	2.61	2.86	3.31	3.73
49638.4	1.24	1.16	1.73	1.62	2.02	1.93	2.29	2.23	2.67	2.61	2.86	3.31	3.74
49641.3	1.25	1.16	1.73	1.62	2.03	1.93	2.29	2.23	2.67	2.61	2.86	3.32	3.74
49644.2	1.25	1.16	1.74	1.62	2.03	1.93	2.30	2.23	2.68	2.61	2.87	3.32	3.75
49647.1	1.25	1.15	1.74	1.62	2.03	1.93	2.30	2.23	2.68	2.61	2.87	3.33	3.76
49650.0	1.25	1.15	1.74	1.62	2.03	1.93	2.30	2.23	2.68	2.61	2.88	3.33	3.76
49652.9	1.25	1.15	1.74	1.62	2.03	1.93	2.31	2.23	2.69	2.62	2.88	3.34	3.77
49655.8	1.25	1.15	1.74	1.62	2.04	1.93	2.31	2.23	2.69	2.62	2.89	3.34	3.78
49658.7	1.25	1.15	1.74	1.62	2.04	1.93	2.31	2.23	2.70	2.62	2.89	3.35	3.79
49661.6	1.25	1.15	1.75	1.62	2.04	1.93	2.32	2.23	2.70	2.62	2.90	3.36	3.79
49664.5	1.25	1.15	1.75	1.62	2.05	1.93	2.32	2.23	2.71	2.62	2.90	3.36	3.80
49667.4	1.26	1.15	1.75	1.62	2.05	1.93	2.32	2.23	2.71	2.62	2.91	3.37	3.81
49670.3	1.26	1.15	1.75	1.62	2.05	1.93	2.33	2.23	2.72	2.62	2.91	3.38	3.82
49673.2	1.26	1.15	1.76	1.62	2.06	1.93	2.33	2.23	2.72	2.62	2.92	3.39	3.83
49676.1	1.26	1.15	1.76	1.62	2.06	1.93	2.34	2.24	2.73	2.63	2.93	3.40	3.84
49678.9	1.26	1.15	1.76	1.62	2.06	1.93	2.34	2.24	2.74	2.63	2.93	3.41	3.85
49681.8	1.26	1.16	1.76	1.62	2.07	1.93	2.35	2.24	2.74	2.63	2.94	3.42	3.86
49684.7	1.26	1.16	1.77	1.62	2.07	1.93	2.35	2.24	2.75	2.63	2.95	3.43	3.88
49687.6	1.27	1.16	1.77	1.62	2.07	1.94	2.35	2.24	2.76	2.64	2.96	3.44	3.89
49690.5	1.27	1.16	1.77	1.63	2.08	1.94	2.36	2.24	2.76	2.64	2.96	3.45	3.90
49693.4	1.27	1.16	1.78	1.63	2.08	1.94	2.36	2.25	2.77	2.64	2.97	3.46	3.91
49696.3	1.27	1.16	1.78	1.63	2.08	1.94	2.37	2.25	2.78	2.64	2.98	3.47	3.93
49699.2	1.27	1.16	1.78	1.63	2.09	1.94	2.37	2.25	2.78	2.65	2.99	3.48	3.94
49702.1	1.27	1.16	1.78	1.63	2.09	1.94	2.38	2.25	2.79	2.65	3.00	3.49	3.96
49705.0	1.28	1.16	1.79	1.63	2.10	1.95	2.38	2.25	2.80	2.65	3.01	3.50	3.97
49705.0	1.34	1.18	1.84	1.65	2.15	1.97	2.44	2.28	2.85	2.68	3.06	3.55	4.01
49708.0	1.33	1.17	1.83	1.64	2.14	1.96	2.42	2.27	2.83	2.66	3.04	3.52	3.98
49711.0	1.32	1.17	1.82	1.63	2.12	1.94	2.40	2.25	2.81	2.65	3.01	3.50	3.95
49714.0	1.31	1.16	1.80	1.62	2.10	1.93	2.39	2.23	2.79	2.63	2.99	3.47	3.92
49717.0	1.30	1.15	1.79	1.61	2.09	1.91	2.37	2.22	2.76	2.61	2.96	3.44	3.89
49720.0	1.29	1.14	1.77	1.59	2.07	1.90	2.35	2.20	2.74	2.59	2.94	3.41	3.86
49723.0	1.28	1.13	1.76	1.58	2.05	1.89	2.33	2.18	2.72	2.57	2.91	3.39	3.83
49726.0	1.26	1.12	1.74	1.57	2.04	1.87	2.31	2.17	2.69	2.55	2.89	3.36	3.80
49729.0	1.25	1.12	1.73	1.56	2.02	1.86	2.29	2.15	2.67	2.53	2.87	3.33	3.77
49732.0	1.24	1.11	1.71	1.55	2.00	1.84	2.27	2.13	2.65	2.51	2.84	3.30	3.74
49735.0	1.23	1.10	1.70	1.53	1.98	1.83	2.25	2.11	2.62	2.49	2.82	3.27	3.71
49738.0	1.22	1.09	1.68	1.52	1.96	1.81	2.23	2.10	2.60	2.46	2.79	3.24	3.68
49741.0	1.21	1.08	1.67	1.51	1.95	1.80	2.21	2.08	2.58	2.44	2.76	3.21	3.65
49744.0	1.20	1.07	1.65	1.50	1.93	1.78	2.19	2.06	2.55	2.42	2.74	3.19	3.61
49747.0	1.19	1.06	1.64	1.48	1.91	1.77	2.17	2.04	2.53	2.40	2.71	3.16	3.58
49750.0	1.18	1.05	1.62	1.47	1.89	1.75	2.14	2.02	2.50	2.38	2.69	3.13	3.55
49753.0	1.17	1.04	1.61	1.46	1.88	1.74	2.12	2.01	2.48	2.36	2.66	3.10	3.51
49756.0	1.16	1.03	1.59	1.44	1.86	1.72	2.10	1.99	2.46	2.34	2.64	3.06	3.48

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
49759.0	1.14	1.03	1.58	1.43	1.84	1.70	2.08	1.97	2.43	2.31	2.61	3.03	3.44
49762.0	1.13	1.02	1.56	1.42	1.82	1.69	2.06	1.95	2.41	2.29	2.58	3.00	3.41
49765.0	1.12	1.01	1.55	1.41	1.80	1.67	2.04	1.94	2.38	2.27	2.55	2.97	3.37
49768.0	1.11	1.00	1.53	1.39	1.78	1.66	2.02	1.92	2.35	2.25	2.53	2.94	3.33
49771.0	1.10	0.99	1.51	1.38	1.76	1.64	2.00	1.90	2.33	2.23	2.50	2.91	3.30
49774.0	1.09	0.98	1.50	1.37	1.74	1.63	1.97	1.88	2.30	2.21	2.47	2.87	3.26
49777.0	1.07	0.97	1.48	1.35	1.72	1.61	1.95	1.86	2.28	2.18	2.44	2.84	3.23
49780.0	1.06	0.96	1.46	1.34	1.71	1.60	1.93	1.84	2.25	2.16	2.42	2.81	3.19
49783.0	1.05	0.95	1.45	1.33	1.69	1.58	1.91	1.83	2.23	2.14	2.39	2.78	3.16
49786.0	1.04	0.94	1.43	1.31	1.67	1.56	1.89	1.81	2.20	2.12	2.36	2.75	3.12
49789.0	1.03	0.93	1.41	1.30	1.65	1.55	1.86	1.79	2.18	2.10	2.33	2.71	3.08
49792.0	1.01	0.92	1.40	1.29	1.63	1.53	1.84	1.77	2.15	2.07	2.31	2.68	3.05
49795.0	1.00	0.91	1.38	1.27	1.61	1.51	1.82	1.75	2.12	2.05	2.28	2.65	3.01
49797.9	1.00	0.91	1.38	1.27	1.61	1.52	1.82	1.75	2.13	2.05	2.28	2.66	3.02
49800.7	1.01	0.92	1.39	1.28	1.61	1.52	1.83	1.75	2.13	2.06	2.29	2.66	3.03
49803.6	1.01	0.92	1.39	1.28	1.62	1.52	1.83	1.76	2.14	2.06	2.29	2.67	3.03
49806.4	1.01	0.92	1.39	1.28	1.62	1.52	1.84	1.76	2.14	2.06	2.30	2.68	3.04
49809.3	1.01	0.92	1.39	1.28	1.62	1.52	1.84	1.76	2.15	2.07	2.31	2.68	3.05
49812.2	1.01	0.92	1.40	1.28	1.63	1.53	1.84	1.76	2.15	2.07	2.31	2.69	3.06
49815.0	1.02	0.92	1.40	1.28	1.63	1.53	1.85	1.77	2.16	2.07	2.32	2.70	3.07
49817.9	1.02	0.92	1.40	1.29	1.63	1.53	1.85	1.77	2.16	2.08	2.32	2.70	3.08
49820.8	1.02	0.92	1.40	1.29	1.64	1.53	1.86	1.77	2.17	2.08	2.33	2.71	3.09
49823.6	1.02	0.92	1.41	1.29	1.64	1.54	1.86	1.77	2.17	2.08	2.33	2.72	3.09
49826.5	1.02	0.93	1.41	1.29	1.64	1.54	1.86	1.78	2.18	2.09	2.34	2.73	3.10
49829.3	1.02	0.93	1.41	1.29	1.65	1.54	1.87	1.78	2.18	2.09	2.35	2.73	3.11
49832.2	1.03	0.93	1.42	1.29	1.65	1.54	1.87	1.78	2.19	2.09	2.35	2.74	3.12
49835.1	1.03	0.93	1.42	1.30	1.65	1.54	1.88	1.78	2.19	2.10	2.36	2.75	3.13
49837.9	1.03	0.93	1.42	1.30	1.66	1.55	1.88	1.79	2.20	2.10	2.36	2.76	3.14
49840.8	1.03	0.93	1.42	1.30	1.66	1.55	1.88	1.79	2.20	2.10	2.37	2.76	3.15
49843.6	1.03	0.93	1.43	1.30	1.67	1.55	1.89	1.79	2.21	2.11	2.38	2.77	3.16
49846.5	1.04	0.93	1.43	1.30	1.67	1.55	1.89	1.80	2.22	2.11	2.38	2.78	3.17
49849.4	1.04	0.93	1.43	1.30	1.67	1.55	1.90	1.80	2.22	2.11	2.39	2.79	3.18
49852.2	1.04	0.94	1.44	1.31	1.68	1.56	1.90	1.80	2.23	2.12	2.39	2.80	3.19
49855.1	1.04	0.94	1.44	1.31	1.68	1.56	1.91	1.80	2.23	2.12	2.40	2.80	3.20
49857.9	1.04	0.94	1.44	1.31	1.68	1.56	1.91	1.81	2.24	2.12	2.41	2.81	3.21
49860.8	1.05	0.94	1.44	1.31	1.69	1.56	1.91	1.81	2.24	2.13	2.41	2.82	3.22
49863.7	1.05	0.94	1.45	1.31	1.69	1.57	1.92	1.81	2.25	2.13	2.42	2.83	3.23
49866.5	1.05	0.94	1.45	1.32	1.69	1.57	1.92	1.81	2.25	2.13	2.43	2.84	3.24
49869.4	1.05	0.94	1.45	1.32	1.70	1.57	1.93	1.82	2.26	2.14	2.43	2.85	3.25
49872.3	1.05	0.94	1.46	1.32	1.70	1.57	1.93	1.82	2.27	2.14	2.44	2.86	3.27
49875.1	1.06	0.95	1.46	1.32	1.71	1.57	1.94	1.82	2.27	2.14	2.45	2.86	3.28
49878.0	1.06	0.95	1.46	1.32	1.71	1.58	1.94	1.83	2.28	2.15	2.45	2.87	3.29
49880.8	1.06	0.95	1.47	1.32	1.71	1.58	1.95	1.83	2.28	2.15	2.46	2.88	3.30
49883.7	1.06	0.95	1.47	1.33	1.72	1.58	1.95	1.83	2.29	2.15	2.47	2.89	3.31
49886.6	1.06	0.95	1.47	1.33	1.72	1.58	1.96	1.83	2.30	2.16	2.47	2.90	3.32
49889.4	1.07	0.95	1.47	1.33	1.72	1.59	1.96	1.84	2.30	2.16	2.48	2.91	3.34

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
49892.3	1.07	0.95	1.48	1.33	1.73	1.59	1.97	1.84	2.31	2.17	2.49	2.92	3.35
49895.1	1.07	0.95	1.48	1.33	1.73	1.59	1.97	1.84	2.32	2.17	2.50	2.93	3.36
49898.0	1.07	0.95	1.48	1.33	1.74	1.59	1.98	1.85	2.32	2.17	2.50	2.94	3.37
49901.0	1.06	0.95	1.47	1.33	1.72	1.58	1.96	1.83	2.31	2.16	2.49	2.92	3.35
49904.0	1.06	0.94	1.46	1.32	1.71	1.57	1.95	1.82	2.29	2.14	2.47	2.90	3.33
49907.0	1.05	0.93	1.45	1.31	1.70	1.56	1.93	1.81	2.27	2.13	2.45	2.88	3.30
49910.0	1.04	0.93	1.44	1.30	1.69	1.55	1.92	1.79	2.26	2.11	2.44	2.86	3.28
49913.0	1.04	0.92	1.43	1.29	1.68	1.54	1.91	1.78	2.24	2.10	2.42	2.84	3.26
49916.0	1.03	0.92	1.42	1.28	1.67	1.53	1.90	1.77	2.23	2.08	2.40	2.82	3.24
49919.0	1.02	0.91	1.42	1.27	1.66	1.52	1.88	1.76	2.21	2.07	2.39	2.80	3.22
49922.0	1.02	0.90	1.41	1.26	1.65	1.51	1.87	1.75	2.20	2.05	2.37	2.79	3.20
49925.0	1.01	0.90	1.40	1.25	1.63	1.50	1.86	1.73	2.19	2.04	2.36	2.77	3.18
49928.0	1.00	0.89	1.39	1.25	1.62	1.49	1.85	1.72	2.17	2.03	2.34	2.75	3.16
49931.0	1.00	0.89	1.38	1.24	1.61	1.48	1.84	1.71	2.16	2.01	2.33	2.73	3.14
49934.0	0.99	0.88	1.37	1.23	1.60	1.47	1.82	1.70	2.14	2.00	2.31	2.72	3.12
49937.0	0.98	0.88	1.36	1.22	1.59	1.46	1.81	1.69	2.13	1.99	2.30	2.70	3.10
49940.0	0.98	0.87	1.35	1.21	1.58	1.45	1.80	1.68	2.12	1.97	2.28	2.68	3.08
49943.0	0.97	0.86	1.35	1.21	1.57	1.44	1.79	1.67	2.11	1.96	2.27	2.67	3.06
49946.0	0.97	0.86	1.34	1.20	1.57	1.43	1.78	1.66	2.09	1.95	2.26	2.65	3.04
49949.0	0.96	0.85	1.33	1.19	1.56	1.42	1.77	1.65	2.08	1.94	2.24	2.64	3.03
49952.0	0.95	0.85	1.32	1.19	1.55	1.41	1.76	1.64	2.07	1.93	2.23	2.62	3.01
49955.0	0.95	0.84	1.31	1.18	1.54	1.41	1.75	1.63	2.06	1.91	2.22	2.61	2.99
49958.0	0.94	0.84	1.31	1.17	1.53	1.40	1.74	1.62	2.04	1.90	2.20	2.59	2.98
49961.0	0.94	0.83	1.30	1.16	1.52	1.39	1.73	1.61	2.03	1.89	2.19	2.58	2.96
49964.0	0.93	0.83	1.29	1.16	1.51	1.38	1.72	1.60	2.02	1.88	2.18	2.56	2.94
49967.0	0.93	0.82	1.28	1.15	1.50	1.37	1.71	1.59	2.01	1.87	2.17	2.55	2.93
49970.0	0.92	0.82	1.28	1.14	1.49	1.36	1.70	1.58	2.00	1.86	2.16	2.53	2.91
49973.0	0.92	0.81	1.27	1.14	1.49	1.36	1.69	1.57	1.99	1.85	2.14	2.52	2.89
49976.0	0.91	0.81	1.26	1.13	1.48	1.35	1.68	1.56	1.98	1.84	2.13	2.51	2.88
49979.0	0.91	0.80	1.26	1.12	1.47	1.34	1.67	1.55	1.97	1.82	2.12	2.49	2.86
49982.0	0.90	0.80	1.25	1.12	1.46	1.33	1.66	1.54	1.96	1.81	2.11	2.48	2.85
49985.0	0.90	0.80	1.24	1.11	1.45	1.33	1.65	1.53	1.94	1.80	2.10	2.47	2.83
49988.0	0.89	0.79	1.24	1.11	1.45	1.32	1.65	1.52	1.93	1.79	2.09	2.45	2.82
49991.0	0.89	0.79	1.23	1.10	1.44	1.31	1.64	1.52	1.92	1.78	2.08	2.44	2.81
49994.0	0.88	0.78	1.22	1.09	1.43	1.30	1.63	1.51	1.91	1.77	2.07	2.43	2.79
49997.0	0.88	0.78	1.22	1.09	1.42	1.30	1.62	1.50	1.90	1.76	2.06	2.42	2.78
50000.0	0.87	0.77	1.21	1.08	1.42	1.29	1.61	1.49	1.89	1.75	2.04	2.40	2.76
50003.0	0.87	0.77	1.21	1.08	1.41	1.29	1.61	1.49	1.89	1.75	2.04	2.40	2.76
50005.9	0.87	0.77	1.21	1.08	1.41	1.28	1.61	1.49	1.89	1.75	2.04	2.40	2.76
50008.9	0.87	0.77	1.21	1.08	1.41	1.28	1.61	1.48	1.89	1.75	2.04	2.40	2.76
50011.8	0.87	0.77	1.20	1.07	1.41	1.28	1.60	1.48	1.89	1.74	2.04	2.39	2.76
50014.8	0.87	0.77	1.20	1.07	1.41	1.28	1.60	1.48	1.88	1.74	2.03	2.39	2.75
50017.8	0.87	0.77	1.20	1.07	1.40	1.28	1.60	1.48	1.88	1.74	2.03	2.39	2.75
50020.7	0.86	0.76	1.20	1.07	1.40	1.27	1.60	1.47	1.88	1.73	2.03	2.39	2.75
50023.7	0.86	0.76	1.20	1.07	1.40	1.27	1.59	1.47	1.88	1.73	2.03	2.38	2.75
50026.7	0.86	0.76	1.19	1.06	1.40	1.27	1.59	1.47	1.87	1.73	2.02	2.38	2.75

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
50029.6	0.86	0.76	1.19	1.06	1.40	1.27	1.59	1.47	1.87	1.73	2.02	2.38	2.74
50032.6	0.86	0.76	1.19	1.06	1.39	1.26	1.59	1.46	1.87	1.72	2.02	2.38	2.74
50035.5	0.86	0.76	1.19	1.06	1.39	1.26	1.59	1.46	1.87	1.72	2.02	2.38	2.74
50038.5	0.86	0.76	1.19	1.06	1.39	1.26	1.58	1.46	1.86	1.72	2.01	2.37	2.74
50041.5	0.86	0.76	1.19	1.05	1.39	1.26	1.58	1.46	1.86	1.71	2.01	2.37	2.74
50044.4	0.85	0.75	1.18	1.05	1.39	1.26	1.58	1.45	1.86	1.71	2.01	2.37	2.73
50047.4	0.85	0.75	1.18	1.05	1.38	1.25	1.58	1.45	1.86	1.71	2.01	2.37	2.73
50050.3	0.85	0.75	1.18	1.05	1.38	1.25	1.57	1.45	1.86	1.71	2.00	2.36	2.73
50053.3	0.85	0.75	1.18	1.05	1.38	1.25	1.57	1.45	1.85	1.70	2.00	2.36	2.73
50056.3	0.85	0.75	1.18	1.05	1.38	1.25	1.57	1.44	1.85	1.70	2.00	2.36	2.73
50059.2	0.85	0.75	1.17	1.04	1.38	1.25	1.57	1.44	1.85	1.70	2.00	2.36	2.72
50062.2	0.85	0.75	1.17	1.04	1.37	1.24	1.57	1.44	1.85	1.69	2.00	2.36	2.72
50065.2	0.84	0.74	1.17	1.04	1.37	1.24	1.56	1.44	1.84	1.69	1.99	2.35	2.72
50068.1	0.84	0.74	1.17	1.04	1.37	1.24	1.56	1.43	1.84	1.69	1.99	2.35	2.72
50071.1	0.84	0.74	1.17	1.04	1.37	1.24	1.56	1.43	1.84	1.69	1.99	2.35	2.72
50074.0	0.84	0.74	1.17	1.03	1.37	1.23	1.56	1.43	1.84	1.68	1.99	2.35	2.71
50077.0	0.84	0.74	1.16	1.03	1.36	1.23	1.55	1.43	1.83	1.68	1.98	2.34	2.71
50080.0	0.84	0.74	1.16	1.03	1.36	1.23	1.55	1.42	1.83	1.68	1.98	2.34	2.71
50082.9	0.84	0.74	1.16	1.03	1.36	1.23	1.55	1.42	1.83	1.67	1.98	2.34	2.71
50085.9	0.83	0.73	1.16	1.03	1.36	1.23	1.55	1.42	1.83	1.67	1.98	2.34	2.71
50088.8	0.83	0.73	1.16	1.02	1.36	1.22	1.55	1.42	1.82	1.67	1.97	2.33	2.71
50091.8	0.83	0.73	1.15	1.02	1.35	1.22	1.54	1.41	1.82	1.67	1.97	2.33	2.70
50094.8	0.83	0.73	1.15	1.02	1.35	1.22	1.54	1.41	1.82	1.66	1.97	2.33	2.70
50097.7	0.83	0.73	1.15	1.02	1.35	1.22	1.54	1.41	1.82	1.66	1.97	2.33	2.70
50100.7	0.83	0.73	1.15	1.02	1.35	1.21	1.54	1.41	1.82	1.66	1.96	2.33	2.70
50103.7	0.83	0.73	1.15	1.02	1.35	1.21	1.54	1.40	1.81	1.65	1.96	2.32	2.70
50106.6	0.83	0.73	1.15	1.01	1.34	1.21	1.53	1.40	1.81	1.65	1.96	2.32	2.69
50109.6	0.82	0.72	1.14	1.01	1.34	1.21	1.53	1.40	1.81	1.65	1.96	2.32	2.69
50112.5	0.82	0.72	1.14	1.01	1.34	1.21	1.53	1.40	1.81	1.65	1.96	2.32	2.69
50115.5	0.82	0.72	1.14	1.01	1.34	1.20	1.53	1.39	1.80	1.64	1.95	2.31	2.69
50118.5	0.82	0.72	1.14	1.01	1.34	1.20	1.52	1.39	1.80	1.64	1.95	2.31	2.69
50121.4	0.82	0.72	1.14	1.00	1.33	1.20	1.52	1.39	1.80	1.64	1.95	2.31	2.69
50124.4	0.82	0.72	1.14	1.00	1.33	1.20	1.52	1.39	1.80	1.63	1.95	2.31	2.68
50127.3	0.82	0.72	1.13	1.00	1.33	1.20	1.52	1.38	1.79	1.63	1.94	2.31	2.68
50130.3	0.81	0.71	1.13	1.00	1.33	1.19	1.52	1.38	1.79	1.63	1.94	2.30	2.68
50133.3	0.81	0.71	1.13	1.00	1.33	1.19	1.51	1.38	1.79	1.63	1.94	2.30	2.68
50136.2	0.81	0.71	1.13	1.00	1.32	1.19	1.51	1.38	1.79	1.62	1.94	2.30	2.68
50139.2	0.81	0.71	1.13	0.99	1.32	1.19	1.51	1.38	1.78	1.62	1.93	2.30	2.68
50142.2	0.81	0.71	1.12	0.99	1.32	1.18	1.51	1.37	1.78	1.62	1.93	2.29	2.67
50145.1	0.81	0.71	1.12	0.99	1.32	1.18	1.50	1.37	1.78	1.61	1.93	2.29	2.67
50148.1	0.81	0.71	1.12	0.99	1.32	1.18	1.50	1.37	1.78	1.61	1.93	2.29	2.67
50151.0	0.80	0.71	1.12	0.99	1.31	1.18	1.50	1.37	1.78	1.61	1.93	2.29	2.67
50154.0	0.80	0.70	1.12	0.98	1.31	1.18	1.50	1.36	1.77	1.61	1.92	2.29	2.67
50156.9	0.80	0.70	1.11	0.98	1.31	1.17	1.49	1.36	1.77	1.60	1.92	2.28	2.66
50159.9	0.80	0.70	1.11	0.98	1.30	1.17	1.49	1.35	1.76	1.60	1.91	2.27	2.65
50162.8	0.80	0.70	1.11	0.98	1.30	1.17	1.48	1.35	1.76	1.59	1.90	2.26	2.65

Notes

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Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
50165.8	0.79	0.70	1.10	0.97	1.29	1.16	1.48	1.35	1.75	1.59	1.90	2.26	2.64
50168.7	0.79	0.69	1.10	0.97	1.29	1.16	1.47	1.34	1.75	1.58	1.89	2.25	2.63
50171.7	0.79	0.69	1.09	0.97	1.29	1.15	1.47	1.34	1.74	1.58	1.89	2.24	2.63
50174.6	0.78	0.69	1.09	0.96	1.28	1.15	1.46	1.33	1.73	1.57	1.88	2.24	2.62
50177.5	0.78	0.69	1.09	0.96	1.28	1.15	1.46	1.33	1.73	1.57	1.88	2.23	2.61
50180.5	0.78	0.68	1.08	0.96	1.27	1.14	1.45	1.32	1.72	1.56	1.87	2.23	2.60
50183.4	0.78	0.68	1.08	0.95	1.27	1.14	1.45	1.32	1.72	1.56	1.86	2.22	2.60
50186.4	0.77	0.68	1.08	0.95	1.26	1.14	1.45	1.32	1.71	1.55	1.86	2.21	2.59
50189.3	0.77	0.68	1.07	0.95	1.26	1.13	1.44	1.31	1.71	1.55	1.85	2.21	2.58
50192.3	0.77	0.68	1.07	0.95	1.26	1.13	1.44	1.31	1.70	1.54	1.85	2.20	2.58
50195.2	0.77	0.67	1.07	0.94	1.25	1.13	1.43	1.30	1.70	1.54	1.84	2.19	2.57
50198.1	0.76	0.67	1.06	0.94	1.25	1.12	1.43	1.30	1.69	1.53	1.84	2.19	2.56
50201.1	0.76	0.67	1.06	0.94	1.24	1.12	1.42	1.30	1.69	1.53	1.83	2.18	2.56
50204.0	0.76	0.67	1.06	0.93	1.24	1.12	1.42	1.29	1.68	1.52	1.82	2.17	2.55
50207.0	0.76	0.67	1.05	0.93	1.24	1.11	1.41	1.29	1.68	1.52	1.82	2.17	2.54
50209.9	0.75	0.66	1.05	0.93	1.23	1.11	1.41	1.28	1.67	1.52	1.81	2.16	2.54
50212.8	0.75	0.66	1.05	0.93	1.23	1.11	1.40	1.28	1.67	1.51	1.81	2.16	2.53
50215.8	0.75	0.66	1.04	0.92	1.22	1.10	1.40	1.28	1.66	1.51	1.80	2.15	2.52
50218.7	0.75	0.66	1.04	0.92	1.22	1.10	1.40	1.27	1.66	1.50	1.80	2.14	2.52
50221.7	0.74	0.66	1.04	0.92	1.22	1.10	1.39	1.27	1.65	1.50	1.79	2.14	2.51
50224.6	0.74	0.65	1.03	0.91	1.21	1.09	1.39	1.27	1.65	1.49	1.79	2.13	2.50
50227.6	0.74	0.65	1.03	0.91	1.21	1.09	1.38	1.26	1.64	1.49	1.78	2.13	2.50
50230.5	0.74	0.65	1.03	0.91	1.21	1.09	1.38	1.26	1.64	1.48	1.78	2.12	2.49
50233.4	0.73	0.65	1.02	0.91	1.20	1.08	1.37	1.25	1.63	1.48	1.77	2.11	2.49
50236.4	0.73	0.65	1.02	0.90	1.20	1.08	1.37	1.25	1.63	1.48	1.77	2.11	2.48
50239.3	0.73	0.64	1.02	0.90	1.19	1.08	1.37	1.25	1.62	1.47	1.76	2.10	2.47
50242.3	0.73	0.64	1.01	0.90	1.19	1.07	1.36	1.24	1.62	1.47	1.76	2.10	2.47
50245.2	0.73	0.64	1.01	0.90	1.19	1.07	1.36	1.24	1.61	1.46	1.75	2.09	2.46
50248.2	0.72	0.64	1.01	0.89	1.18	1.07	1.35	1.24	1.61	1.46	1.75	2.08	2.45
50251.1	0.72	0.64	1.00	0.89	1.18	1.06	1.35	1.23	1.60	1.45	1.74	2.08	2.45
50254.0	0.72	0.63	1.00	0.89	1.18	1.06	1.35	1.23	1.60	1.45	1.73	2.07	2.44
50257.0	0.72	0.63	1.00	0.88	1.17	1.06	1.34	1.23	1.59	1.45	1.73	2.07	2.44
50259.9	0.71	0.63	0.99	0.88	1.17	1.05	1.34	1.22	1.59	1.44	1.72	2.06	2.43
50262.9	0.71	0.63	0.99	0.88	1.16	1.05	1.33	1.22	1.58	1.44	1.72	2.06	2.42
50265.8	0.71	0.63	0.99	0.88	1.16	1.05	1.33	1.21	1.58	1.43	1.71	2.05	2.42
50268.8	0.71	0.63	0.98	0.87	1.16	1.05	1.33	1.21	1.57	1.43	1.71	2.04	2.41
50271.7	0.70	0.62	0.98	0.87	1.15	1.04	1.32	1.21	1.57	1.43	1.71	2.04	2.40
50274.6	0.70	0.62	0.98	0.87	1.15	1.04	1.32	1.20	1.56	1.42	1.70	2.03	2.40
50277.6	0.70	0.62	0.98	0.87	1.15	1.04	1.31	1.20	1.56	1.42	1.70	2.03	2.39
50280.5	0.70	0.62	0.97	0.86	1.14	1.03	1.31	1.20	1.56	1.41	1.69	2.02	2.39
50283.5	0.70	0.62	0.97	0.86	1.14	1.03	1.31	1.19	1.55	1.41	1.69	2.02	2.38
50286.4	0.69	0.61	0.97	0.86	1.14	1.03	1.30	1.19	1.55	1.41	1.68	2.01	2.37
50289.3	0.69	0.61	0.96	0.86	1.13	1.02	1.30	1.19	1.54	1.40	1.68	2.01	2.37
50292.3	0.69	0.61	0.96	0.85	1.13	1.02	1.29	1.18	1.54	1.40	1.67	2.00	2.36
50295.2	0.69	0.61	0.96	0.85	1.13	1.02	1.29	1.18	1.53	1.39	1.67	2.00	2.36
50298.2	0.69	0.61	0.96	0.85	1.12	1.02	1.29	1.18	1.53	1.39	1.66	1.99	2.35

Notes

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Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: ULHH_202207_V054_D

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
50301.1	0.68	0.61	0.95	0.85	1.12	1.01	1.28	1.17	1.52	1.39	1.66	1.98	2.35
50304.1	0.68	0.60	0.95	0.85	1.12	1.01	1.28	1.17	1.52	1.38	1.65	1.98	2.34
50307.0	0.68	0.60	0.95	0.84	1.11	1.01	1.28	1.17	1.52	1.38	1.65	1.97	2.33
50309.9	0.68	0.60	0.94	0.84	1.11	1.00	1.27	1.16	1.51	1.37	1.64	1.97	2.32
50312.8	0.67	0.60	0.94	0.84	1.10	1.00	1.26	1.16	1.50	1.37	1.63	1.96	2.32
50315.8	0.67	0.60	0.94	0.83	1.10	1.00	1.26	1.15	1.50	1.36	1.63	1.95	2.31
50318.7	0.67	0.59	0.93	0.83	1.10	0.99	1.25	1.15	1.49	1.36	1.62	1.94	2.30
50321.6	0.67	0.59	0.93	0.83	1.09	0.99	1.25	1.15	1.49	1.35	1.62	1.94	2.29
50324.5	0.66	0.59	0.92	0.82	1.09	0.99	1.24	1.14	1.48	1.35	1.61	1.93	2.28
50327.5	0.66	0.59	0.92	0.82	1.08	0.98	1.24	1.14	1.47	1.34	1.60	1.92	2.27
50330.4	0.66	0.59	0.92	0.82	1.08	0.98	1.24	1.13	1.47	1.34	1.60	1.91	2.27
50333.3	0.66	0.58	0.91	0.82	1.07	0.97	1.23	1.13	1.46	1.33	1.59	1.91	2.26
50336.2	0.65	0.58	0.91	0.81	1.07	0.97	1.23	1.13	1.46	1.33	1.58	1.90	2.25
50339.2	0.65	0.58	0.91	0.81	1.07	0.97	1.22	1.12	1.45	1.32	1.58	1.89	2.24
50342.1	0.65	0.58	0.90	0.81	1.06	0.96	1.22	1.12	1.45	1.32	1.57	1.89	2.23
50345.0	0.65	0.58	0.90	0.80	1.06	0.96	1.21	1.11	1.44	1.31	1.57	1.88	2.23
50347.9	0.64	0.57	0.90	0.80	1.05	0.96	1.21	1.11	1.44	1.31	1.56	1.87	2.22
50350.8	0.64	0.57	0.89	0.80	1.05	0.95	1.20	1.11	1.43	1.31	1.56	1.87	2.21
50353.8	0.64	0.57	0.89	0.80	1.05	0.95	1.20	1.10	1.42	1.30	1.55	1.86	2.20
50356.7	0.64	0.57	0.89	0.79	1.04	0.95	1.19	1.10	1.42	1.30	1.54	1.85	2.19
50359.6	0.63	0.57	0.88	0.79	1.04	0.94	1.19	1.10	1.41	1.29	1.54	1.85	2.19
50362.5	0.63	0.56	0.88	0.79	1.03	0.94	1.18	1.09	1.41	1.29	1.53	1.84	2.18
50365.5	0.63	0.56	0.88	0.79	1.03	0.94	1.18	1.09	1.40	1.28	1.53	1.83	2.17
50368.4	0.63	0.56	0.87	0.78	1.03	0.94	1.18	1.08	1.40	1.28	1.52	1.83	2.17
50371.3	0.62	0.56	0.87	0.78	1.02	0.93	1.17	1.08	1.39	1.28	1.52	1.82	2.16
50374.2	0.62	0.56	0.87	0.78	1.02	0.93	1.17	1.08	1.39	1.27	1.51	1.81	2.15
50377.2	0.62	0.55	0.86	0.77	1.02	0.93	1.16	1.07	1.38	1.27	1.51	1.81	2.14
50380.1	0.62	0.55	0.86	0.77	1.01	0.92	1.16	1.07	1.38	1.26	1.50	1.80	2.14
50383.0	0.61	0.55	0.86	0.77	1.01	0.92	1.16	1.07	1.37	1.26	1.50	1.80	2.13
50385.9	0.61	0.55	0.85	0.77	1.00	0.92	1.15	1.06	1.37	1.26	1.49	1.79	2.12
50388.8	0.61	0.55	0.85	0.76	1.00	0.91	1.15	1.06	1.37	1.25	1.49	1.78	2.12
50391.8	0.61	0.55	0.85	0.76	1.00	0.91	1.14	1.06	1.36	1.25	1.48	1.78	2.11
50394.7	0.61	0.54	0.85	0.76	0.99	0.91	1.14	1.05	1.36	1.24	1.48	1.77	2.10
50397.6	0.60	0.54	0.84	0.76	0.99	0.91	1.14	1.05	1.35	1.24	1.47	1.77	2.10
50400.5	0.60	0.54	0.84	0.76	0.99	0.90	1.13	1.05	1.35	1.24	1.47	1.76	2.09
50403.5	0.60	0.54	0.84	0.75	0.98	0.90	1.13	1.04	1.34	1.23	1.46	1.75	2.08
50406.4	0.60	0.54	0.83	0.75	0.98	0.90	1.12	1.04	1.34	1.23	1.46	1.75	2.08
50409.3	0.60	0.54	0.83	0.75	0.98	0.90	1.12	1.04	1.33	1.22	1.45	1.74	2.07
50412.2	0.59	0.53	0.83	0.75	0.97	0.89	1.12	1.03	1.33	1.22	1.45	1.74	2.06
50415.2	0.59	0.53	0.83	0.74	0.97	0.89	1.11	1.03	1.32	1.22	1.44	1.73	2.06
50418.1	0.59	0.53	0.82	0.74	0.97	0.89	1.11	1.03	1.32	1.21	1.44	1.73	2.05
50421.0	0.59	0.53	0.82	0.74	0.96	0.88	1.11	1.03	1.32	1.21	1.43	1.72	2.04
50423.9	0.59	0.53	0.82	0.74	0.96	0.88	1.10	1.02	1.31	1.21	1.43	1.72	2.04
50426.8	0.58	0.53	0.81	0.74	0.96	0.88	1.10	1.02	1.31	1.20	1.42	1.71	2.03
50429.8	0.58	0.52	0.81	0.73	0.95	0.88	1.10	1.02	1.30	1.20	1.42	1.70	2.03
50432.7	0.58	0.52	0.81	0.73	0.95	0.87	1.09	1.01	1.30	1.20	1.41	1.70	2.02

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix C Table 2: In-channel (1D) results - maximum velocity (m/s)

Model version: *ULHH_202207_V054_D*

Chainage (m)	Storm scenario												
	39% AEP	39% AEP CC	20% AEP	20% AEP CC	10% AEP	10% AEP CC	5% AEP	5% AEP CC	2% AEP	2% AEP CC	1,900 cumecs	2,300 cumecs	2,800 cumecs
50435.6	0.58	0.52	0.81	0.73	0.95	0.87	1.09	1.01	1.30	1.19	1.41	1.69	2.01
50438.5	0.58	0.52	0.80	0.73	0.95	0.87	1.08	1.01	1.29	1.19	1.41	1.69	2.01
50441.5	0.57	0.52	0.80	0.72	0.94	0.87	1.08	1.00	1.29	1.19	1.40	1.68	2.00
50444.4	0.57	0.52	0.80	0.72	0.94	0.86	1.08	1.00	1.28	1.18	1.40	1.68	2.00
50447.3	0.57	0.52	0.80	0.72	0.94	0.86	1.07	1.00	1.28	1.18	1.39	1.67	1.99
50450.2	0.57	0.51	0.79	0.72	0.93	0.86	1.07	1.00	1.28	1.18	1.39	1.67	1.98
50453.2	0.57	0.51	0.79	0.72	0.93	0.86	1.07	0.99	1.27	1.17	1.38	1.66	1.98
50456.1	0.57	0.51	0.79	0.71	0.93	0.85	1.06	0.99	1.27	1.17	1.38	1.66	1.97
50459.0	0.56	0.51	0.79	0.71	0.93	0.85	1.06	0.99	1.26	1.17	1.38	1.65	1.97

Notes

1. Velocities are provided for Hutt River branches only.
2. AEP = annual exceedance probability; CC = climate change included.

Appendix D Peer review

- **D1: Summary of peer review process**
- **D2: Peer review documentation and record of communications**
 - **D2.1: *Hutt River model review* (Awa Environmental Ltd, 3 March 2020)**
 - **D2.2: Responses to review of 2018 DHI models**
 - D2.2.1 *Hutt River DHI model update – cross-section georeferencing* (T+T, 8 April 2021)
 - D2.2.2 *Spot checks of transverse roughness* (T+T, 11 July 2022)
 - D2.2.3 Supporting figures
 - D2.2.4 *Lateral links plot* (T+T, 11 July 2022)
 - D2.2.5: Responses to draft peer review report
 - **D2.3: FHMS Peer Review Part A spreadsheet (version 0.9)**
 - D2.3.1: *Record of model updates UHLH_202207_V038 (supplementary information for peer review)*
 - D2.3.2: *Model differences UHLH_202207_V038*
 - D2.3.3: *Difference plot UHLH_202207_V038*
 - D2.3.4: *Difference plot UHLH_202207_V040*
 - D2.3.5: *Silverstream bridge representation in hydraulic model memo* (T+T, March 2023)
 - D2.3.6: *Bridge checks UHLH_202207_V054*
 - D2.3.7: *Difference plot UHLH_202207_V054*

D1 Summary of peer review process

The timeline of the peer review process is outlined in the figure below. The original scope of works was to address peer review comments of the 2018 DHI models. The scope evolved following the publication of the FHMS¹¹ part way through the project. This means that some peer review documentation is as per the FHMS, and some is not. For a portion of the project, both pre-FHMS documentation and FHMS specifications were utilised.

The key peer review document for the final Hutt River model (version *UHLH_202207_V054*) is Specification 4 of the FHMS – Peer Review Part A (version 0.9).

Other supporting documentation, including those issued prior to the FHMS implementation, are provided in this Appendix. These are included for completeness for any future users of the hydraulic model and/or hydraulic model results. These are a record of the communications between the hydraulic modelling team (T+T), the peer reviewer (Awa), and GWRC only. Supporting documentation is provided in order from oldest to newest.

¹¹ *Flood hazard modelling standard* (GWRC, May 2021)

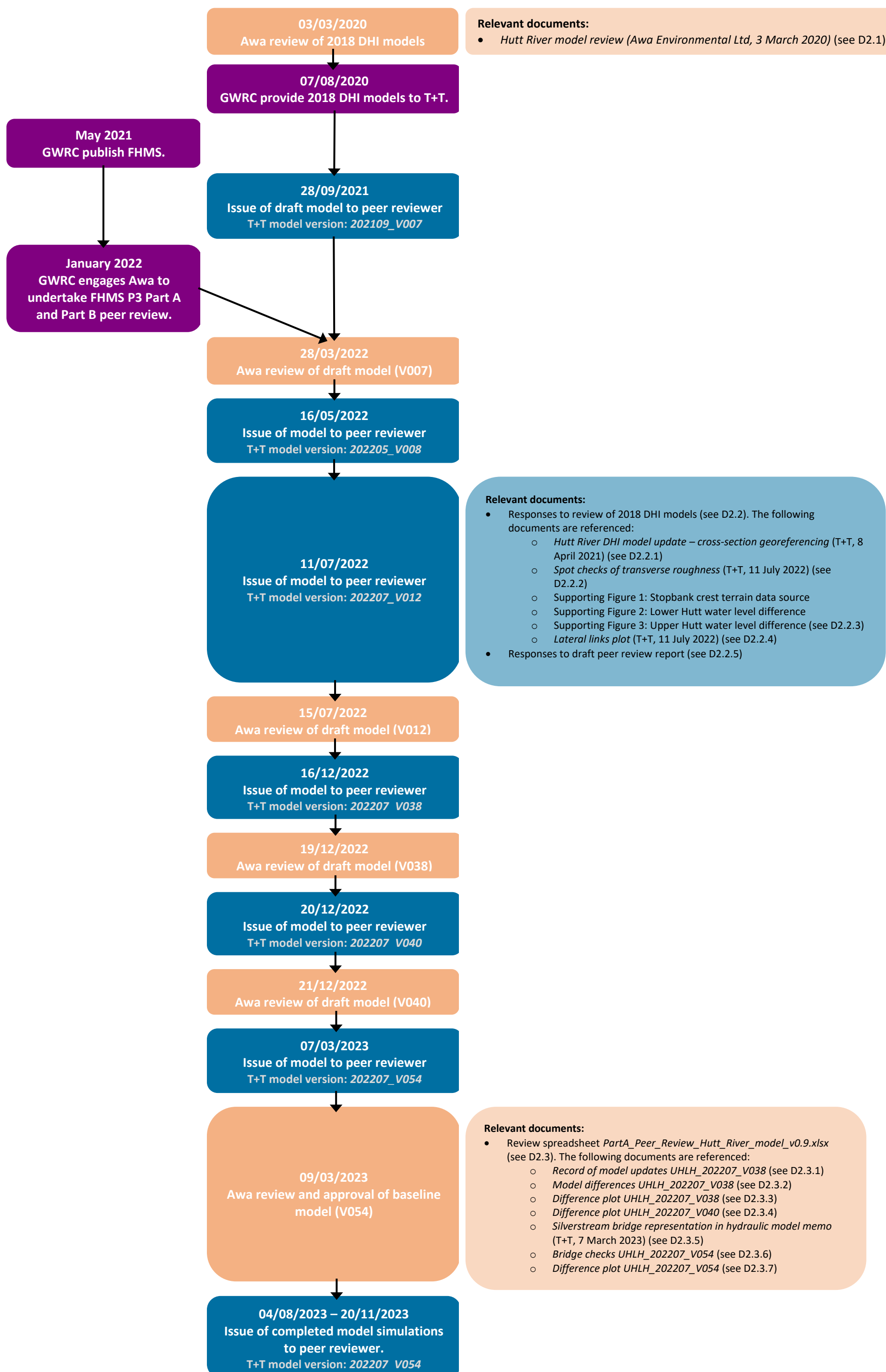


Figure Appendix D.1: Hutt River peer review process and timeline

D2 Peer review documentation and record of communications

D2.1 *Hutt River model review* (Awa Environmental Ltd, 3 March 2020)



GREATER WELLINGTON REGIONAL COUNCIL
Shed 39, Harbour Quays,
Pipitea,
Wellington
Attn: Susan Borrer

3 March 2020

Dear Susan

RE Hutt River Model Review

The Hutt River models have been previously reviewed by Awa and spreadsheets detailing the model review supplied to GWRC. It is considered normal practice to document changes made to the model and or supply commentary on the issues raised in the review spreadsheets as part of the model update process. These updated spreadsheets have not been supplied and no commentary has been supplied detailing changes made to the model subsequent to the previous review.

We have undertaken a second review of the models and have identified a range of issues as described below.

Lower Hutt Model

- The model files supplied for the October 1998 calibration run are not those used to generate the results. The October 1998 LH ReRun2018.m21 file references the bathymetry file 2002_topoMODELRRUNv3.dfs2. The log files supplied show that the model was run with the file 2002_topoMODELRRUNv4.dfs2.
- The January 2005 model the uses the bathymetry file 2002_topoMODELRRUNv3.dfs2 model file. The June 2002 model references the bathymetry file 2002_topoMODELRRUNv4.dfs2. Section 3.2.1.4 states that a different bathymetry file was used for each of the three flood events and that this was based on 2004 LiDAR. It appears that only two different Bathymetry files have been used, 2002_topoMODELRRUNv3.dfs2 and 2002_topoMODELRRUNv4.dfs2. The report should be updated to detail the changes made between the versions of the bathymetry and which versions were used in the different model runs.
- The bathymetry file 2002_topoMODELRRUNv3.dfs2 has not been supplied. This makes checking the October 1998 and January 2005 model difficult.
- The Hd11 file HuttModel-Rerun LH Jan05 v2.HD11 used in the January 2005 validation model was not supplied.
- The blocking out of the rivers and creeks in the bathymetry has been undertaken in an inconsistent manner. In some locations the full width of the channel has been blocked out, in others a strip of cells inside the lateral coupling locations has been blocked out. In various locations there is more than one strip of blocked out cells on either side of the river. There are also gaps in the strips of blocked out cells. While this does not appear to affect the model results it is rather untidy.
- The Waiwhetu Stream and Awamutu Streams have been blocked out of the DEMs used for the calibration and validation events. These streams are not modelled in MIKE 11. This does not appear to affect the model results. This area could be removed from the bathymetry used in the calibration and validation events.
- In all simulations there is a step of approximately 1m in the initial surface level at chainage 38492 and a small step at chainage 43086. This appears to have a negligible effect on model stability/results.

- Section 3.2.3 of the report describes a boundary at the Wellington harbour in the MIKE 21 model. This boundary has only been applied to the Melling right bank breach 2300 and 2300 models. Overland flow reaches the Petone foreshore in some of the other options models. In some cases, e.g. the Shandon Breach 2800 model, water is ponding at the land boundary on the Petone foreshore. This will most likely result in a significant over estimation of the flooding in Petone in this model run. The handling of the harbour in the models should be updated as well as Section 3.2.3 of the report.
- In some of the design runs water is ponding against the land boundary at the upstream end of the model. This is likely to result in an over estimation of flood levels here. The upstream extent of the model needs further work to resolve this.
- The three calibration/validation models use different MIKE 11 network files, CalibrationLH_1998RERUN, Calibration_final_2004-2001 RERUN.nwk11 and Calibration_final_2004RERUN2. The file Calibration_final_2004RERUN2.nwk11 was not supplied with the model making checking of the model difficult.
- There is an instability occurring during peak flows in the Waiwhetu Stream at chainage 12125 in the design models. There are also minor instabilities in the Awamutu Stream.
- The Lower Hutt Melling right bank breach model specify a boundary file "DesignTide2-PhaseShift.dfs0". Mike Zero reports an item type error with this file.
- The Melling right bank breach 1900 model specifies the bathymetry file LH_2013dem-v8 MellingRB FullBreach topo.dfs2, this file was not supplied. The 2800 and 2300 Melling right bank breach models use a different bathymetry to the 1900 model. The Melling right bank breach 1900 model specifies an initial conditions file that has not been supplied. The differences between these files should be detailed in the report.
- In the Melling right bank breach model the downstream end of the MIKE 11 model and the MIKE 21 model have not been coupled in an intuitive way. The MIKE 11 model extends beyond the mouth of the river into the harbour. The right bank of the river is not coupled to the harbour and the downstream tidal boundary has been applied directly to the last chainage in the river rather than the harbour. The left bank in this area is coupled here. It is unclear as to why this set up has been used, a better description in the report would be useful.
- Over 100,000m³ of water is being generated by instabilities in the October 1998 MIKE 21 model. The continuity balance in the MIKE 11 component of this model is much higher than for other model runs. Depending on where this water is being generated this may be significant. The locations of water being generated can be identified by setting the water correction file switch to true in the MIKE 21 model.
- The bnd11 files Hutt1900Waiwhetu20_Opahu_2018.bnd11, Hutt1900Waiwhetu20__2018.bnd11, Hutt2300Waiwhetu20_2018.bnd11 and Hutt2300Waiwhetu20_Opahu_2018.bnd11 incorrectly reference the 2800cumeecs.dfs0.
- The bnd11 file Hutt2300Waiwhetu20_2018.bnd11 used in the 2300 models incorrectly references the 2800cumeecs.dfs0.

Upper Hutt Model

- The bathymetry file UH TP BreachTopo-v2018.dfs2 specified in the MIKE 21 model for the Totara Park breach was not supplied.
- Instabilities in the MIKE 21 models for the breach scenarios are generating significant volumes of water, in excess of 2 million cubic meters for the 2800 runs and 1 million cubic meters for the 1900 runs. Water generation files have been supplied and these typically show that water

generation is distributed across the flood plains. The volumes shown in the water generation files do not correspond with the volumes shown in the log files.

- Initial water levels have been specified in a HD11 file. The initial condition at the downstream end of the Hutt River, chainage 38492, is below the invert of the channel here. This does not appear to cause any issues after the first 30 minutes of the simulation. Initial conditions have not been specified for the bridge reaches, and as a result water rushes into the bridge reaches at the start of the run. This does not appear to be creating significant issues beyond the first 15 minutes of the run.

General

- The MIKE 11 cross sections for some river reaches use the Resistance Radius Type, while other use the Total Cross Section Area resistance type. The rationale for the use of the different radius types should be detailed in the report.
- The cross sections do not have end coordinates specified. Consequently the cross sections are positioned in the MIKE ZERO GUI perpendicular to the channel at the specified chainage, with the lowest point marker positioned on the channel centerline. As such the surveyed cross section locations do not align with the cross-section positions shown in the map. This makes it difficult to assess the positioning of the landed-out portion of the channel in the MIKE 21 bathymetry and the positioning of the coupled cells in the MIKE FLOOD couple file.
- The cross sections do not have angles assigned. Where the surveyed cross sections are not perpendicular to the direction of flow this will result in an over estimation of conveyance.
- The transverse distribution of cross section resistance is set variously as Uniform, High/Low flow zones, and Distributed. Figure 3-7 in the report details resistance along the length of the river, however there is no mention of how non uniform resistances have been defined. Further detail in the report would be useful.
- The MIKE 21 result file output areas for some of the models do not cover the full extent of the bathymetry. This makes it difficult to assess the model as it is not possible to see what is happening in the areas that are not included in the result files.
- The wetting and drying values used in MIKE 21 are more appropriate for a rain on grid model than a model that uses inflow hydrographs.
- Coriolis forcing has been applied to most of the MIKE 21 models. Typically, this should not be applied when doing flood plain models as the effects of Coriolis are likely to be negligible. While the application of Coriolis forcing on the model is likely to be negligible, the reasons for considering it should be detailed in the report.

Folder and File Structure

- From a file management perspective, the models are not well structured. The model build files were supplied in a single folder with result files and log files in separate folders.
- Placing multiple models in a single folder results in some of the ancillary files that are generated during the model run being overwritten and lost when another model in the same folder is run. Some of these files, for example the MFLateralLinkConnections.txt files are unique to the model set up.
- Placing multiple models in a single folder may also result in additional file management effort, for example when copying a model to a separate PC for running.
- An inconsistent file naming convention has been applied, making it difficult to identify which files belong to which model, without accessing the model through the DHI GUI.

- Not all the model files were supplied for the review and there are inconsistencies between the model set up files and model log/result files. This is likely a consequence of the poor file and folder management practices employed.
- While the file and folder structure does not affect the model results, a more structured approach would make the models easier to review, maintain and use by third parties.
- The MIKE11.ini files that control model parameters that are not exposed through the MIKE ZERO GUI were not supplied. While it is likely that the default file has been used, it is generally considered good practice to include these files allowing any variation from the default settings to be identified.

Recommendations

- The following should be undertaken prior to utilising the model results.
 - The correct inflow boundary conditions should be applied to the various design runs.
 - The coupling set up for the harbour, foreshore, and river should be revised in the Lower model.
 - The wetting and drying parameters should be revised.
 - Coriolis forcing should be turned off or addressed in the report.
 - The initial conditions in the MIKE 11 channels should be updated to remove steps in the initial surface levels.
 - The upstream portion of the Lower Hutt model should be revised to avoid water ponding against the boundary.
 - The down stream boundary of the Lower model should be tidied up, including the coupling of the foreshore to the harbour and the main river channel to the harbour.
 - Edits made to the various bathymetry files should be documented.
 - The report should be updated to reflect the application of variable roughness in the Mike 11 Cross Sections.
- The model could be further improved by implementing the following,
 - Consideration should be given to combining the Upper and Lower models to avoid the complex boundary interaction. It appears that the river was split in two to avoid long run times. Advances in computer power since these models were initially developed may mean this is now unnecessary. The run times could be further reduced by removing the harbour area from the MIKE 21 model.
 - Water correction files should be generated to identify areas of excessive water generation in the MIKE 21 models.
 - The landing out of open channels in the bathymetry should be tidied and the entire reach of the MIKE 11 model, excluding the bridge locations, should be coupled to the MIKE 21 model. This will reduce the risk of glass walling in the MIKE 11 model.
 - A consistent well-structured folder set up should be employed with a consistent file naming convention and all of the files required to run the model should be supplied.
 - The MIKE 21 result file extents should be updated to cover the entire model extent.
 - Cross sections should be positioned using end coordinates and skew angles should be applied where appropriate.



Yours faithfully,

A handwritten signature in blue ink, appearing to read 'S Cornelius', on a light blue rectangular background.

Steven Cornelius

Director

m: +64 21 0834 0297 e: steven.cornelius@awa.kiwi

D2.2 Responses to review of 2018 DHI models

The table below contains review comments relating to the March 2020 model review ('Upper' and 'Lower' 2018 DHI models). It also includes additional model updates made by T+T in the baseline model prior to September 2021.

Appendix D Table 1: T+T responses to Awa review of 2018 DHI models

ID	Item	Peer Review comment from Hutt River model review (Awa Environmental Ltd, 3 March 2020)	Modellers comments (T+T model version: UHLH_202109_V007)	Review comments 28/03/2022	Modellers comments (T+T model version: UHLH_202109_V012)	Review comments 15/07/2022
1. Model Filing						
1.1	Folder and file structure	<i>The model files supplied for the October 1998 calibration run are not those used to generate the results. The October 1998 LH ReRun2018.m21 file references the bathymetry file 2002_topoMODELRRERUNv3.dfs2. The log files supplied show that the model was run with the file 2002_topoMODELRRERUNv4.dfs2.</i>	A proposed file naming and folder structure pattern has been proposed by T+T and GWRC have confirmed they are happy with the proposed approach ¹² Note that the model issued for peer review is versioned (202109_V007) in order to track the updates made, however folder structure will be maintained.	Closed Historic event models have not been supplied for inspection so this item cannot be confirmed directly, however a file naming convention has been applied. Logged files match those provided.	n/a	Previously closed noting: Historic event models have not been supplied for inspection so this item cannot be confirmed directly. All files for the baseline 2800 design event model have been supplied.
1.2		<i>The January 2005 model the uses the bathymetry file 2002_topoMODELRRERUNv3.dfs2 model file. The June 2002 model references the bathymetry file 2002_topoMODELRRERUNv4.dfs2. Section 3.2.1.4 states that a different bathymetry file was used for each of the three flood events and that this was based on 2004 LiDAR. It appears that only two different Bathymetry files have been used, 2002_topoMODELRRERUNv3.dfs2 and 2002_topoMODELRRERUNv4.dfs2. The report should be updated to detail the changes made between the versions of the bathymetry and which versions were used in the different model runs.</i>	See 1.1 above	See 1.1 above	See 1.1 above	See 1.1 above
1.3		<i>The bathymetry file 2002_topoMODELRRERUNv3.dfs2 has not been supplied. This makes checking the October 1998 and January 2005 model difficult.</i>	See 1.1 above	Closed Historic event models have not been supplied for inspection so this item cannot be confirmed directly. All files for the baseline 2800 design event model have been supplied.	n/a	Previously closed noting Historic event models have not been supplied for inspection so this item cannot be confirmed directly. All files for the baseline 2800 design event model have been supplied.
1.4		<i>The Hd11 file HuttModel-Rerun LH Jan05 v2.HD11 used in the January 2005 validation model was not supplied.</i>	See 1.1 above	See 1.3 above	See 1.3 above	See 1.3 above
1.5		<i>The three calibration/validation models use different MIKE 11 network files, CalibrationLH_1998RRERUN, Calibration_final_2004-2001 RERUN.nwk11 and Calibration_final_2004RRERUN2. The file Calibration_final_2004RRERUN2.nwk11 was not supplied with the model making checking of the model difficult.</i>	See 1.1 above	See 1.3 above	See 1.3 above	See 1.3 above
1.6		<i>The Melling right bank breach 1900 model specifies the bathymetry file LH_2013dem-v8 MellingRB FullBreach topo.dfs2, this file was not supplied. The 2800 and 2300 Melling right bank breach models use a different bathymetry to the 1900 model. The Melling right bank breach 1900 model specifies an</i>	See 1.1 above	See 1.3 above	See 1.3 above	See 1.3 above

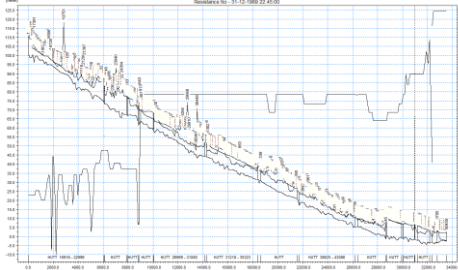
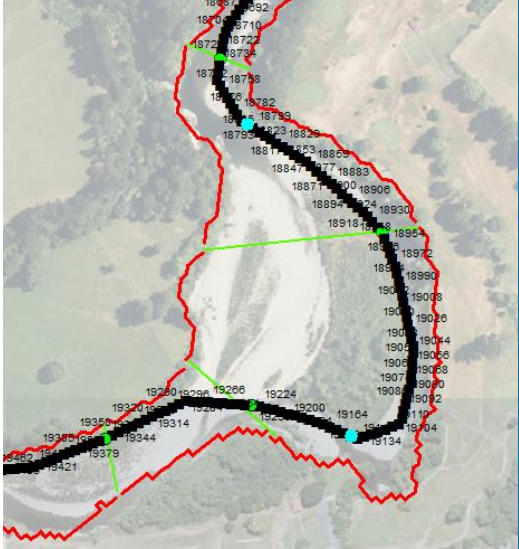
¹² Meeting minutes, GWRC Hutt Model Update – Peer reviewer meeting 1, 15 September 2020.

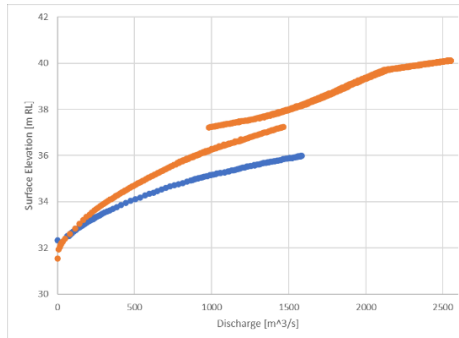
ID	Item	Peer Review comment from Hutt River model review (Awa Environmental Ltd, 3 March 2020)	Modellers comments (T+T model version: UHLH_202109_V007)	Review comments 28/03/2022	Modellers comments (T+T model version: UHLH_202109_V012)	Review comments 15/07/2022
		<i>initial conditions file that has not been supplied. The differences between these files should be detailed in the report.</i>				
1.7		<i>The bathymetry file UH TP BreachTopo-v2018.dfs2 specified in the MIKE 21 model for the Totara Park breach was not supplied.</i>	See 1.1 above	See 1.3 above	See 1.3 above	See 1.3 above
1.8		<i>From a file management perspective, the models are not well structured. The model build files were supplied in a single folder with result files and log files in separate folders.</i>	See 1.1 above	Closed File management has been significantly improved.	n/a	Previously closed
1.9		<i>Placing multiple models in a single folder results in some of the ancillary files that are generated during the model run being overwritten and lost when another model in the same folder is run. Some of these files, for example the MFLateralLinkConnections.txt files are unique to the model set up.</i>	See 1.1 above	Closed The separation of model runs into individual folders has overcome this issue.	n/a	Previously closed
1.10		<i>Placing multiple models in a single folder may also result in additional file management effort, for example when copying a model to a separate PC for running.</i>	See 1.1 above	See 1.10 above	See 1.1 above	See 1.1 above
1.11		<i>An inconsistent file naming convention has been applied, making it difficult to identify which files belong to which model, without accessing the model through the DHI GUI.</i>	See 1.1 above	See 1.10 above	See 1.1 above	See 1.1 above
1.12		<i>Not all the model files were supplied for the review and there are inconsistencies between the model set up files and model log/result files. This is likely a consequence of the poor file and folder management practices employed.</i>	See 1.1 above	See 1.10 above	See 1.1 above	See 1.1 above
1.13		<i>While the file and folder structure does not affect the model results, a more structured approach would make the models easier to review, maintain and use by third parties.</i>	See 1.1 above	Closed A dedicated results folder has been set up within each model folder.	n/a	Previously closed
1.14		<i>The MIKE11.ini files that control model parameters that are not exposed through the MIKE ZERO GUI were not supplied. While it is likely that the default file has been used, it is generally considered good practice to include these files allowing any variation from the default settings to be identified.</i>	See 1.1 above	Closed Mike11.ini file is supplied.	n/a	Previously closed
1.15		<i>A consistent well-structured folder set up should be employed with a consistent file naming convention and all of the files required to run the model should be supplied.</i>	See 1.1 above	Closed New file structure is tidy, consistent, and easy to understand.	n/a	Previously closed
2. Model Schematisation						
2.1	Consideration should be given to combining	<i>Consideration should be given to combining the Upper and Lower models to avoid the complex boundary interaction. It appears that the river was split in two to avoid long run times. Advances in computer power since these models were initially developed may mean this is now unnecessary. The</i>	The Upper and Lower Hutt models have been combined. The model timestep has been increased to 0.75 which results in a model runtime of 15 hours for the 2800 m ³ /s event. The combined model runtime is less than the runtimes of the previous Upper and	Closed The models have been combined and log files confirm that the model completes in about 17 hours with no reported errors. The continuity balance reports a vanishingly small imbalance. A large area of harbour is still included in the	n/a	Previously closed

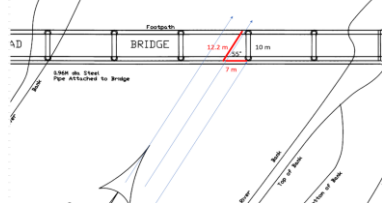
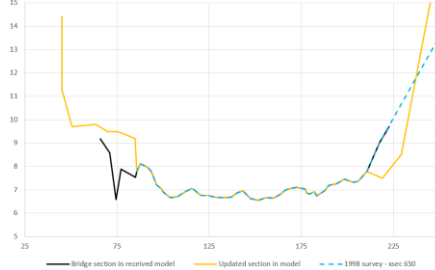
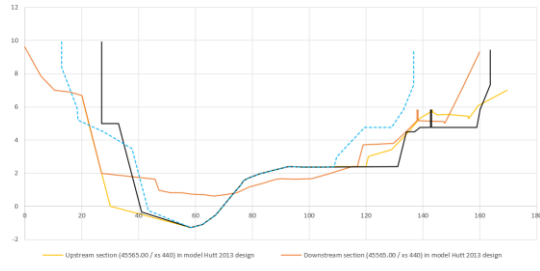
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	the models.	<i>run times could be further reduced by removing the harbour area from the MIKE 21 model.</i>	Lower models (17 and 16 hours for the 2800 m³/s event respectively).	model and could be removed to improve run times further and prevent sloshing in the harbour. Alternatively, the harbour bed resistance could be increased.		
2.2	Revise US Lower Hutt model configuration	<i>In some of the design runs water is ponding against the land boundary at the upstream end of the model. This is likely to result in an over estimation of flood levels here. The upstream extent of the model needs further work to resolve this.</i>	The models have been combined which removes the US boundary of the Lower Hutt model.	Closed Combining models has removed all boundary issues at the connection between models. There is now more flooding outside the banks in the 2800 m³/s simulation.	n/a	Previously closed
2.3		<i>The upstream portion of the Lower Hutt model should be revised to avoid water ponding against the boundary.</i>	See 2.2 above			
2.4	Schematisation	<i>The Waiwhetu Stream and Awamutu Streams have been blocked out of the DEMs used for the calibration and validation events. These streams are not modelled in MIKE 11. This does not appear to affect the model results. This area could be removed from the bathymetry used in the calibration and validation events.</i>	Model setup for Waiwhetu and Awamutu Stream consistent across all events modelled	Closed Side streams included in the combined models.	n/a	Previously closed
2.5	Redefine coupling configuration for the harbour, foreshore, and river in the Lower model	<i>Section 3.2.3 of the report describes a boundary at the Wellington harbour in the MIKE 21 model. This boundary has only been applied to the Melling right bank breach 2300 and 2300 models. Overland flow reaches the Petone foreshore in some of the other options models. In some cases, e.g. the Shandon Breach 2800 model, water is ponding at the land boundary on the Petone foreshore. This will most likely result in a significant over estimation of the flooding in Petone in this model run. The handling of the harbour in the models should be updated as well as Section 3.2.3 of the report.</i>	A 2D downstream boundary has been added to the MIKE21 model with a consistent water level time-series to the MIKE11 model. This ensures a consistent downstream boundary is applied across all scenarios modelled and scenarios that result in flooding of the Petone foreshore do not incur boundary effects.	Closed Downstream boundary has been improved. However, there is now both a M21 and M11 downstream boundary, when it should be possible to cut back the M11 branch, link the 1D to 2D using a standard link and remove the M11 boundary. This approach may introduce instabilities but will provide a more realistic flow pattern and lower water level in the river at the mouth. The boundary is good enough but should be reconsidered in future model updates.	Noted for future updates. No update to boundary made since last review.	Previously closed
2.6		<i>In the Melling right bank breach model the downstream end of the MIKE 11 model and the MIKE 21 model have not been coupled in an intuitive way. The MIKE 11 model extends beyond the mouth of the river into the harbour. The right bank of the river is not coupled to the harbour and the downstream tidal boundary has been applied directly to the last chainage in the river rather than the harbour. The left bank in this area is coupled here. It is unclear as to why this set up has been used, a better description in the report would be useful.</i>	The right “bank” of the MIKE11 model is not coupled as the water levels in the harbour are consistent between the two models and the Marine Parade headland is high ground (above the 1% AEP tide level). The left bank is coupled as this can allow overtopping.	See 2.5 above	See 2.5 above	See 2.5 above
2.7		<i>The coupling set up for the harbour, foreshore, and river should be revised in the Lower model.</i>	See 2.5 and 2.6 above	See 2.5 above	See 2.5 above	See 2.5 above
2.8		<i>The downstream boundary of the Lower model should be tidied up, including the coupling of the foreshore to the harbour and the main river channel to the harbour.</i>	See 2.5 and 2.6 above	See 2.5 above	See 2.5 above	See 2.5 above
2.9	Model result output area	<i>The MIKE 21 result file output areas for some of the models do not cover the full extent of the bathymetry. This makes it difficult to assess the model as it is not possible to see what is happening in the areas that are not included in the result files.</i>	The model result output area has been set to encompass the entire domain and it is proposed to keep this output area consistent for all events and scenarios modelled.	Closed Results extent covers entire 2D extent and the full period at a 5 min interval. It is recommended that only the standard outputs of H, P and Q are saved as this will allow the	Depth and velocity grids for all scenarios are required under the scope deliverables for the project so have been kept as outputs in the dfs2 file to reduce number of post-processing steps required	Previously closed

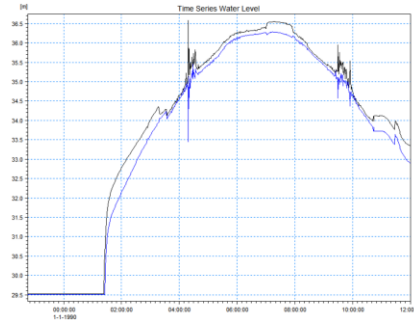
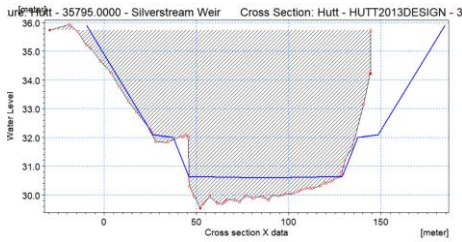
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				results to be processed for other output types using MIKE Zero tools.		
2.10		<i>The MIKE 21 result file extents should be updated to cover the entire model extent.</i>	See 2.9 above	See 2.9 above	See 2.9 above	See 2.9 above
3. Boundary Conditions						
3.1	Reconfigure inflow boundary conditions based off supplied hydrological data.	<i>The Lower Hutt Melling right bank breach model specify a boundary file "DesignTide2-PhaseShift.dfs0". Mike Zero reports an item type error with this file.</i>	Inflow boundaries were provided by GWRC. The Hutt boundaries have been named in accordance with the file naming and folder structure pattern. The initial timestep of these inflows have been adjusted to be consistent with the initial conditions of the model across all events. This has a negligible impact on the hydrograph shape and volume (<0.5% impact on volume).	Closed The combined peak inflows for the three discharge scenarios are: Q1900: 1620 m ³ /s Q2300: 2340 m ³ /s Q2800: 2906 m ³ /s Is it accepted that these inflows don't align with the titular values? It is assumed that these values aim to reproduce the peak flow at Taita Gorge.	No hydrology update in this project. Agree with assumption that values aim to reproduce flows at Taita Gorge. The 1900 flow dfs0 file has been corrected since the September 2021 issue as the flow at Taita Gorge of 1620 was below the 1900 target. A scale factor used in the 2018 models for the 1900 event has been implemented directly into the latest dfs0 file to ensure a scale factor is not required as these are hidden in the DHI interface.	Previously closed
3.2		<i>The bnd11 files Hutt1900Waiwhetu20_Opahu_2018.bnd11, Hutt1900Waiwhetu20_2018.bnd11, Hutt2300Waiwhetu20_2018.bnd11 and Hutt2300Waiwhetu20_Opahu_2018.bnd11 incorrectly reference the 2800cumecs.dfs0.</i>	See 3.1 above	See 3.1 above	See 3.1 above	See 3.1 above
3.3		<i>The bnd11 file Hutt2300Waiwhetu20_2018.bnd11 used in the 2300 models incorrectly references the 2800cumecs.dfs0.</i>	See 3.1 above	See 3.1 above	See 3.1 above	See 3.1 above
3.4		<i>The correct inflow boundary conditions should be applied to the various design runs.</i>	See 3.1 above - The inflows for the Waiwhetu/Awamutu branches (not modelled in detail within this study as GWRC have separate models for these watercourses) are proposed to be modelled with the 20-year hydrology inflows for all events, as per the previous modelling. - The downstream boundary condition is currently as per the previous modelling (reported as a 20-year sea level event including storm surge). It is proposed that this boundary condition will remain the same for all events and scenarios, apart from specific downstream boundary sensitivity events.	Closed Inflows are connected to the Waiwhetu/Awamutu branches through MIKE 11 boundaries. A single downstream boundary condition has been applied across all three design scenarios. The applicability of these boundary conditions is not part of this review but should be decided by GWRC.	n/a	Previously closed
4. Initial Conditions						
4.1	Revise initial conditions	<i>In all simulations there is a step of approximately 1m in the initial surface level at chainage 38492 and a small step at chainage 43086. This appears to have a negligible effect on model stability/results</i>	A MIKE11 hot start file has been generated that will ultimately be used for all hydrological events. The issued model (V007) has temporarily set initial conditions equal to empty / simulation start conditions in order to avoid having to regenerate this hotstart file with each model update.	Open The hotstart file is provided but not connected to the design simulations. The HD11 initial conditions consist of a single downstream water level. It is recommended that a constant low-flow discharge is applied along the channel as an initial condition as this will prevent unrealistic velocities at the flow front and may alter the wave speed at the start of the simulation. This can be implemented directly in the HD11 file.	Initial conditions updated in HD file. To be used for all hydrological events	Closed.

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4.2		<i>Initial water levels have been specified in a HD11 file. The initial condition at the downstream end of the Hutt River, chainage 38492, is below the invert of the channel here. This does not appear to cause any issues after the first 30 minutes of the simulation. Initial conditions have not been specified for the bridge reaches, and as a result water rushes into the bridge reaches at the start of the run. This does not appear to be creating significant issues beyond the first 15 minutes of the run.</i>	See 4.1 above		See 4.1 above	See 4.1 above
4.3		<i>The initial conditions in the MIKE 11 channels should be updated to remove steps in the initial surface levels.</i>	See 4.1 above		See 4.1 above	See 4.1 above
5. 1D Model						
5.1	Input georeferenced cross-sections	<i>The cross-sections do not have end coordinates specified. Consequently, the cross-sections are positioned in the MIKE ZERO GUI perpendicular to the channel at the specified chainage, with the lowest point marker positioned on the channel centreline. As such the surveyed cross-section locations do not align with the cross-section positions shown in the map. This makes it difficult to assess the positioning of the landed-out portion of the channel in the MIKE 21 bathymetry and the positioning of the coupled cells in the MIKE FLOOD couple file.</i>	Cross-sections have been georeferenced in accordance with the methodology agreed in the peer review meeting on 19/04/2021 and as recorded in the T+T memo dated 8 April 2021 (refer D2.2.1).	Closed Coordinates applied to all Hutt River cross-sections.	n/a	Previously closed
5.2		<i>Cross-sections should be positioned using end coordinates and skew angles should be applied where appropriate.</i>	See 5.1 above		See 5.1 above	See 5.1 above
5.3	Input cross-section angles	<i>The cross-sections do not have angles assigned. Where the surveyed cross-sections are not perpendicular to the direction of flow this will result in an over estimation of conveyance.</i>	Cross-section angles have been added to the model. It should be noted that the angles have been calculated in GIS and then added to the cross-section file rather than using the automated calculation within MIKE11. This is because: 1. A bug in the DHI software has been detected whereby the angle values do not display the correct value in the new cross-section viewer/editor (2017 releases of the software onwards). The angles can be viewed in the old editor viewer (by changing settings in MIKE ZERO). The processed data used in the model calculation is consistent in both viewers. The bug has been reported to DHI software developers. 2. The automated calculation within MIKE11 relies on unique branch naming within the model network. The "Hutt" and "Hutt Bridges" branch naming is used multiple times in the model.	Open Spot check of Estuary Bridge has uncovered differences in the width and skew angle in cross-sections on either side of reach connections upstream and downstream of the bridge reaches. These should be aligned.	Connections between the HUTT and HUTT_BRIDGES branches have been checked and updated where required to ensure consistency at the branch start/end.	Closed.
		<i>Cross-sections should be positioned using end coordinates and skew angles should be applied where appropriate. [REPEATED PEER REVIEW COMMENT ABOVE]</i>	See 5.2 above	See 5.3 above	See 5.3 above	See 5.3 above

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5.4	Check cross-section resistance type	<i>The MIKE 11 cross-sections for some river reaches use the Resistance Radius Type, while other use the Total Cross-section Area resistance type. The rational for the use of the different radius types should be detailed in the report.</i>	All cross-sections have been assigned 'Total area, hydraulic radius' type.	Closed	n/a	Previously closed
5.5	Define transverse roughness	<i>The transverse distribution of cross-section resistance is set variously as Uniform, High/Low flow zones, and distributed. Figure 3-7 in the report details resistance along the length of the river, however there is no mention of how non uniform resistances have been defined. Further detail in the report would be useful.</i>	- The transverse roughness values have been spot checked at random locations across the entire length of the Hutt channel against aerial imagery (checks shown in D2.2.2). The checks showed that the roughness values applied are appropriate. At the majority of cross-sections, the roughness values have been increased on the riverbanks to represent vegetation. The bed roughness shows a trend of decreasing with distance downstream which is considered appropriate (bed material grain size decreases downstream). - As the spot checks have not identified any inappropriate implementation of roughness values, and the November 2018 report states that roughness values were adjusted during the model calibration process, no updates to the transverse roughness at cross-sections have been made.	Open The averaged resistance varies very quickly between cross-sections at the upper end of the Hutt River (plot of Resistance No.). Overall, the resistance reflects that of the pre-existing models. Two large spikes are at HUTT 18793.4 and HUTT 19146. There is a large step in resistance at Maoribank swimming hole and a large spike in roughness across Estuary Bridge. These massive changes in roughness may occur because of changes in bank roughness, but it is not clear that this is the case here. These locations are not commented on in the transverse roughness spot checks table provided by T&T and would be good candidates for spot checks.  The spike in resistance at the Estuary bridge does not appear in the pre-existing models.	Additional checks made and A3.2.2 updated including comments below: HUTT 18793.4 and HUTT 19146: This is where the channel transitions into and out of a braided/island reach channel with a parts of the bed vegetated. So, a sudden change in roughness through this short reach is deemed to be appropriate.  Maoribank Swimming hole: The increased roughness through the 90-degree bend appears to have been added to the existing (2018) model to account for energy losses through the bend. It is noted that there is also an energy loss within the network file to account for this 90-degree bend and therefore the bend losses may be double counted. The 2018 report shows calibration/validation against an observed flood level immediately upstream of the bend, with the modelled level being 0.2m above observed level in the October 1998 event. A test run has been undertaken (in 1D only) to assess the impacts of removing the increased roughness through the bend with results shown below. Removing the increased roughness through Maoribank bend is likely to improve the calibration of the October 1998 event (if this event were to be run through the 1D-2D model which includes some floodplain storage upstream). The 1D only tests using the design hydrograph (scaled to the October 1998 peak flow) show that the resulting peak flood level is reduced by approximately 0.2m. This is	Closed.

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					comparable to the difference between modelled and observed October 1998 level in the 2018 report. The increased roughness through the bend has therefore been removed as it is expected this will improve model calibration and the bend loss is not double counted. <table><tr><td>chainage 25588</td><td>peak level</td><td>peak discharge (m3/s)</td><td>difference (m)</td></tr><tr><td>1D only test 1 - existing roughness</td><td>71.34</td><td>1423</td><td></td></tr><tr><td>1D only test 2 - increased roughness through Maoribank removed</td><td>71.12</td><td>1423</td><td>0.22</td></tr><tr><td>DHI2018 model 1998 calibration event (2018 report - 1d2d model)</td><td>71.15</td><td>1423</td><td></td></tr><tr><td>observed level 1998 (2018 report - 1d2d model)</td><td>70.95</td><td></td><td>0.2</td></tr></table> Estuary Bridge The spike in roughness appears in the 2018 design model received but not in the report or the calibration models. The spike does not seem deliberate, and it is occurring due to chainages at the end of the HUTT_BRIDGES sections being missed in the HD file. These chainages have therefore been added to the HD file to remove the spike in roughness.	chainage 25588	peak level	peak discharge (m3/s)	difference (m)	1D only test 1 - existing roughness	71.34	1423		1D only test 2 - increased roughness through Maoribank removed	71.12	1423	0.22	DHI2018 model 1998 calibration event (2018 report - 1d2d model)	71.15	1423		observed level 1998 (2018 report - 1d2d model)	70.95		0.2	
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5.6		<i>The report should be updated to reflect the application of variable roughness in the Mike 11 Cross-sections.</i>	Reporting to detail the application of variable roughness in the Mike11 Cross-sections.	Open Documentation not provided unless spot check table is considered sufficient. Prior reporting suggests roughnesses are calibrated.	Final report to summarise roughness, checks and previous calibration undertaken to refine values (DHI 2018).	Closed.																				
5.7	Additional T+T Updates	All bridge structures along the Hutt River have schematisation checked against the source model report and available drawings. Note that a 10% (pier) blockage and 0.5m reduction in soffit level is used at most bridges to account for debris in the baseline scenario. The following errors have been noted and updated: <u>Akatarawa Bridge:</u> Waterway length updated from 10m to 11.3m (source: drawing) Note that pier blockage is reported incorrectly (correct in model). <u>Norbert Street Bridge:</u> Overflow added to bridge at 0.3m above soffit. Weir width measured from aerial <u>Totara Park Bridge:</u> Weir width parameter has been interpreted incorrectly and is updated from 10m to 175m (measured from aerial) <u>Moonshine Bridge:</u> Soffit level reduced by 0.5 m to account for debris Weir width parameter appears incorrect and is updated from 0 m to 90 m (measured from aerial) <u>Silverstream Road Bridge:</u> Soffit level reported as 37.0 mRL but 37.5 mRL modelled. Changed to 37.0 mRL (which includes 0.5m debris blockage).	All bridge structures along the Hutt River have schematisation checked against the source model report and available drawings. Note that a 10% (pier) blockage and 0.5m reduction in soffit level is used at most bridges to account for debris in the baseline scenario. The following errors have been noted and updated: <u>Akatarawa Bridge:</u> Waterway length updated from 10m to 11.3m (source: drawing) Note that pier blockage is reported incorrectly (correct in model). <u>Norbert Street Bridge:</u> Overflow added to bridge at 0.3m above soffit. Weir width measured from aerial <u>Totara Park Bridge:</u> Weir width parameter has been interpreted incorrectly and is updated from 10m to 175m (measured from aerial) <u>Moonshine Bridge:</u> Soffit level reduced by 0.5 m to account for debris Weir width parameter appears incorrect and is updated from 0 m to 90 m (measured from aerial) <u>Silverstream Road Bridge:</u> Soffit level reported as 37.0 mRL but 37.5 mRL modelled. Changed to 37.0 mRL (which includes 0.5m debris blockage).	Open Generally, bridges are consistent with pre-existing models. Addition of blockage to bridge structures is not consistent. Norbert bridge overflow is added. It should be considered whether the bridge has been designed for submergence. It seems unlikely that the bridge will submerge. Silverstream Road Bridge blockage increase is very conservative as the skewed piers are more aerodynamic than a bluff body of the same width. A value between the original (4%) and the new (31%) is more appropriate. This has a significant effect on local upstream water levels (see Q-H plots below with original in blue). 	Silverstream Road Bridge blockage: Peer reviewer confirmed in meeting 01/04/2022 that existing (2018) model blockage factor would be more appropriate as calibration exercise was undertaken in 2018 modelling. The blockage has been adjusted back to 14%. Norbert Bridge: The bridge deck level has been adjusted to 78.6m. This is 1m above the soffit of the bridge, to account for the bridge deck and debris build up on the railings. The overflow and submergence options have been maintained as active in the model, but the latest 2800m3/s results show the peak water level (77.01 mRL) to be just below the soffit (77.1 m RL). This reduction is peak level is due to the change in roughness applied at the Maoribank bend (refer item 5.5). The structure design of the bridge (regarding if the bridge would survive submergence) has not been investigated at this stage as the bridge is no longer submerged in the 2800 m3/s event (largest modelled event). The structure design consultation is also outside of the project scope and would require specialist input. In a meeting of 28/06/22 it was agreed between T+T and GWRC that it would be more appropriate at this stage to keep the current model representation (i.e. assuming the bridge does not collapse if the soffit level were to be exceeded) and GWRC will then consider if further investigations are needed based on the final model results.	Closed.																				

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			Pier blockage updated from 14% to 41% in order to account for the skew of the bridge. Piers are calculated to block 7m (see figure below). 7m x 7 no. piers = 49m. This is equivalent to a 31% blockage of the 156.6m opening width. 10% is added for the debris blockage allowance.  Weir width parameter has been interpreted incorrectly and is updated from 10m to 175m (measured from aerial) <u>Kennedy Good Bridge:</u> Bridge cross-section updated (see figure below) to ensure opening width is represented. Waterway length updated from 15m to 11m (measured from aerial) Soffit updated from 14.75mRL to 15.05mRL. The soffit ramps from 14.4 to 16.7, so 15.55mRL is applied. 15.55mRL minus 0.5 for debris = 15.05 mRL.  <u>Melling Bridge:</u> Source of bridge cross-section is unknown. This is updated using bridge drawing and 1998 survey (see figure below) Soffit level updated from 8.845mRL to 9.345mRL due to error in model (which did not match reporting). Bridge soffit ranges from 9.42 to 10.27 (not 9.47 to 10.27 as reported), but 9.845 is average soffit level as reported. Soffit entered as 9.345mRL to account for debris (9.845 - 0.5m = 9.345mRL) Bridge deck updated from 11.145mRL to 11.72mRL (obtained from 9.42+1.8+0.5)  <u>Ewen Bridge:</u>			

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			Waterway length is updated from 15m to 24m (source from aerial and drawing HR-5353/19) Additionally, the Bell Rd bridge on Waiwhetū has had the weir width parameter interpreted incorrectly and is updated from 14.5m to 45m (measured from aerial).			
5.8			Some scenarios required to be run for this project involve removal of the weir at Silverstream. This was not included in the source model provided and has therefore been added in Mike11 in model version 202109_v007 as follows: - Model: MIKE11 - Structure type: Weir - Location: HUTT, chainage 35795 - Dimensions: Weir geometry is added from 1977 as-builts. Level (30.6 mRL WVD 53) is inferred from drawing located in the following paper: <i>RISK vs COST – PROTECTING HUTT CITY COUNCIL'S VITAL WASTEWATER RIVER CROSSING</i>, G. Shearer, 2016; accessed via: https://www.waternz.org.nz/Attachment?Action=Download&Attachment_id=1776 - Interpolated cross-sections are added upstream and downstream (at chainages 35793 and 35797) in order to meet the dx requirements of the bridge (without splitting the branch) - Lateral links are updated upstream and downstream of the structure	- This weir is unstable.  - The weir profile is wider than the interpolated cross-sections for elevations above 32 m RL.  - It is recommended that the channel cross-section shape and the weir shape be modified to better reflect the contraction and expansion losses across the weir.	The Silverstream weir and upstream and downstream sections have been updated with 2022 survey data provided by GWRC. The weir is now more stable in the 2800m3/s event.	Closed.
5.9			The following 1D additional result outputs are included in order to analyse results appropriately: Resistance, Froude Number, Volume, Flood Area, Mass Error and Lateral Inflows.	Open Energy level should be added to the additional outputs so that fictitious pumps at structures can be detected. In addition, energy level may be used as a more conservative alternative to water level for predicting overtopping.	Energy level output activated in HD file	Closed.
5.10			Mike11 river branches have inverts matched at river connections in order to reduce instabilities (and as is best practice).	Closed This may prevent instabilities and mass generation at start up, but if the river is initialised with base flow this mostly won't be an issue.	n/a	Previously closed
5.11			- A number of errors were identified in the Mike11 cross-section markers. Bank markers were adjusted as follows: - Marker 2 shifted to the invert of the XS at - HUTT: 29668, 35419, 36452, 44228, 44462, 44701, 44808, 448908, 45016, 45373, 45485 HUTT_BRIDGES: 19065, 44229, 44462, 44701, 44808, 44908, 45016, 45373 AWAMUTU: 11101	- Right bank markers in the upper reaches of "AWAMUTU" include bank levels. - The cross-sections at WAIWHETU 19639 and 20065 are unusual. The hydraulic parameters may be calculated correctly, but this should be checked by analysing the openings separately and combining the parameters. A spot check of width suggests this parameter is correct. The	WAIWHETU 19657.00 Marker 2 corrected. Further updates to the Awamutu and Waiwhetu reaches have not been made as GWRC have confirmed they rely on separate models of these watercourses, and they are only included in the Hutt model to include any backwater storage from the Hutt flood hydrograph.	Closed.

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			OPAHU: 4040, 5000, 7100 WAIWHETU: 12370, 17062, 124340 - Extruding objects not found in survey data removed from: HUTT/HUTTBRIDGES: 45633 AWAMUTU: 10198 - Deleted extraneous cross-sections at: AWAMUTU: 101360, 11738 OPAHU: 80580 WAIWHETU: 124340, 161030, 161200, 165680, 191480, 1861900 - Bank marker updated at: AWAMUTU: 10355 OPAHU: 9016	cross-section ID does not contain any useful information. WAIWHETU 19657.00 Marker 2 is not at bottom of cross-section.		
5.12			Cross-sections along HUTT and HUTT_BRIDGES have processed data smoothed to limit instabilities. This is typically done by setting processed data to “Equidistant, 50 levels”.	Closed	n/a	Previously closed
5.13			All Mike11 structures have q-h relationship recalculated to ensure the correction relationship is being applied. In some instances, this required minor updates to the upstream/downstream cross-sections in order to match the culvert structure.	Closed Updated Q-H relations are confirmed.	n/a	Previously closed
5.14			Mike11 structure ID’s in Opahu Stream are updated to remove name duplication.	Open Most of the Opahu culverts share a common empty structure ID.	These small branches (Opahu branches) were included in the previous DHI 2018 models for some of the breach scenarios. It was decided that these branches should be incorporated into all models for completeness/consistency across the suite of models so that any changes to the M11 network are incorporated in all scenario models. It is noted that some these branches are active in the 2800 m3/s event, but most are likely to only convey flow in breach scenarios and the hydraulic representation of these channels could be improved, but this is not part of the current project scope. 2D model schematisation improvements were discussed with GWRC and at this stage GWRC have instructed T+T to only make changes to the floodplain topography relating to the representation of building footprints in the 2D grid. It is noted that the area in which these channels are located (Lower Hutt) is an area where GWRC have instructed T+T as being less critical with regards to identifying flood risk, due to the proposed Riverlink works which will provide an improved standard of protection than the current model representation.	Closed.
5.15			Mike11 structure located at Waiwhetu chainage 1368 is shifted to chainage 1330 due to apparent location error (cross-sections upstream and downstream of chainage 1330 are name “upstream of weir” and “downstream of weir”).	Closed This modification appears correct.	n/a	Previously closed
5.16			Hd file is updated to ensure all modelled river branches have an absolute roughness specified	Closed	n/a	Previously closed

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			(indicated via M11 warnings in the source model provided).			
6. 2D Model						
6.1	Define lateral links. Consistent blocking of rivers and creeks	<i>The blocking out of the rivers and creeks in the bathymetry has been undertaken in an inconsistent manner. In some locations the full width of the channel has been blocked out, in others a strip of cells inside the lateral coupling locations has been blocked out. In various locations there is more than one strip of blocked out cells on either side of the river. There are also gaps in the strips of blocked out cells. While this does not appear to affect the model results it is rather untidy.</i>	River blocking has been updated and applied consistently within the 1D river extent.	Closed Blocking out is good. There are two bridges on the Awamutu where blocking is applied over bridge structures, but this should have a negligible effect on the results.	n/a	Previously closed
6.2	Minor configuration changes - turn off Coriolis forcing - reconfigure wetting/drying depths	<i>Coriolis forcing has been applied to most of the MIKE 21 models. Typically, this should not be applied when doing flood plain models as the effects of Coriolis are likely to be negligible. While the application of Coriolis forcing on the model is likely to be negligible, the reasons for considering it should be detailed in the report.</i>	Coriolis forcing has been switched off	Closed	n/a	Previously closed
6.3		<i>The wetting and drying values used in MIKE 21 are more appropriate for a rain on grid model than a model that uses inflow hydrographs.</i>	Flooding and drying depths have been updated to 0.03 and 0.01, respectively.	Closed These values are acceptable.	n/a	Previously closed
6.4		<i>The wetting and drying parameters should be revised.</i>	See 6.3 above	See 6.3 above	See 6.3 above	See 6.3 above
6.5		<i>Coriolis forcing should be turned off or addressed in the report.</i>	See 6.2 above	See 6.2 above	See 6.2 above	See 6.2 above
6.6	Additional T+T Updates:		The eddy viscosity constant value has been updated to a more appropriate value given the timestep and cell size of the model.	Closed Value calculated as recommended by DHI manual.	n/a	Previously closed.
6.7			Following discussion with GWRC, the 2D terrain is updated to ensure that critical terrain features (namely stopbanks along the Hutt River) are represented appropriately. - Base terrain is sourced from 2013 LiDAR - stopbank levels are stamped on top of this (source either from 1 – drawings 2 – cross-section survey 3 – LiDAR) (refer figure 1 in A3.2.3) - Manual updates are made at standard link coupled cells to ensure that 1D and 2D levels match, in order to reduce instabilities in the coupling. This has occurred at all 2D culvert inlets and outlets.	Open - Generally, it appears that stopbank levels have been burned into the grid, but it is only possible to check this where dikes have also been implemented in the M21 model. Stopbank levels have not been provided as part of this review. - While lowering grid cells to accommodate linking it vital, it is also necessary to provide sufficiently conveyance to or away from inlets or outlets for them to function realistically.	Stopbank levels shapefile to be provided. These small branches (Opahu branches) were included in the previous DHI 2018 models for some of the breach scenarios. It was decided that these branches should be incorporated into all models for completeness/consistency across the suite of models so that any changes to the M11 network are incorporated in all scenario models. It is noted that some these branches are active in the 2800 m3/s event, but most are likely to only convey flow in breach scenarios and the hydraulic representation of these channels could be improved, but this is not part of the current project scope. 2D model schematisation improvements were discussed with GWRC and at this stage GWRC have instructed T+T to only make changes to the	Closed.

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					floodplain topography relating to the representation of building footprints in the 2D grid. It is noted that the area in which these channels are located (Lower Hutt) is an area where GWRC have instructed T+T as being less critical with regards to identifying flood risk, due to the proposed Riverlink works which will provide an improved standard of protection than the current model representation.	
7. Couple (Mike Flood) Model						
7.1	Define lateral links. Consistent blocking of rivers and creeks	<i>The landing out of open channels in the bathymetry should be tidied and the entire reach of the MIKE 11 model, excluding the bridge locations, should be coupled to the MIKE 21 model. This will reduce the risk of glass walling in the MIKE 11 model</i>	Lateral links have been updated following georeferencing of cross-sections and refining of river blocking. This includes creation of lateral links where they were previously missing.	Open It is noted that for most bridges the lateral links do not extend to the bridges fully and in most cases the lateral links in the original two models provide better coverage. This means that water will not be exchanged with the flood plain in the vicinity of the bridges. This is particularly apparent for the Estuary Bridge where pre-existing model lateral links (shown in yellow) extend to the bridge, but the combined model ones (orange and green) do not. This change will have to be made in concert with redefining the Max dx in the "HUTT_BRIDGES" branches and interpolating cross-sections closer to the bridges.  It is recommended that lateral links extend up to the bridge to allow for overtopping. This update must be combined with shortening of the bridge reaches to 10-20 m upstream and downstream of the bridges as the expansion and contraction around bridges is small. Lateral linking skips the Akatarawa and Mangaroa confluences. If these channels are represented by inflow boundary conditions only, then I would recommend that the open channels and catchments are removed entirely from the 2D domain to prevent confusion for future model users and to remove the potential for	Interpolates have been added at bridges to allow for lateral linking to extend to immediately upstream and downstream of structures. This includes linking between the road and rail bridge at Silverstream. Small sections of 1D channel branches (using 2013 LiDAR) have been generated to better represent the inflows from the Mangaroa, Akatarawa and Whakatiki tributaries (to remove localised spikes in water level where inflows were previously represented as point source inflows). These channels and a tributary just upstream of Mangaroa have been blocked in the 2D grid to prevent any unrealistic backfilling from the Hutt channel.	Closed.

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				unintended back filling of the open channels, which give incorrect flood estimates. Any other side branches modelled in a similar way should be removed from the 2D domain.		
7.2	Additional T+T Updates:		Where the lateral link line is located at the stopbank crest, lateral Links are set to spill at the highest ground level (HGH). This is done in order to ensure that the spill level is appropriate where cross-section survey in the 1D model captures the stopbank crest.	Closed It is confirmed that “HGH” source is used in locations where the stopbank alignment corresponds to edge of the 2D grid at lateral linking locations. This is appropriate so long as the stopbank crest is sufficiently described by cross-section bank levels and the crest levels do not fall below the interpolated level between cross-sections. Elsewhere the “M21” source has been used.	<i>Lateral links plot.pdf</i> (D2.2.4) is attached which shows a comparison of all HGH lateral links with the existing (2018) models. Overall, the crest trends are comparable with the updated V008 model crest being higher in most instances. The V008 crest line is considered more accurate as: - The latest available surveyed crest levels at each cross-section were analysed and have been checked at each modelled cross-section where a stopbank is present. The stopbank (or floodwall) crest has been implemented into the 1D model where the lateral link follows the stopbank crest. - The HGH approach ensures these surveyed stopbank crest levels are applied as a minimum, with LiDAR/M21 levels applied if they exceed the interpolated crest. - The existing/2018 model used a combination of M11 and M21 crest level extraction. The M11 approach can cause instabilities if lower than the 2D grid. The M21 approach relies on the lateral links being accurately digitised on the crest of the stopbank and the crest being accurately implemented in the 2D grid. Both of these are unable to be traced back in the 2018 models. The levels have been checked in detail on the right bank between chainages 38292 to 38492 and 45633 to 46835 as the crest in the updated V008 model is lower than the 2018 model here. The model V008 is representative of the latest available stopbank crest levels in these locations.	Closed.
			T+T note that while lateral links of the Hutt River branches have been updated, the lateral links of the modelled tributaries have not been and are not considered appropriate. Updating these lateral links is considered outside of the scope of this project if the peer reviewer is satisfied with the current representation, acknowledging that local models of these areas exist. We note that the lateral links in their current state could lead to erroneous results and/or instabilities in the overall model.	Closed Linking for the Awamutu and Waiwhetu branches appears to be adequate, although some attention could be paid to the blocking out. It is agreed that the other branches, such as Opahu, are not linked correctly.	These small branches (Opahu branches) were included in the previous DHI 2018 models for some of the breach scenarios. It was decided that these branches should be incorporated into all models for completeness/consistency across the suite of models so that any changes to the M11 network are incorporated in all scenario models. It is noted that some these branches are active in the 2800 m3/s event, but most are likely to only convey flow in breach scenarios and the hydraulic representation of these channels could be	Previously closed

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					improved, but this is not part of the current project scope. 2D model schematisation improvements were discussed with GWRC and at this stage GWRC have instructed T+T to only make changes to the floodplain topography relating to the representation of building footprints in the 2D grid. It is noted that the area in which these channels are located (Lower Hutt) is an area where GWRC have instructed T+T as being less critical with regards to identifying flood risk, due to the proposed Riverlink works which will provide an improved standard of protection than the current model representation.	
8. Instabilities						
8.1	Instabilities	<i>There is an instability occurring during peak flows in the Waiwhetu Stream at chainage 12125 in the design models. There are also minor instabilities in the Awamutu Stream.</i>	The instability identified on the Waiwhetu branch has been removed in the combined model.	Closed 1D channel is generally stable, especially at the peak.	n/a	Previously closed
8.2		<i>Over 100,000m3 of water is being generated by instabilities in the October 1998 MIKE 21 model. The continuity balance in the MIKE 11 component of this model is much higher than for other model runs.</i>	Not addressed in this peer review round: Model version UHLH_202109_v007 is issued as the Baseline scenario only currently.			
8.3		<i>Depending on where this water is being generated this may be significant. The locations of water being generated can be identified by setting the water correction file switch to true in the MIKE 21 model.</i>	Water correction file is now being generated.	Closed Simulation volume imbalance is less than 1%. M21 water-generation grid indicates that M21 water generation is only occurring in significant quantities at intermittent locations along Hutt River lateral links. This is not worth investigating further as the issues are likely due to the lateral linking implementation.	n/a	Previously closed
8.4		<i>Instabilities in the MIKE 21 models for the breach scenarios are generating significant volumes of water, in excess of 2 million cubic meters for the 2800 runs and 1 million cubic meters for the 1900 runs. Water generation files have been supplied and these typically show that water generation is distributed across the flood plains. The volumes shown in the water generation files do not correspond with the volumes shown in the log files.</i>	Not addressed in this peer review round: Model version UHLH_202109_v007 is issued as the Baseline scenario only currently.			
8.5		<i>Water correction files should be generated to identify areas of excessive water generation in the MIKE 21 models.</i>	See 8.3 above.		See 8.3 above	See 8.3 above
8.6	Additional T+T Updates:		There is a discharge instability noted in on the Awamutu branch at AWAMUTU 11332 which was also present in the original model. Attempts have been made to fix this instability, but it still remains. The effect is considered minor as the Awamutu and Waiwhetu branches are not modelled in detail in this study as GWRC have a separate model. They are included in the Hutt model for backwater effects only. The flow and storage provided by the Awamutu branch is very small (4 m³/s) in comparison to the	Closed Instabilities are common in bridges that are modelled as culverts when there is little to no contraction and expansion. The worst instabilities occur as the culvert surcharges. Artificially increasing expansion and contraction losses may be the only way to improve this instability, which is not justified here as it does not affect peak flows and does not significantly impact overall volume.	n/a	Previously closed

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			lowest ARI (2 year) event to be modelled on the Hutt watercourse (approx. 750 m ³ /s).			
			We note that with the introduction of the Silverstream weir, additional instabilities have been noted in the model. This is occurring in both 1) the 1D model and 2) at the coupling locations, as indicated by the location of 'water correction' cells. T+T suggest testing the following approaches with the approval of the peer reviewer: - Suggest lowering the ESF of the lateral links which is currently set at the (maximum) value of 1.0. 'Lateral inflow' outputs from the hdAdd.res11 indicate that oscillations between the 1D/2D models are present. - Suggest testing increasing the maximum dx. Max dx is set to 6m for the model, which is equivalent to the 2D cell size. This is quite a small value for a river this size.	Open It is recommended that the geometry of the weir and adjacent cross-sections are made to be consistent. Increasing the Max dx may improve stability of the H-points upstream and downstream, but it will not have an impact on the weir calculation. It is reasonable to lower the smoothing factor to 0.3, but this is unlikely to improve the stability of the channel.	The Silverstream weir and upstream and downstream sections have been updated with 2022 survey data provided by GWRC. The weir is now more stable in the 2800m ³ /s event.	Closed.
9. Outputs						
9.1	Document updates, produce draft output and brief GWRC	<i>Edits made to the various bathymetry files should be documented.</i>	This peer review table will track updates made to the hydraulic model. Additionally, T+T will provide GWRC with the model change documentation and produce draft output following peer review process.	Open No documentation of the changes made to the model, aside from the note concerning georeferencing of cross-sections (dated 8 April 2021), has been provided.	GWRC confirmed no interim model report required at this stage but responses to specific peer review comments should provide detail where requested.	Closed.
9.2			Provided figures (refer D2.2.3) show the flood level difference maps for one model simulation between existing results (202109_v007) and the source model.			

D2.2.1 *Hutt River DHI model update – cross-section georeferencing (T+T, 8 April 2021)*

Memo

To:	Reuben Ferguson	Job No:	1014022
From:	James Mogridge	Date:	8 April 2021
Subject:	Hutt River DHI model update - cross-section georeferencing		

1 Summary

The peer reviewer suggested georeferencing model cross-sections so that the 1D-2D links can be reviewed and updated as necessary. Having fully georeferenced cross-sections will also improve the data sourcing within the model, allowing future model updates, reviews, and data analysis (comparing model topography with new survey datasets, for example) to be completed more efficiently.

The current model cross-sections are a mix of data comprising mainly 1998 bed levels, 1987-89 berm levels, design sections (as of 2013) and 2013 LiDAR. The 1998 bed levels are required in the model (as this is part of GWRC maintenance plan). It has previously been recommended that the model bank levels are updated with the 2019 cross-section survey dataset, but it was GWRC's preference to maintain the current model topographic sources across the bed and banks.

Table 1.1 summarises the number of cross-sections that have been successfully georeferenced at both banks from the provided datasets. This is where the Z height value of the bank levels in the model cross-section can be matched to levels in the respective survey datasets.

Table 1.1: Summary of cross sections georeferenced directly from the survey datasets.

Total number of modelled cross-sections		303
Cross-section bank markers (both banks) successfully georeferenced (i.e. match between Z values in the survey dataset and the model)	Survey dataset	No. cross-sections georeferenced
	1987-1989	63
	1998	76
	2014	26
Remaining un-georeferenced cross sections		138

Table 1.1 shows that 54% of the model cross-sections have been georeferenced (165 sections). The remaining 46% of un-referenced cross-sections (138 sections) are a mix of design sections, those derived from LiDAR, or those for which partial/no bank level matches exist, as follows:

- Cross sections 170-190 – 1998 bed with 2013 LiDAR bank levels – 3 cross-sections.
- Cross sections 210-300 – design sections (based on Opus design) – 10 cross-sections.
- Cross sections with only one bank level matched from the survey data – 114 cross-sections.
- Cross sections with no bank levels matched from the survey data – 11 cross-sections.

2 Proposed methodology for georeferencing missing bank markers

The following method is proposed to enable the remaining non-georeferenced cross-sections to be spatially adjusted so that a 100% georeferenced model can be produced. The particular method applied to an individual section depends on the section category noted above. A proof-of-concept demonstration of each method was conducted on a sample of the cross-sections, as shown in the accompanying images.

2.1 Cross sections 170-190 – 1998 bed with LiDAR 2013 bank levels

- Georeference the cross-section in GIS using the bed level from the survey dataset as the referenced point instead of the bank markers (as there is no recorded survey/LiDAR extraction XY coordinate of the bank Z height).
- Once the bed level is matched, the polyline is rotated in GIS to the orientation of the survey(s). No changes are made to the cross-section width.
- Bank/left-right markers can then be georeferenced using the end points of the GIS polylines.

Figure 2.1 shows the non-georeferenced sections (blue polylines) and the corrected sections using the above methodology (green polylines). The corrected sections show a good agreement with the existing 1D-2D lateral link lines in this location, given that the cell size of the 2D model is 6 m².



Figure 2.1: Cross sections 170-190 – 1998 bed with 2013 LiDAR bank levels

2.2 Cross sections 210-300 – design sections (based on Opus design)

Cross-sections are shifted and rotated in GIS (no change to cross-section width) to match the 2019 survey bank markers. Figure 2.2 shows the un-georeferenced sections (left) and the corrected sections (right) using the above methodology. The corrected sections show a good agreement with the existing 1D-2D lateral link lines in this location, given that the cell size of the 2D model is 6 m². There is one location identified on the right bank (circled in red) where the lateral link requires extending to the stopbank.



Figure 2.2: Cross sections 210-300 – design sections (based on Opus design)

2.3 Cross-sections with only one bank level matched from the survey data

There are a large number of sections (114) where only one bank level Z height value from the model cross-section can be matched to levels in the survey(s). Spot checks have shown this appears in locations where:

- One bank has been “widened as per adopted design as of 2013”.
- An interpolated Z height has been used in the model between two surveyed Z height points.

The proposed methodology for these sections is to georeference to the matched bank level and then rotate the section to the same orientation as the survey data. The opposite bank can then be georeferenced using the length of the cross-section.

Figure 2.3 shows an example at the sections “widened as per adopted design as of 2013” where the non-georeferenced sections (orange lines) have been referenced using the left bank. The corrected sections (green lines) show that the lateral link on the right bank also requires widening at this location.



Figure 2.3: Cross-sections with only one bank level matched from the survey data.

2.4 Cross-sections with no bank levels matched from the survey data

There are 11 cross-sections with no Z height bank levels matched to the survey data. For these sections it is proposed to use the same methodology outlined in Section 2.1, in which the cross-section is georeferenced in GIS using the bed level from the survey dataset as the reference point instead of the bank markers.

D2.2.2 Spot checks of transverse roughness

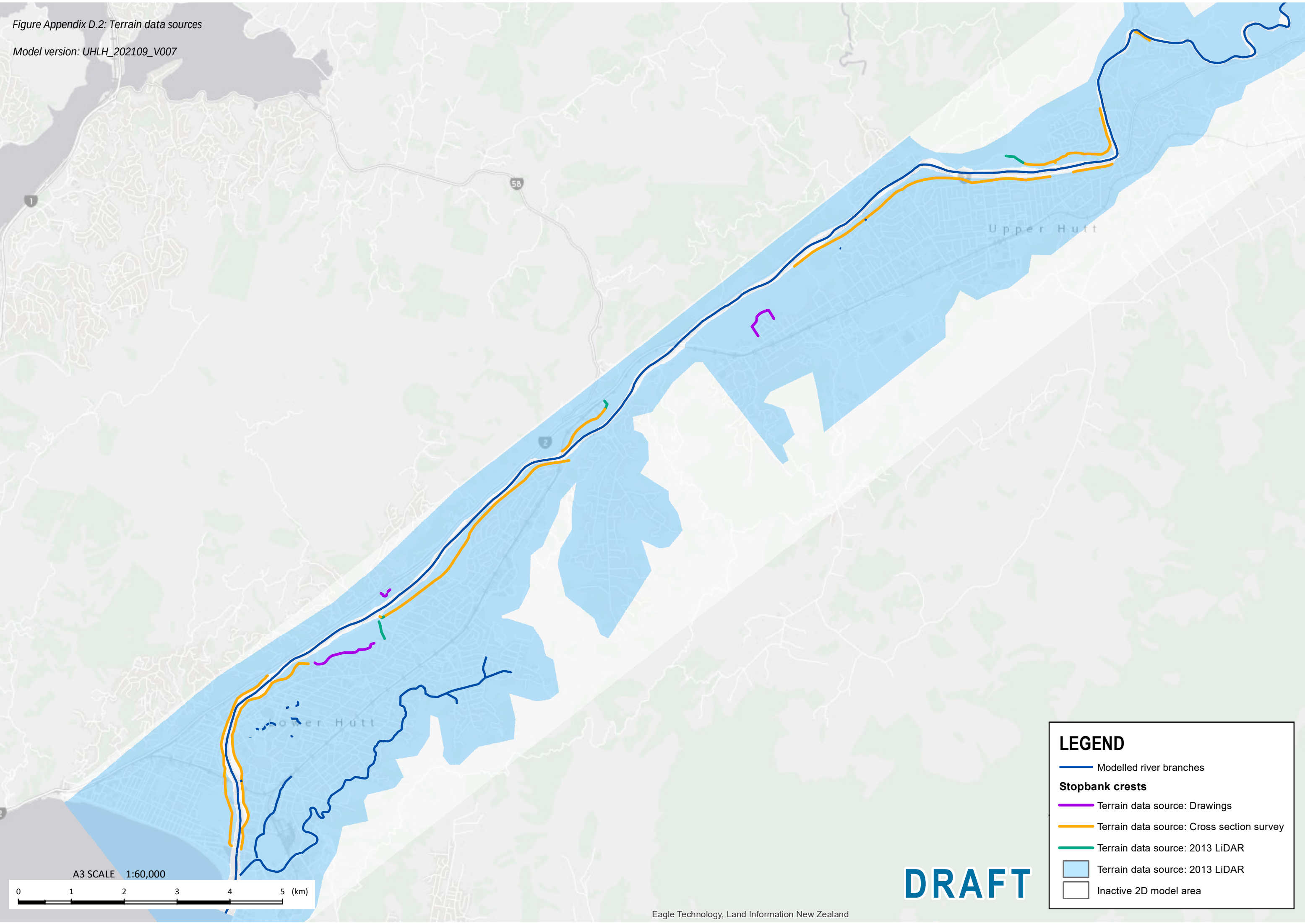
Appendix D Table 2: T+T roughness checks and comments, 11 July 2022

Chainage	Roughness values at cross-section		Roughness checks against aerial imagery	
	Bed	Banks	Bed	Banks
16,918	0.051	0.153	Ok, Stones, pools, and riffles with some channel bends.	Ok, dense vegetation on both banks.
17,042	0.051	0.153	Ok, Stones, pools, and riffles with some channel bends.	Ok, dense vegetation on both banks.
17,160	0.051	0.153	Ok, Stones, pools, and riffles with some channel bends.	Ok, dense vegetation on both banks.
17,419	0.051	0.153 (RB only)	Ok, Stones, pools, and riffles with some channel bends.	Ok, dense vegetation on right bank. Grass on left bank.
17,510	0.05	0.075 on left side (high flow zone) of channel. 0.1 on left bank	OK, Stones, pools, and riffles with a straighter channel reach.	Ok, increased vegetation on left bank/side of channel
17,627	0.05	0.1 on left side (high flow zone) of channel.	OK, Stones, pools, and riffles with a straighter channel reach.	Ok, increased vegetation (compared to 17510) on left bank/side of channel
17,748	0.05	0.1 on left side (high flow zone) of channel.	OK, Stones, pools, and riffles with a straighter channel reach.	Ok, increased vegetation (compared to 17510) on left bank/side of channel
17,866	0.051	0.153 on right bank	Ok, Stones, pools, and riffles with some channel bends.	Ok, dense vegetation on right bank.
17,975	0.052	0.156 (RB) 0.089 (LB)	OK, Stones, pools, and riffles with a straighter channel reach.	Ok, vegetation on LB, dense vegetation on right bank.
18,793	0.066	0.132 (LB) 0.198 (RB)	OK, vegetation/island within channel	Ok dense vegetation on both banks.
20,028	0.053	0.159 on right bank	Ok, stones and meandering channel	Ok, dense vegetation on right bank
22,644	0.045	0.077, 0.156, 0.225 on left bank 0.016, 0.077, 0.156, 0.225 on right bank	Ok, stones and straight channel	Ok, increasing vegetation density on LB Right bank also increasing in vegetation density but not clear why there is a localised area of reduced roughness at the bottom of the bank.
29,810	0.036	0.0612, 0.126, 0.18 on right bank	Ok, straight channel reach	Ok, increasing vegetation on the right bank.
33,470	0.036	0.0468, 0.126 left bank 0.126, 0.0612 right bank 0.036 on right bank floodplain	Ok, straight channel reach	Ok, rip rap on left bank, vegetation on right bank, grass on floodplain.
41,705	0.036	0.18, 0.126 left bank 0.126, 0.18 right bank 0.036 floodplain	Ok, straight channel reach	Ok, vegetation on left bank and right bank, grass on floodplain.
45,741	0.038	0.19 on right bank No increased roughness on left bank	Ok, some sinuosity through channel.	Ok, Vegetation on right bank, No data available/Unknown (design section) for left bank
48,348	0.034	0.126 on left bank (of secondary channel)	Ok, straight channel reach	OK, Vegetation on left bank of secondary channel appropriate. Grass in between two channels (value of 0.034 appropriate)
49,497	0.029	No change to roughness on banks	Ok, straight channel reach	Ok, no dense vegetation on banks (grass only)

D2.2.3 Supporting figures

Figure Appendix D.2: Terrain data sources

Model version: UHLH_202109_V007



LEGEND

- Modelled river branches
- Stopbank crests**
 - Terrain data source: Drawings
 - Terrain data source: Cross section survey
 - Terrain data source: 2013 LiDAR
- Terrain data source: 2013 LiDAR
- Inactive 2D model area

DRAFT

Figure Appendix D.3: Water level difference
Updated model (UHLH_202109_V007) minus
Source model (DHI's LH No Breach Rerun 2018)
2800m³/s event

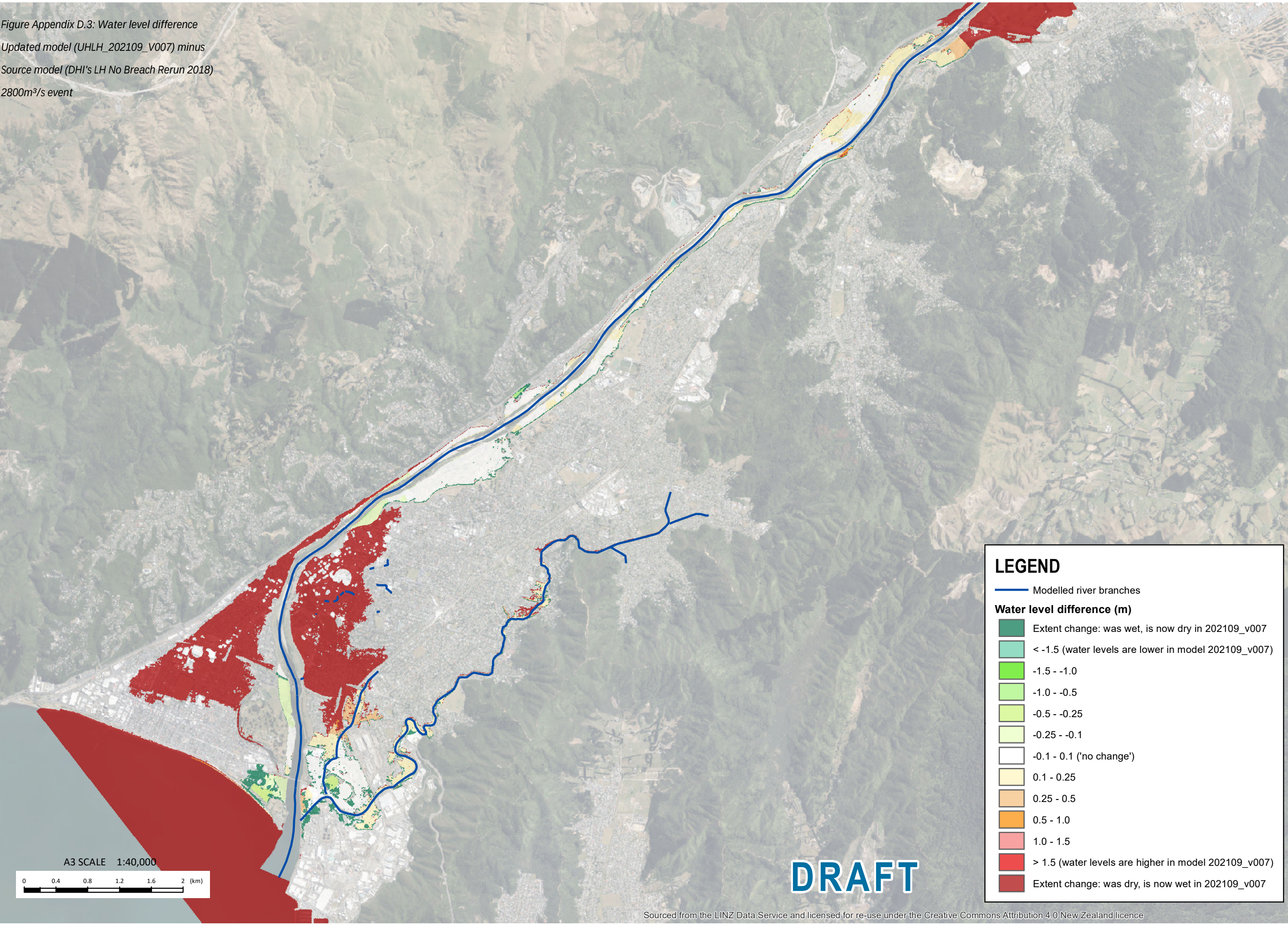
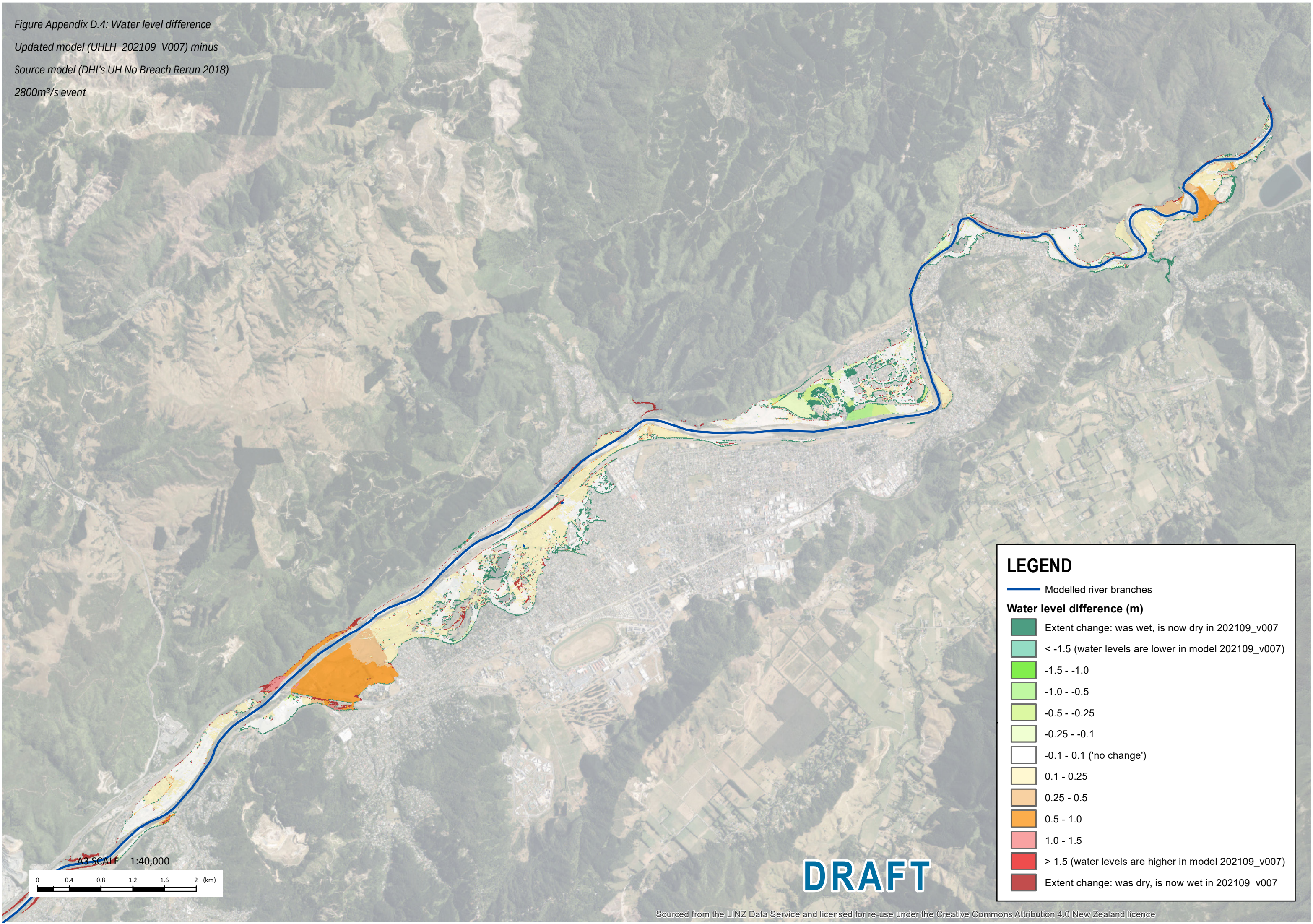
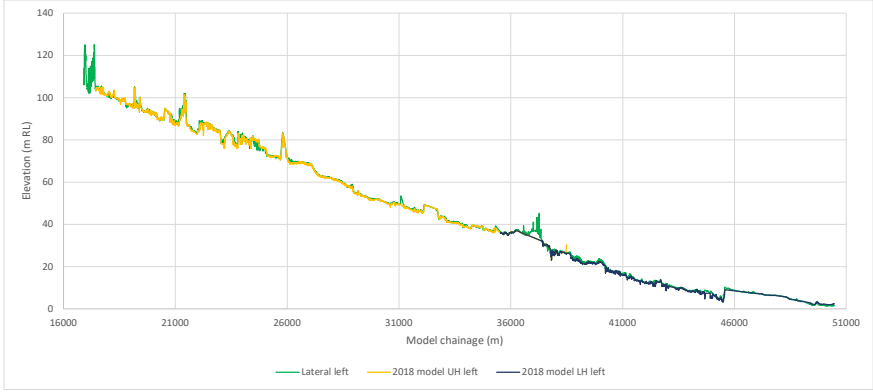


Figure Appendix D.4: Water level difference
Updated model (UHLH_202109_V007) minus
Source model (DHI's UH No Breach Rerun 2018)
2800m³/s event



D2.2.4 *Lateral links plot* (T+T, 11 July 2022)

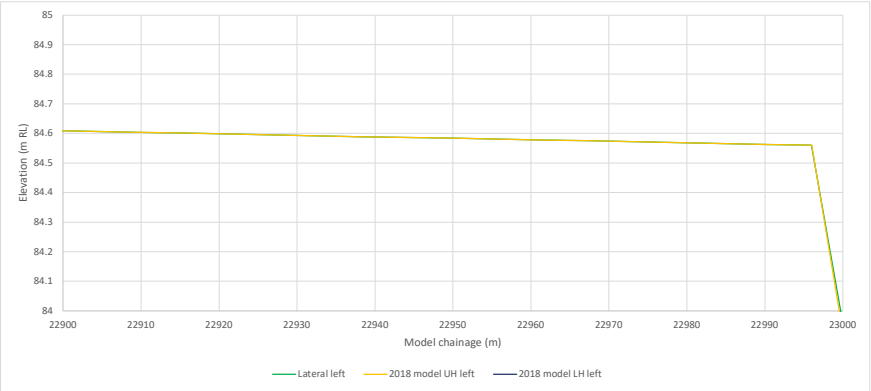
Left bank



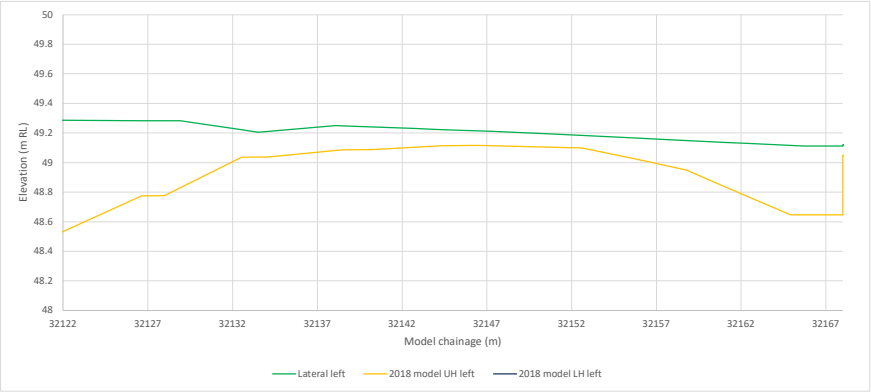
CHG from 22644 CHG to 22898



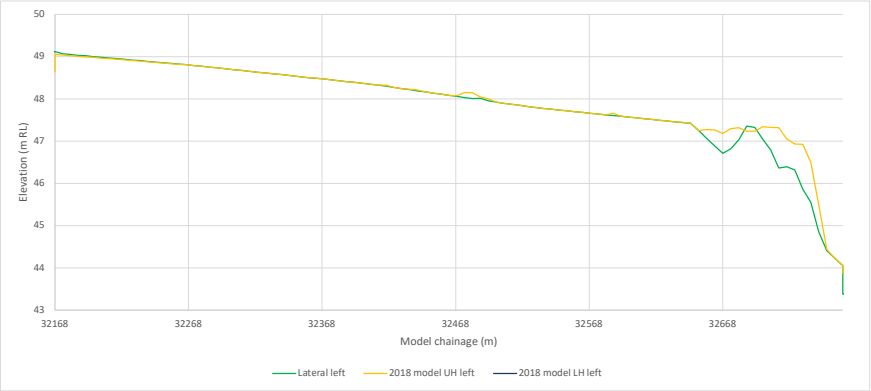
CHG from 22898 CHG to 22996



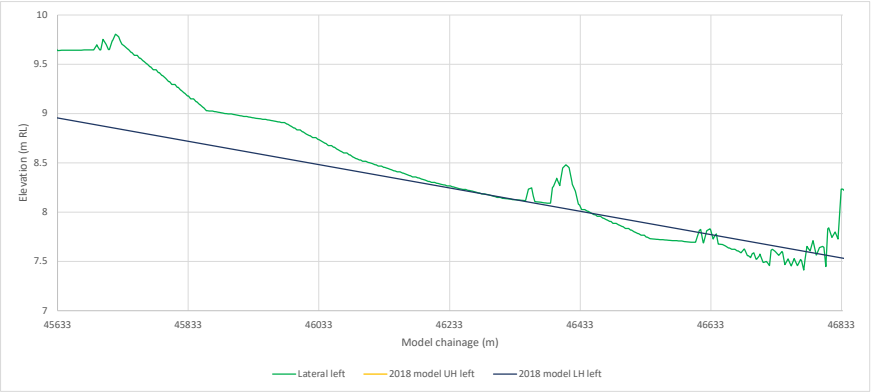
CHG from 32122 CHG to 32168



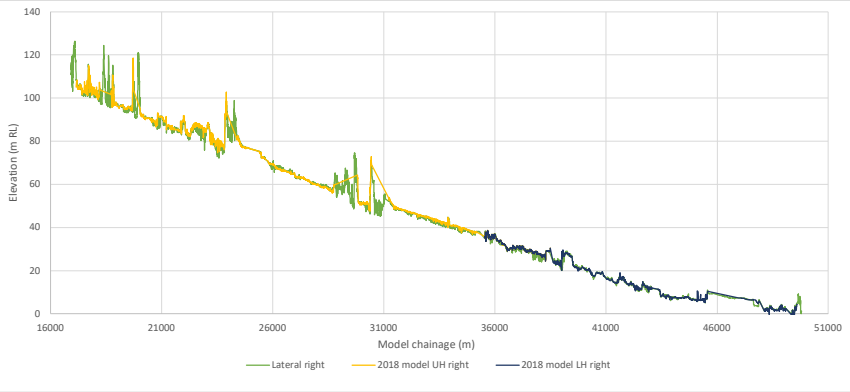
CHG from 32168 CHG to 32758



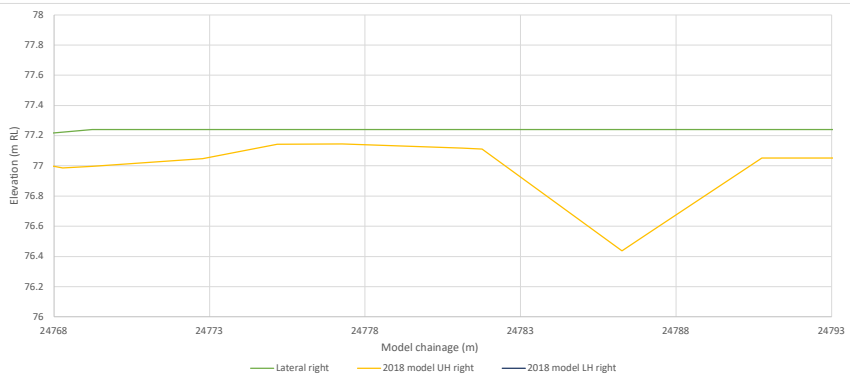
CHG from 45633 CHG to 46835



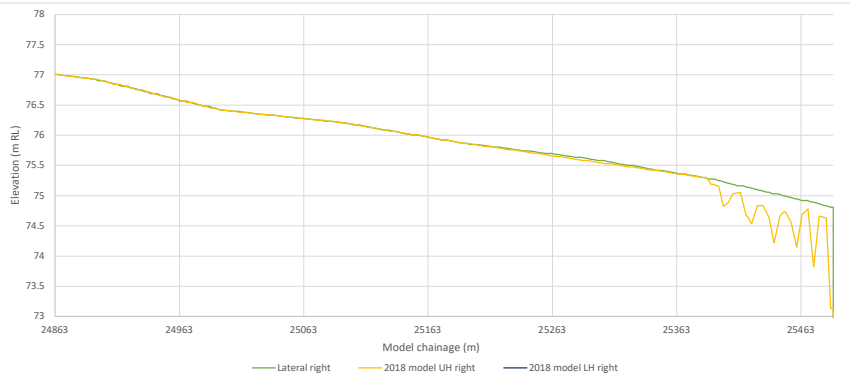
Right bank



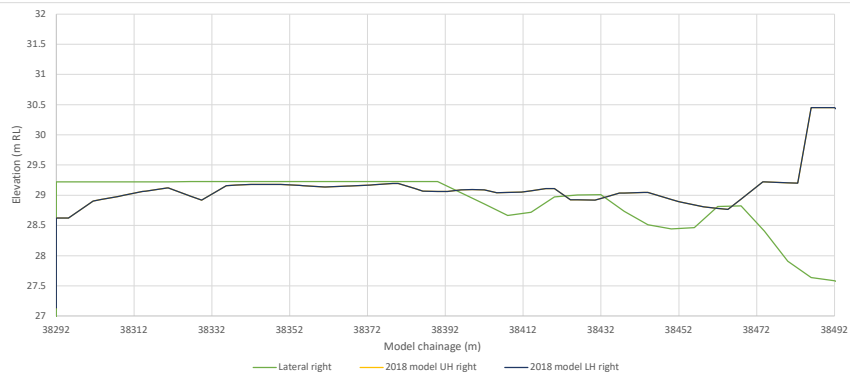
CHG from 24768 CHG to 24793



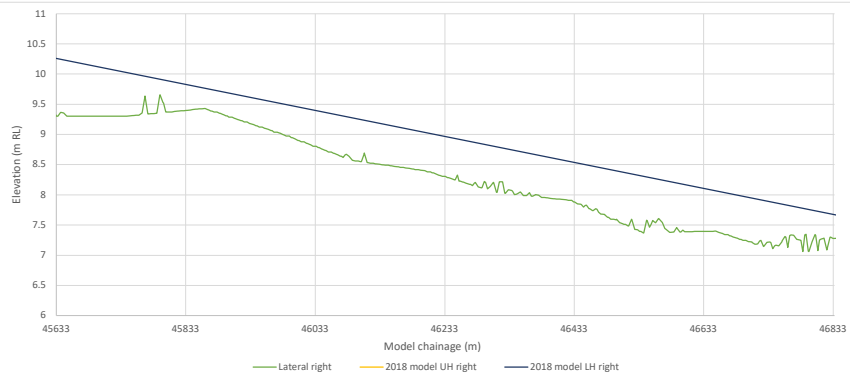
CHG from 24863 CHG to 25489



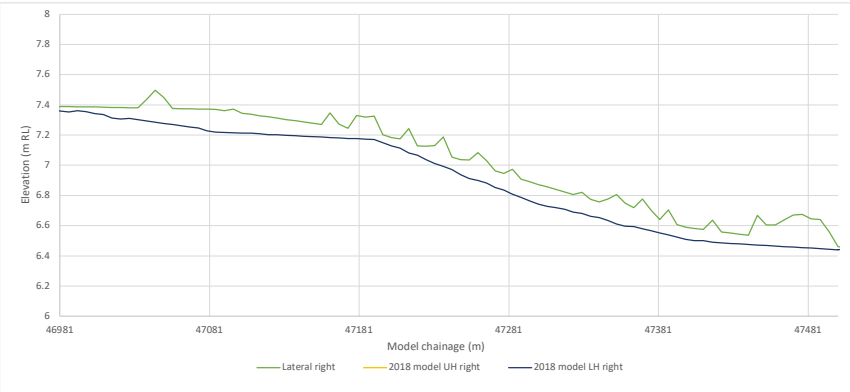
CHG from 38292 CHG to 38492



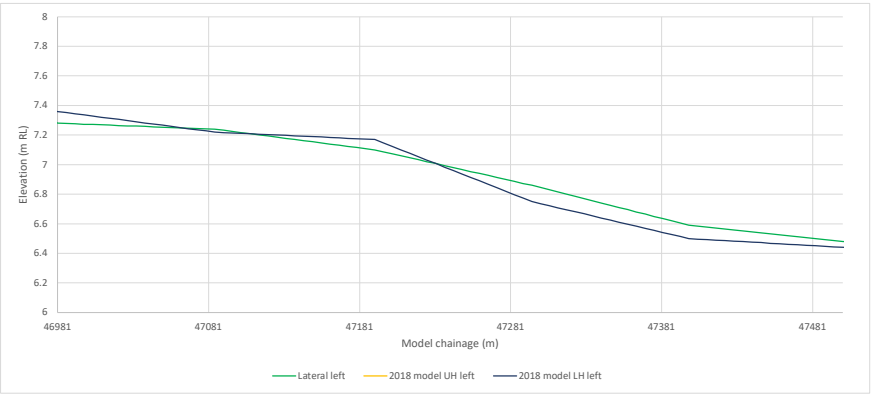
CHG from 45633 CHG to 46835



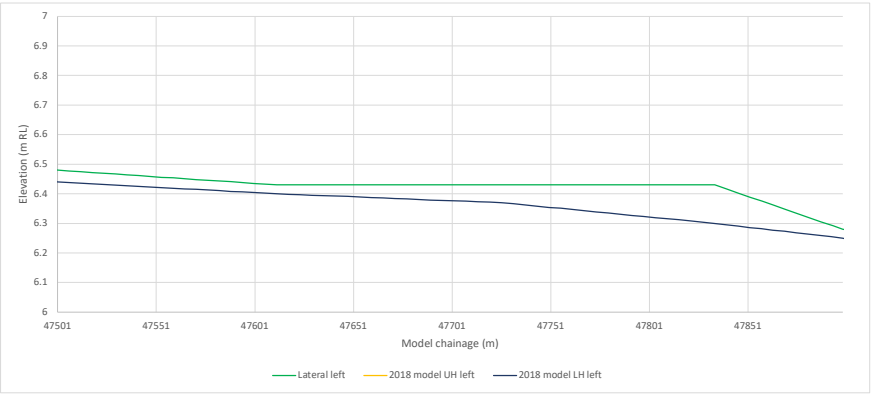
CHG from 46981 CHG to 47501



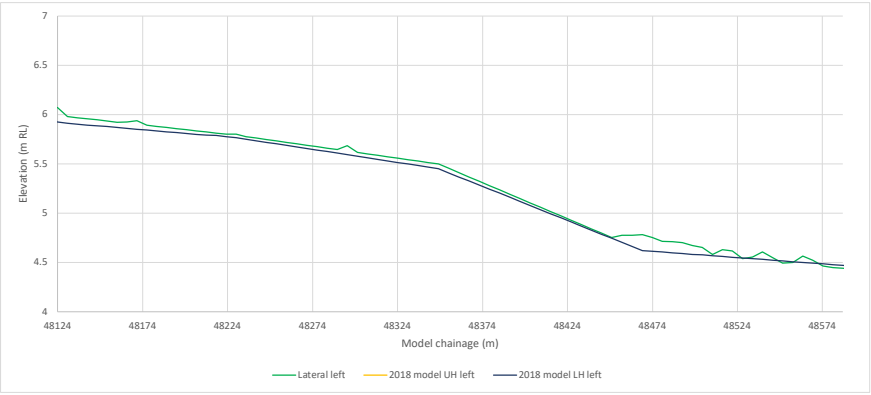
CHG from 46981 CHG to 47501



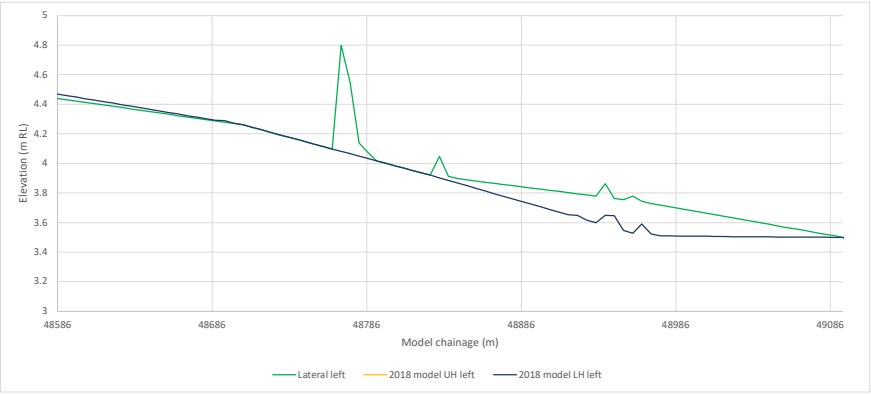
CHG from 47501 CHG to 47899



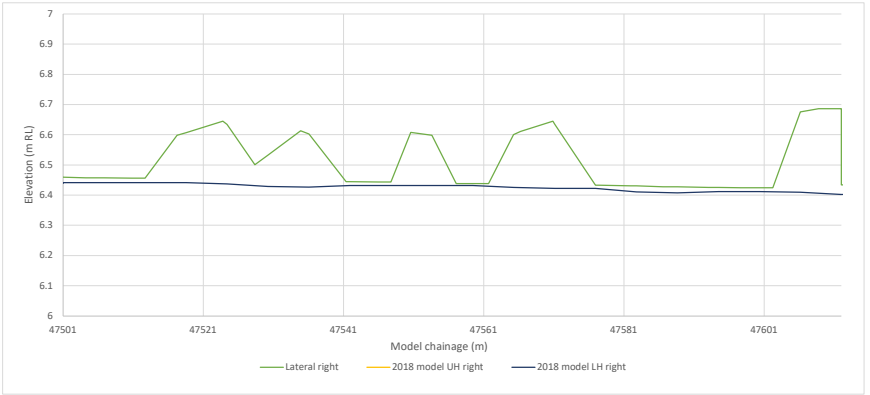
CHG from 48124 CHG to 48586



CHG from 48586 CHG to 49094



CHG from 47501 CHG to 47612



D2.2.5 Responses to draft peer review report

The table below contains review comments relating to the March 2022 review of model *UHLH_202109_V007*. These review comments are extracted from the draft *Hutt River Peer Review Report* (Awa, March 2022). Comments in the report have not always been captured in the FHMS review template, which was implemented at a similar time.

Appendix D Table 3: T+T responses to Awa review report

ID	Peer Review comment from draft <i>Hutt River Peer Review Report</i> (Awa Environmental Ltd, March 2022)	Modellers comments (T+T model version: UHLH_202109_V012)	Review comments 15/07/2022
Model merging			
1.1	Mismatches in cross-sections at 49301 across the “HUTT” “HUTT_BRIDGES” boundary connection. Cross-sections on either side of boundary connections must be identical in order to eliminate unintended energy losses or gains. All similar connections should be inspected, and cross-sections revised where necessary.	Connections between the HUTT and HUTT_BRIDGES branches have been checked and updated where required to ensure consistency at the branch start/end.	Closed.
1.2	Lateral links do not extend up to bridges on both upstream and downstream sides. The bridge reaches are very long (in some instances 200 m). Cross-sections should be interpolated closer to the bridges and the branch Max dx reduced to better reflect the pre-existing models. In addition, lateral links should be added to account for flow exchange close to the bridges.	Interpolates have been added at bridges to allow for lateral linking to extend to immediately upstream and downstream of structures. This includes linking between the road and rail bridge at Silverstream.	Closed.
1.3	Many small branches have been added to the model and standard linked to the 2D grid in the flood plain. It is not clear why these have been added and why the channels are not blocked out or laterally linked. There is insufficient detail in the grid to convey flow to, or away from these channels. These channels are not in the original Lower Hutt model, although they do appear in a figure in DHI (2018). Most of the channels convey no flow in the Q2800 scenario. Improve representation of open channels through grid modification and lateral linking of channels (with associated blocking out in the grid).	These small branches (Opahu branches) were included in the previous DHI 2018 models for some of the breach scenarios. It was decided that these branches should be incorporated into all models for completeness/consistency across the suite of models so that any changes to the M11 network are incorporated in all scenario models. It is noted that some these branches are active in the 2800 m3/s event, but most are likely to only convey flow in breach scenarios and the hydraulic representation of these channels could be improved, but this is not part of the current project scope. 2D model schematisation improvements were discussed with GWRC and at this stage GWRC have instructed T+T to only make changes to the floodplain topography relating to the representation of building footprints in the 2D grid. It is noted that the area in which these channels are located (Lower Hutt) is an area where GWRC have instructed T+T as being less critical with regards to identifying flood risk, due to the proposed Riverlink works which will provide an improved standard of protection than the current model representation.	It is recommended to provide a brief and clear explanation in reporting of the legacy of these branches and note that results in the vicinity of them are not reliable. Closed.
1.4	Because of gaps in the lateral linking, flood plain flows cannot re-enter the river between the Silverstream road and rail bridges. See Figure 1 for a plot of depth results overlaid with velocity vectors in the vicinity of the bridges. Add lateral links between and in the vicinity of the two bridges.	Lateral linking has been updated at bridges including the addition of lateral links between the road and rail bridge at Silverstream.	Closed.
1.5	The large increase in pier width blockage at the Silverstream bridge between the pre-existing and combined models has a large impact on local water levels and should be remedied.	Peer reviewer confirmed in meeting 01/04/2022 that existing (2018) model blockage factor would be more appropriate as calibration exercise was undertaken in 2018 modelling. The blockage has been adjusted back to 14%.	Closed.
1.6	Improvement of the representation of the Silverstream weir is required.	The Silverstream weir and upstream and downstream sections have been updated with 2022 survey data provided by GWRC. The weir is now more stable in the 2800m3/s event.	Closed.
1.7	Removal of the design blockage from bridge pier blockage and soffit adjustments and the addition of recorded blockage will be required when simulating any historic events.	Agreed. The design blockage will be noted in reporting and model documentation.	Closed.
1.8	Removal of LiDAR-error spikes within building footprints has not been undertaken in the combined model but was undertaken in pre-existing models. It is unlikely that this will have much impact on calibration especially as flooding outside of the river berm is not considered in calibration or validation.	All building footprints (LINZ 2022 building footprint data) within the 2D model grid have been flattened to the surrounding ground level (the median ground level surrounding each building footprint after applying a 1m buffer) and then raised by 150 mm (minimum clearance in building code). It is noted that some small spikes in the LiDAR still exist in-between building footprints as there are some cases where the spike was not contained fully within the footprint. These mainly occur in the Lower Hutt area where GWRC have instructed T+T as being less critical with regards to identifying flood risk, due to the proposed Riverlink works which will provide an improved standard of protection than the current model representation.	Closed.
1.9	Using older cross-section sets for the calibration and validation events is important. This is a major update that will be required for the design models provided for this review.	To be noted in reporting.	Closed.

ID	Peer Review comment from draft <i>Hutt River Peer Review Report</i> (Awa Environmental Ltd, March 2022)	Modellers comments (T+T model version: UHLH_202109_V012)	Review comments 15/07/2022
Stopbank updates			
2.1	There is one location where there may be an issue with the combined model stopbank implementation: this is at HUTT chainage 46981 where there is a significant dip in both M11 cross-section banks directly downstream of the Railway Ave Bridge and stopbank levels have not been raised appropriately in the grid. In this location a lateral link source type of "HGH" has been applied to prevent in accurate levels in the grid from misrepresenting the stopbank crest, however, the M11 stopbank crest levels are also too low. This can be seen in Figure 2 and Figure 3 where the orange line (combined model) drops significantly below the blue line (Lower Hutt model). The 2D grid in this location will not prevent spilling. It is recommended that left and right bank link levels from the MFLateral.xns11 files of the pre-existing and combined models are plotted together to compare levels all the way along the Hutt River channel to find any other significant discrepancies. This need only be undertaken along lateral links using the "HGH" source type.	At HUTT chainage 46981 there is a floodwall on the crest of the stopbank that was missing from the model V007 submitted for review. This elevations from this floodwall has been added to the bank levels in the cross-sections in the V008 model to ensure the HGH lateral link height is correct. Other GWRC floodwalls have been checked to ensure they are represented in the model. Lateral links plot.pdf (D2.2.4) is attached which shows a comparison of all HGH lateral links with the existing (2018) models. Overall, the crest trends are comparable with the updated V008 model crest being higher in most instances. The V008 crest line is considered more accurate as: The latest available surveyed crest levels at each cross-section were analysed and have been checked at each modelled cross-section where a stopbank is present. The stopbank (or floodwall) crest has been implemented into the 1D model where the lateral link follows the stopbank crest. The HGH approach ensures these surveyed stopbank crest levels are applied as a minimum, with LiDAR/M21 levels applied if they exceed the interpolated crest. The existing/2018 model used a combination of M11 and M21 crest level extraction. The M11 approach can cause instabilities if lower than the 2D grid. The M21 approach relies on the lateral links being accurately digitised on the crest of the stopbank and the crest being accurately implemented in the 2D grid. Both of these are unable to be traced back in the 2018 models. The levels have been checked in detail on the right bank between chainages 38292 to 38492 and 45633 to 46835 as the crest in the updated V008 model is lower than the 2018 model here. The model V008 is representative of the latest available stopbank crest levels in these locations.	
2.2	Another related issue that is raised in Table 4 is that lateral links have been disconnected in the "HUTT_BRIDGES" branches. These lateral links should be reinstated and extended if necessary (along with attending modifications to the 1D bridge representations). These issues combined may allow water to spill at levels below the stopbank crests.	Interpolates have been added at bridges to allow for lateral linking to extend to immediately upstream and downstream of structures. This includes linking between the road and rail bridge at Silverstream.	Closed.
2.3	It should be noted that the dip in the right bank levels between 47500 and 48000 in the combined model is justified as the channel separates from the stopbank alignment. There may be flow exchange issues in the pre-existing model in this location	Issue is in pre-existing (DHI 2018 models) and not in the updated model. No update to latest model required.	Closed.
Gaps and potential model improvements			
3.1	The pre-existing models (DHI, 2018) do not include RiverLink cross-sections and represent the state of the river prior to 2014. Cross-sections and stopbanks must be updated if the model is to be used for representing the existing system.	Cross-section topography data has previously been raised with GWRC who confirmed that the setup as per the 2018 modelling should remain (2014 sections with 1998 bed. 2013 design sections through the Riverlink channel). GWRC confirmed in meeting with T+T (05/04/2022) that Riverlink design is not to be included in the model as it is a current state model.	Closed.
3.2	MIKE 2022 release notes state that MIKE 21 Classic will be discontinued in the near future, although a date for this has not been set. As MIKE 21 Classic is no longer in active development and does not provide the performance of more modern simulation engines, which utilise GPU's, it is recommended that the model be upgraded to use the MIKE 21 Flexible Mesh (FM) engine, or the model be translated to TUFLOW HPC.	GWRC have communicated to T+T that they are aware of this risk but wish to keep the model in MIKE 21 classic for this project. A change to TUFLOW HPC was recommended by T+T during the procurement of the project for consistency with the Riverlink modelling where a 2D model was used (following recommendations from the peer reviewer for that project). GWRC preference was to keep the existing DHI model.	GWRC is accepting the risk of this decision. Closed.

D2.3 FHMS Peer Review Part A spreadsheet (version 0.9)

Peer Review Spreadsheet Template

This template has been prepared as part of **Procedure 3: Peer Review** of Greater Wellington Regional Council's **Flood Hazard Modelling Standard**.

This spreadsheet must be used when reviewing all hydrological and hydraulic models. Reviewer may add items to this spreadsheet as necessary, but should not delete items.

The hydraulic model review is to be undertaken in two parts. Part A is a review of the model build and calibration, and Part B is a review of the validation, design runs, sensitivity testing and outputs.

Table 1: Review ratings		Model suitable to move to next step in the FHMS?
Ok	The element or parameter being used is modelled correctly.	Yes
Minor	Issue is unlikely to significantly affect model results.	Yes
Major	Issue compromises the model and should be rectified, but may be resolved by explanation or acceptance of the model limitations.	?
Critical	Issue severely compromises the model and should be rectified before moving to the next step of the FHMS.	No
Future Data Collection	Identifies where additional future data collection could result in model improvements in the future.	Yes

Instructions for use:

Separate tabs are provided for the hydrology review and the Part A and Part B hydraulic model review.

The reviewer is to provide a comment for each element or parameter listed. The comments should include a description of the issue, and steps that could be taken to resolve the issue.

The reviewer must assign a review rating to each element using the dropdown menu. Rating categories are defined in Table 1 on this worksheet.

The reviewer must record the date and time of issue of their comments in the space provided at the top of the review column. After issue, this spreadsheet is provided to the original modeller. The original modeller must action the changes and/or provide a comment in the appropriate column outlining the change made, or reasons for not making the change. The modeller must record the time and date of issue of their comments in the space provided at the top of the appropriate column.

The reviewer must then review the changes, and make further comments if needed, and provide a revised review rating.

This process continues until all comments are satisfactorily resolved.

Project Details

Project name:	Hutt River DHI Model Upgrade
Modeller name:	James Mogridge/Kelsey Beckett
Modeller organisation:	Tonkin & Taylor
Reviewer name:	Carl Johnson
Reviewer organisation:	Awa Environmental Ltd.

Review log

Hydraulic Model - Part A Review	Date of review / comments	Outcome
Review V1	22/03/2022	Action Required
Modellers comments V1	8/07/2022	
Review V2	15/07/2022	Action Required
Modellers comments V2	15/12/2022	
Review V3	19/12/2022	Action Required
Modellers comments V3	20/12/2022	
Review V4	21/12/2022	Action Required
Modellers comments V4	6/03/2023	
Review V5	9/03/2023	Suitable to proceed
Hydraulic Model - Part B Review		
Review V1		
Modellers comments V1		
Review V2		
Modellers comments V2		
Review V3		
Modellers comments V3		
Review V4		

Instructions for use:

Enter the project name, modellers details and reviewers details into the relevant cells.
The reviewer and the modeller must enter the date of their review or comments in the review log at each iteration.
The reviewer must select a review outcome from the dropdown menu, a description of each outcome category is provided in the table below.
Additional rows may be added to the review log as necessary.

Outcome categories	Description
Action Required	Issues have been identified within the model that are likely to affect the results and should be rectified before the model moves the next stage of the FHMS process.
Suitable to proceed	Issues identified in the model have been rectified (if any), and the model is considered to be of sufficient quality to move to the next stage of the FHMS process.

PartA_Peer_Review_Hutt_River_model_v0.9.xlsx
Page 3 of 4

D2.3.1 Record of model updates

From V012 (previously peer reviewed version) to V038 (latest version)

Appendix D Table 4: Updates to Mike11 model

Changes to model	Reason
Branch points start/end set to user defined for Mangaroa, Akatarawa, Whakatiki	Neatness
Akatarawa Bridge structure has Mike11 weir changed from Weir #1 to Weir #4	Weir #4 is the Akatarawa weir
Added markers 4,5 to MANGAROA cross-sections chg 170 - 321	To fix backwards conveyance curves
Whakatiki cross-section @chg0 updated from "high/low flow zones" to "distributed", "equidistant" conveyance curve as per other XS	For consistency/neatness
<u>Bridges:</u> Changed calculation method & submergence equation type to be consistent with each other, to ensure stability at bridges (as per peer review recommendations) - Akatarawa Bridge, Norbert Street Bridge, Totara Park Bridge, Moonshine Bridge -changed to energy equation (more stable) - Silverstream Road Bridge -> changed to FHWA WSPRO (more stable, crashed with energy equation)	For stability purposes, as discussed/agreed with peer reviewer
Opahu Stream removed	As requested by peer reviewer

Appendix D Table 5: Updates to Mike21 model

Changes to model	Reason
Changed Roughness file to UHLH_Roughness_006.dfs2	This updated file removes 'land' values at flooding locations
Updated building roughness values from manning’s M = 2 to manning’s M = 5	As requested by peer reviewer
Update bathymetry file samples the 2013 LiDAR at each 2D lateral link cell and applies the highest value from the LiDAR to that cell	Where the highest 2013 LiDAR value is less than the existing (008) bathymetry value, the original value is retained.
Bathymetry - samples the 2013 LiDAR at Opahu Stream links	To restore the model terrain, as peer reviewer requested removing stream

Appendix D Table 6: Updates to MikeFlood (couple) model

Changes to model	Reason
Couple Minor lateral link updates at Mangaroa/Akatarawa/Whakatiki (chainage update)	Neatness
Right bank lateral link at chg ~19800 set to spill at M11 Left bank lateral link at chg ~19800 split due to large water level balance issue at the 2D cell	Right bank lateral link set to spill at M11 level lateral link is located within channel. Left bank lateral link is split due to large water level balance issue at the 2D cell
Fixed lateral link overlaps which caused warnings	Neatness
Opahu Stream links removed	As requested by peer reviewer

D2.3.2 Model differences (UHLH_202207_V038)

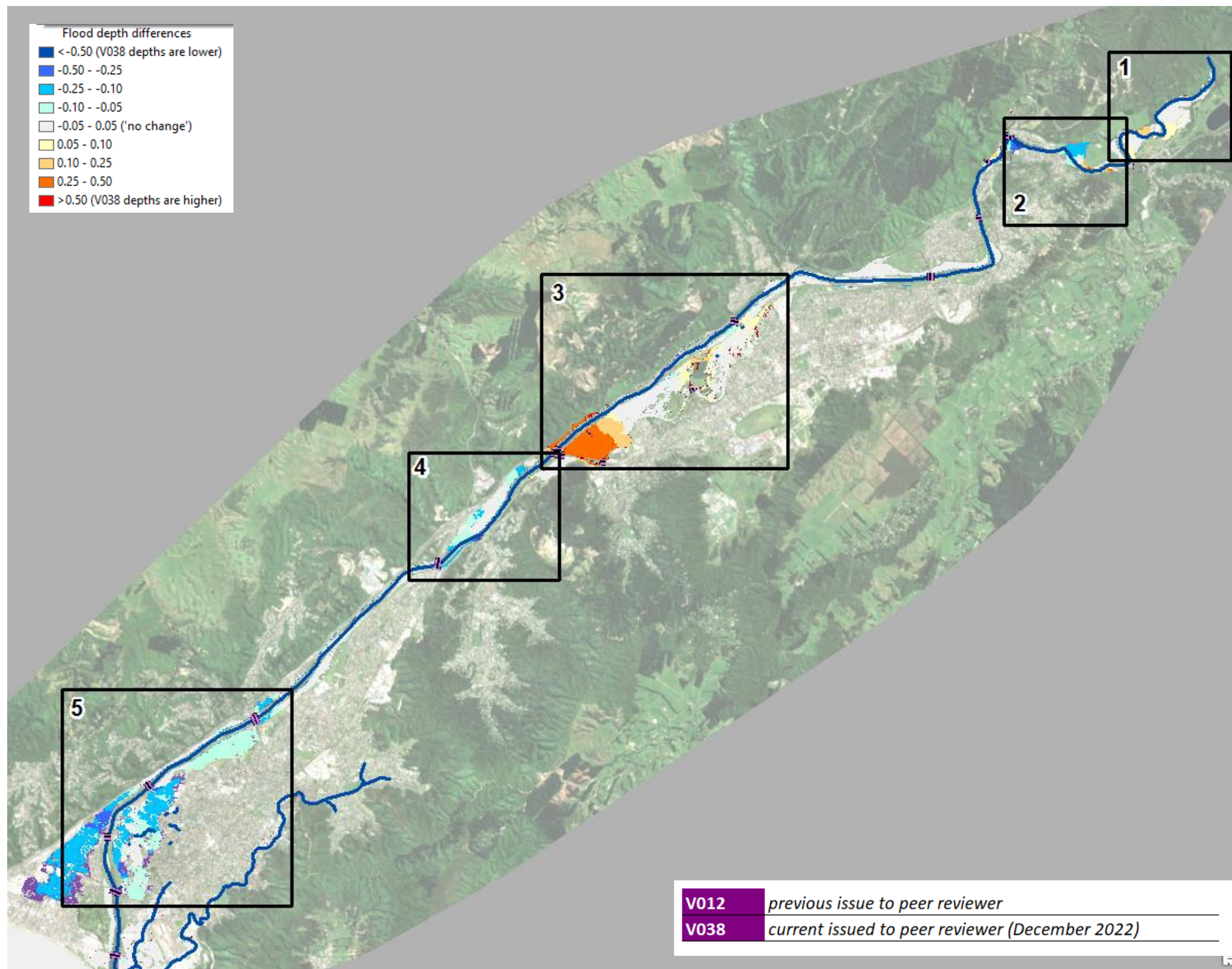


Figure Appendix D.5: Hutt River difference plot (V038 minus V012)

Appendix D Table 7: Area 1 – upstream reaches

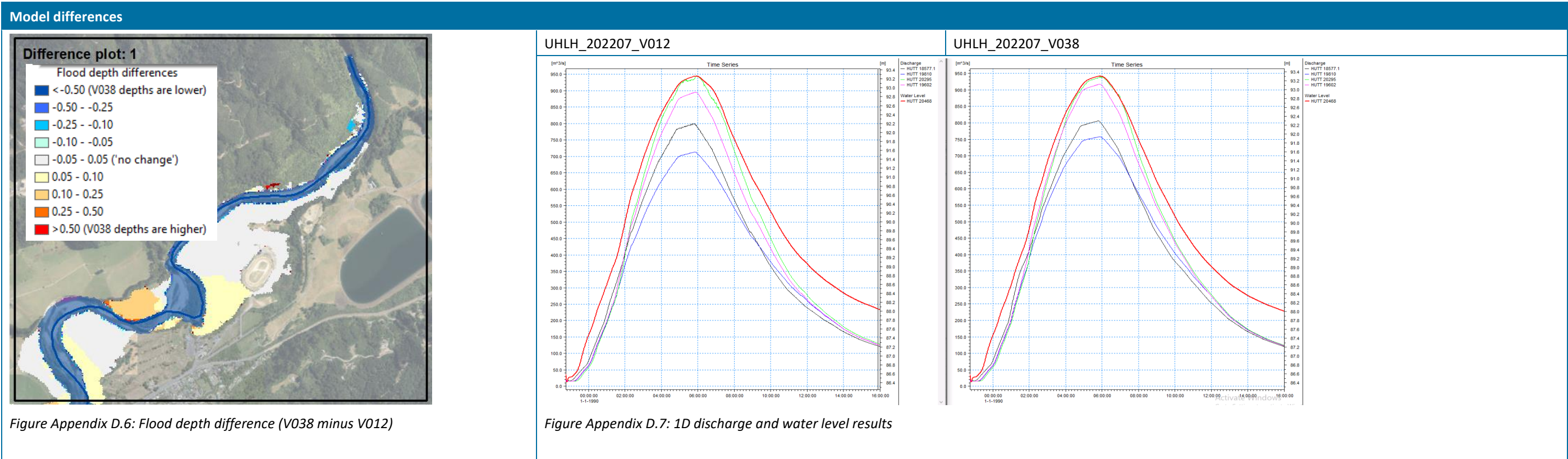


Figure Appendix D.6: Flood depth difference (V038 minus V012)

Figure Appendix D.7: 1D discharge and water level results

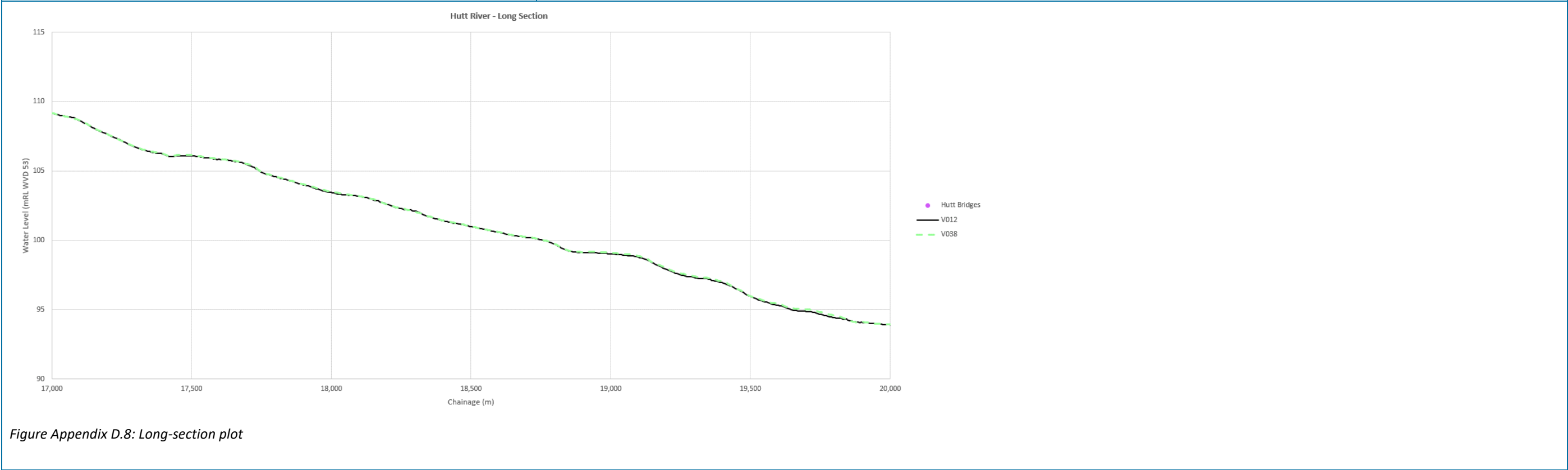
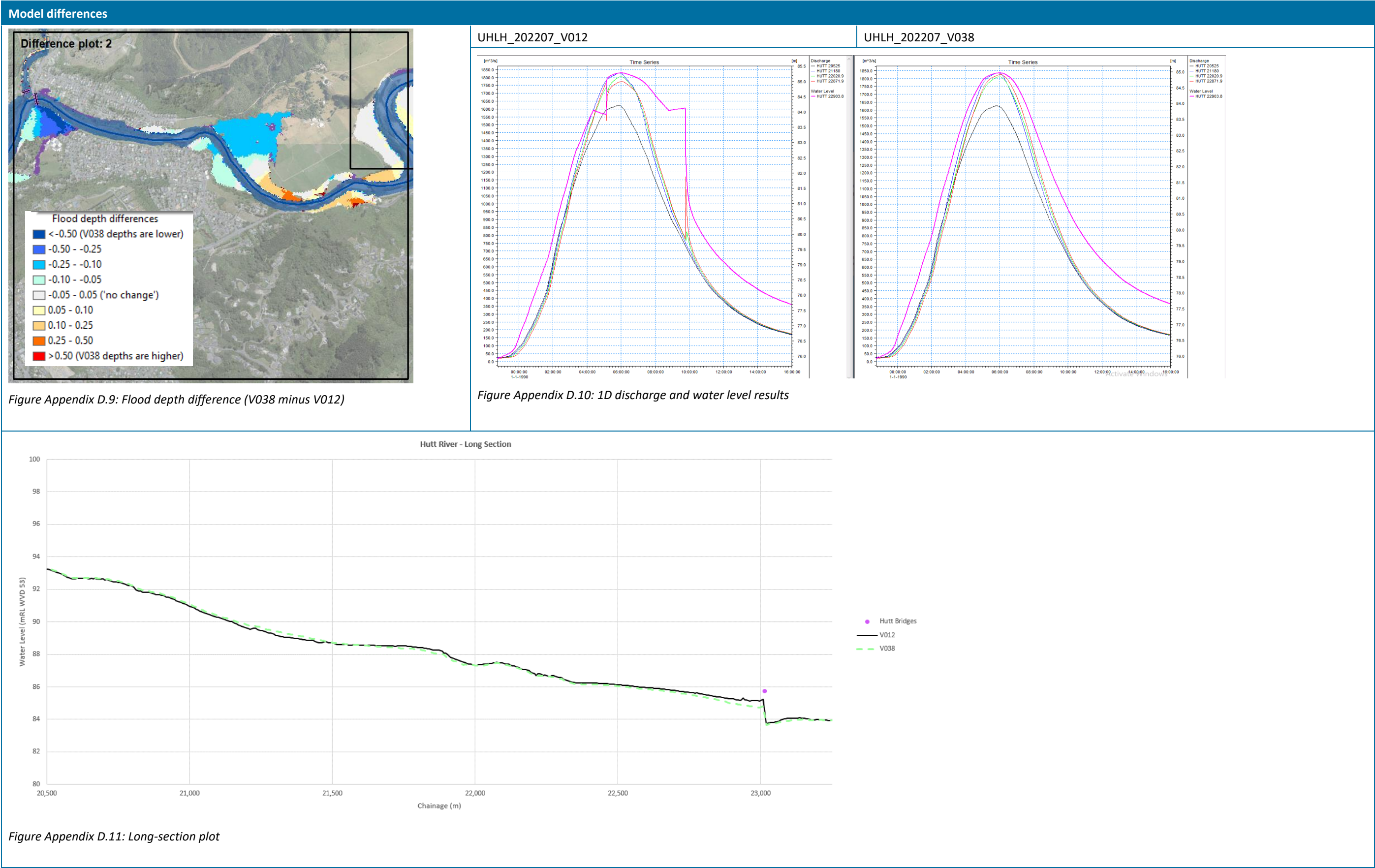
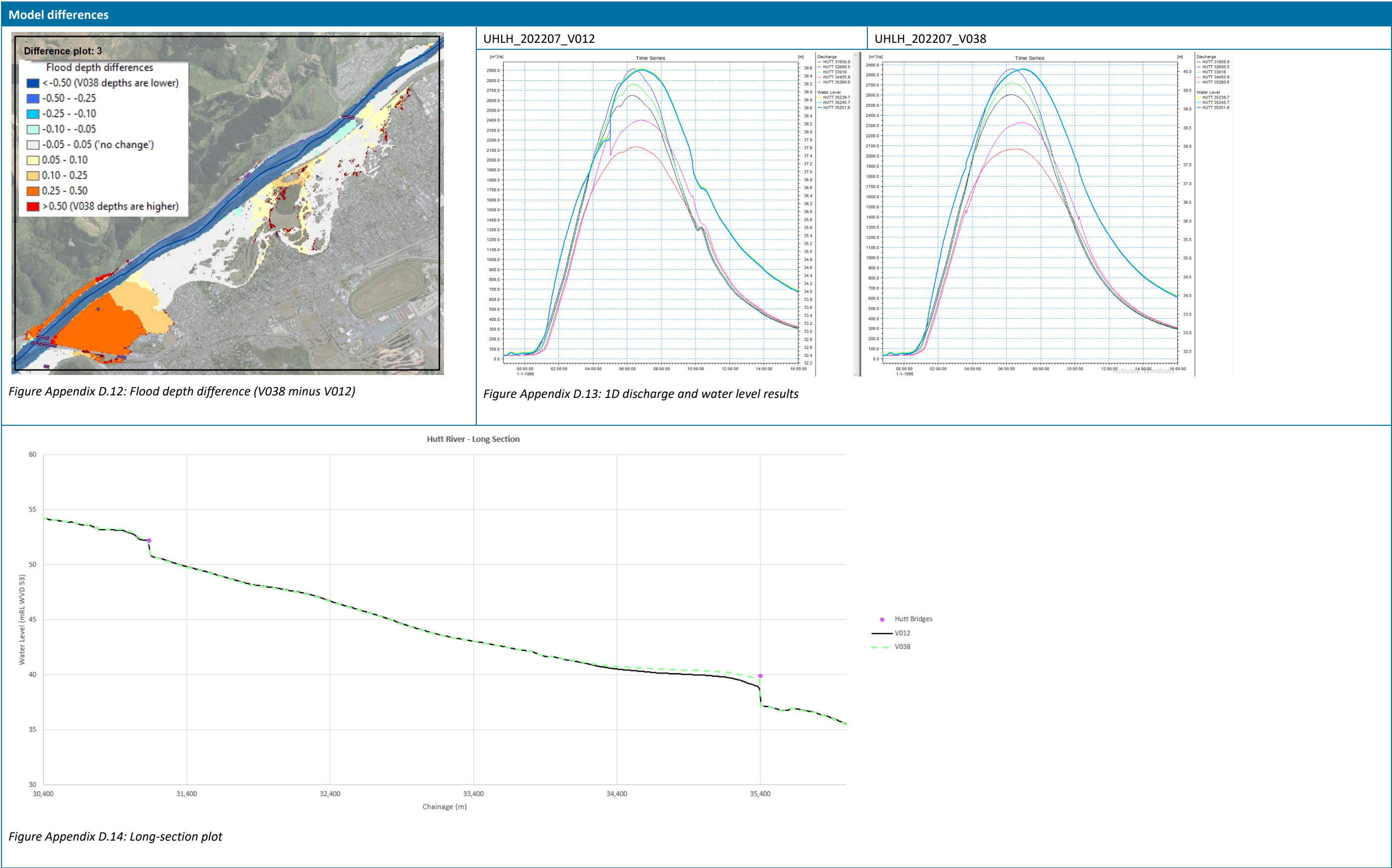


Figure Appendix D.8: Long-section plot

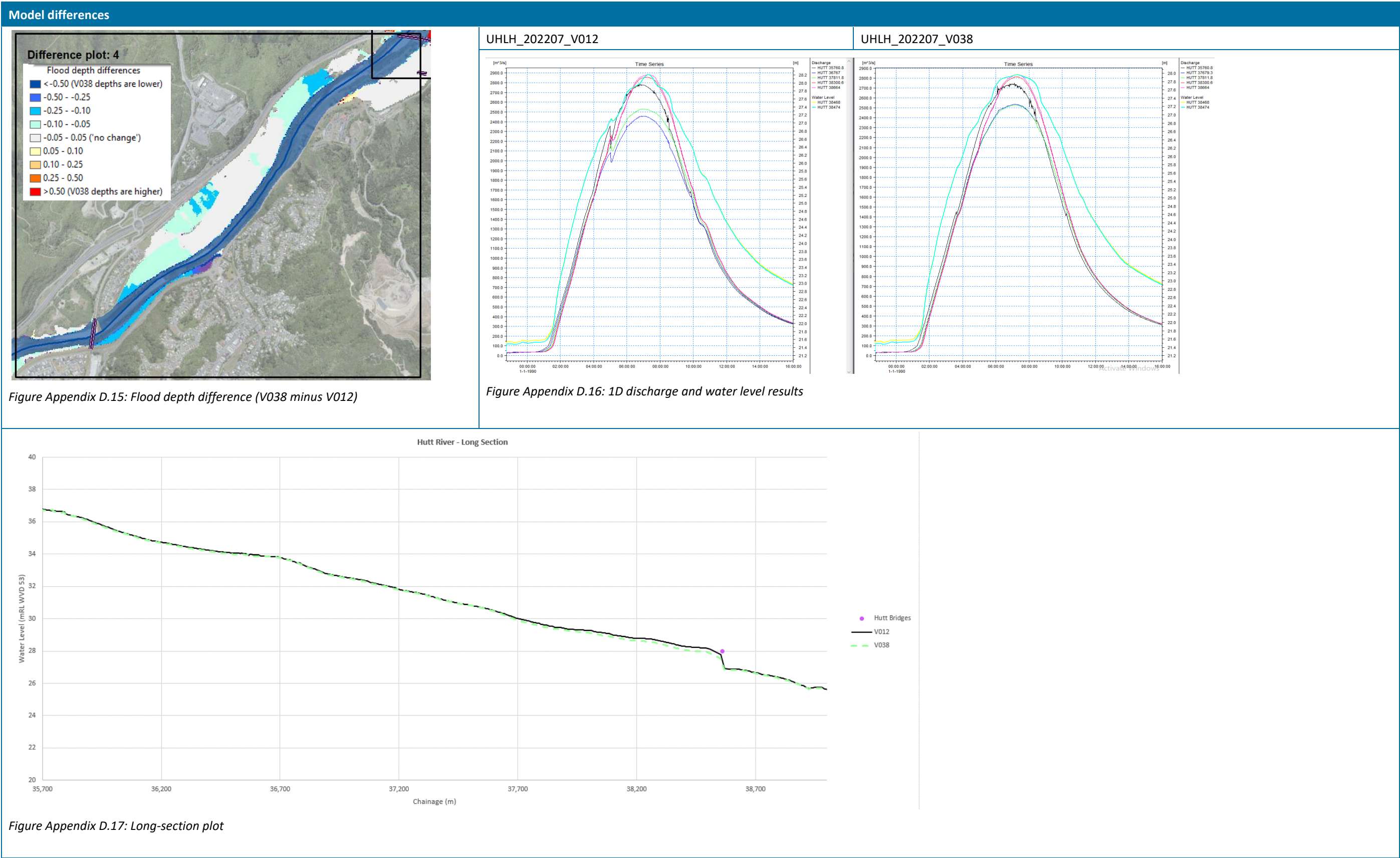
Appendix D Table 8: Area 2 – upstream reaches



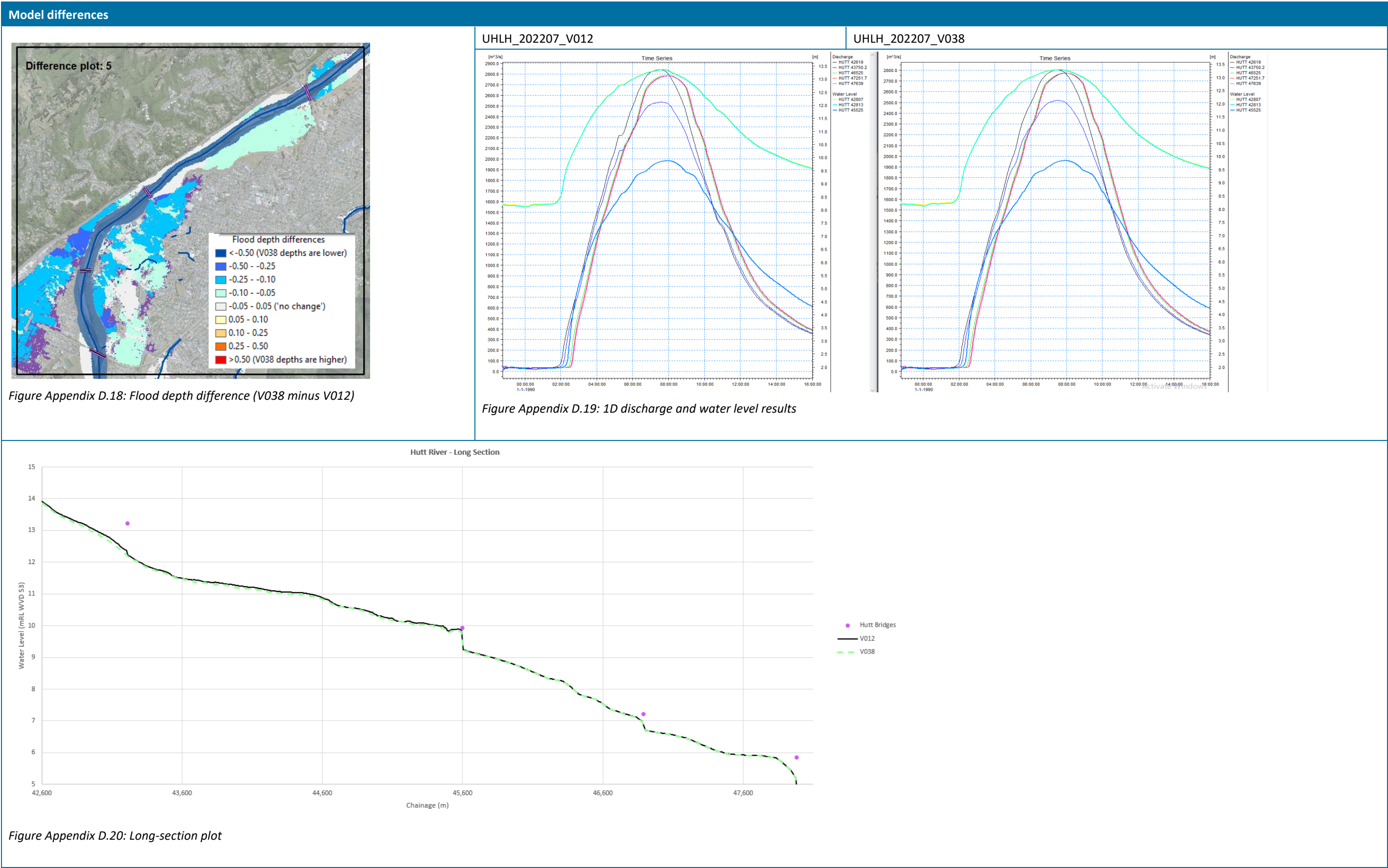
Appendix D Table 9: Area 3 – Silverstream Bridge area



Appendix D Table 10: Area 4 – Pomare Bridge area



Appendix D Table 11: Area 5 – Kennedy Good to Ava Bridge area

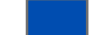
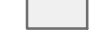


D2.3.3 Difference plot *UHLH_202207_V038*

LEGEND

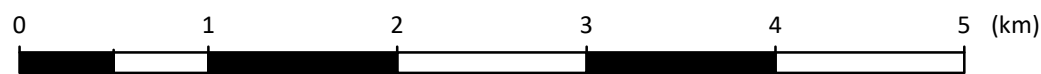
-  Hutt River bridges
-  1D model river centreline
-  1D model extent

Flood depth differences (m)

-  Option has decreased flood extents
-  <-0.50 (V038 depths are lower)
-  -0.50 - -0.25
-  -0.25 - -0.10
-  -0.10 - -0.05
-  -0.05 - 0.05 ('no change')
-  0.05 - 0.10
-  0.10 - 0.25
-  0.25 - 0.50
-  >0.50 (V038 depths are higher)
-  Option has increased flood extents

Hydraulic model version: UHLH_202207_V038
Previous model version: UHLH_202207_V012

A3 SCALE 1:40,000



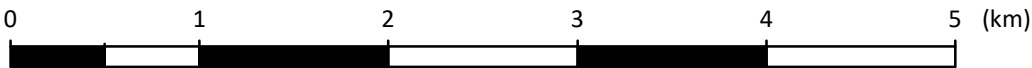
PROJECT	HUTT RIVER MODEL UPDATE 1014022.0000
TITLE	FLOOD MODEL RESULTS - DIFFERENCE PLOT: CURRENT MINUS PREVIOUSLY REVIEWED VERSION (V038 - V012)
SCALE (A3)	1:40,000

Hydraulic model version: UHLH_202207_V038
Previous model version: UHLH_202207_V012

LEGEND

- Hutt River bridges
- 1D model river centreline
- 1D model extent
- Flood depth differences (m)**
 - Option has decreased flood extents
 - <-0.50 (V038 depths are lower)
 - 0.50 - -0.25
 - 0.25 - -0.10
 - 0.10 - -0.05
 - 0.05 - 0.05 ('no change')
 - 0.05 - 0.10
 - 0.10 - 0.25
 - 0.25 - 0.50
 - >0.50 (V038 depths are higher)
 - Option has increased flood extents

A3 SCALE 1:40,000



PROJECT

HUTT RIVER MODEL UPDATE
1014022.0000

TITLE

FLOOD MODEL RESULTS - DIFFERENCE PLOT:
CURRENT MINUS PREVIOUSLY REVIEWED VERSION
(V038 - V012)

SCALE (A3)

1:40,000

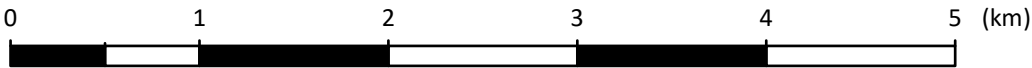
D2.3.4 Difference plot *UHLH_202207_V040*

Hydraulic model version: UHLH_202207_V040
Previous model version: UHLH_202207_V012

LEGEND

- ==== Hutt River bridges
- 1D model river centreline
- 1D model extent
- Flood depth differences (m)**
- Option has decreased flood extents
 - <-0.50 (V038 depths are lower)
 - 0.50 - -0.25
 - 0.25 - -0.10
 - 0.10 - -0.05
 - 0.05 - 0.05 ('no change')
 - 0.05 - 0.10
 - 0.10 - 0.25
 - 0.25 - 0.50
 - >0.50 (V038 depths are higher)
 - Option has increased flood extents

A3 SCALE 1:40,000



PROJECT	HUTT RIVER MODEL UPDATE 1014022.0000
TITLE	FLOOD MODEL RESULTS - DIFFERENCE PLOT: CURRENT MINUS PREVIOUSLY REVIEWED VERSION (V040 - V012)
SCALE (A3)	1:40,000

Hydraulic model version: *UHLH_202207_V040*
Previous model version: *UHLH_202207_V012*

LEGEND

==== Hutt River bridges

— 1D model river centreline

— 1D model extent

Flood depth differences (m)

Option has decreased flood extents

<-0.50 (V038 depths are lower)

-0.50 - -0.25

-0.25 - -0.10

-0.10 - -0.05

-0.05 - 0.05 ('no change')

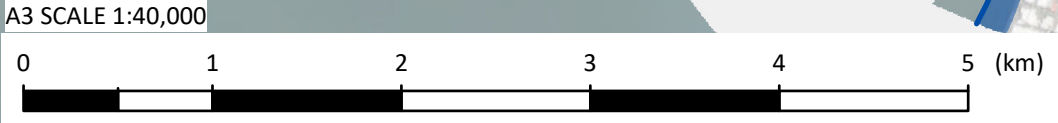
0.05 - 0.10

0.10 - 0.25

0.25 - 0.50

>0.50 (V038 depths are higher)

Option has increased flood extents



PROJECT **HUTT RIVER MODEL UPDATE**
1014022.0000

TITLE **FLOOD MODEL RESULTS - DIFFERENCE PLOT:**
CURRENT MINUS PREVIOUSLY REVIEWED VERSION
(V040 - V012)

SCALE (A3) 1:40,000



D2.3.5 Memo – *Silverstream bridge representation in hydraulic model* (T+T, March 2023)

Memo

To:	Carl Johnson (AWA)	Job No:	1014022.0000
From:	Mark Pennington, Jon Rix, Reuben Fergusson, Kelsey Beckett (T+T)	Date:	7 March 2023
cc:	Susan Borrer (GWRC)		
Subject:	Silverstream Bridge representation in hydraulic model		

1 Purpose

This memo is intended to address outstanding peer review comments of the combined Upper Hutt/Lower Hutt ('UHLH') baseline model. This memo will provide commentary around the ongoing queries associated with the modelled bridge behaviour at Silverstream Bridge. It is intended to be used as supplementary information for the peer reviewer and as a record of the analysis done to date.

This memo will also provide recommended actions that can be used as a basis for closing out the peer review of the baseline model.

2 Background

Tonkin & Taylor Ltd (T+T) has been commissioned by GWRC to make refinements to a hydraulic model, originally built by DHI using MIKE by DHI software. The intended refinements were aimed at closing out comments from an independent peer review of that model. The original model provided to T+T had been noted as demonstrating "reasonable calibration" (DHI, November 2018). The model refinements (by T+T) were to improve the ability for the model to be used for a wide range of event simulations, while keeping it within the "calibration" bounds that had previously been demonstrated¹.

3 Silverstream Bridge

Inspection of the modelled representation of Silverstream Bridge revealed a "reversal" in the rating curve at the bridge soffit elevation. This "reversal" occurs when an increase in stage causes a decrease in discharge. This is likely to be caused by the decrease in conveyance due to a sudden increase in hydraulic radius as the water level reaches the underside of the bridge (the hydraulic radius decreases as there is a notable increase in wetted perimeter for very small increase in cross-sectional area).

We do not consider the rating curve "reversal" an "error". However, having the model perform in this way can lead to instabilities and consequent "crashes" under future event simulations. This can affect the overall "usability" of the model. We also consider it likely that the model will be sensitive

¹ Hutt Model Upgrade – Hydraulic Modelling, DHI Water and Environment Ltd, November 2018

to bridge representation, topographical changes and cross section location and therefore further comparative analysis was carried out to develop a greater understanding of the rating curve.

Further inspection showed this “reversal” effect to occur at a water level slightly below the bridge soffit level. This is understood to occur as the model applies total energy (being both velocity head and static head combined) to determine the onset of bridge “pressurisation”. This effect is shown in Figure 3.1. Also shown in this figure are the peak flow for the calibration event (approximately 1,550 m³/s) and the bridge soffit level (37 mRL).

Figure 3.1 shows that the calibration event did not cause the flow through this bridge to pressurise, nor was the flow sufficiently high to reach the realm within which the rating curve reversal occurs.

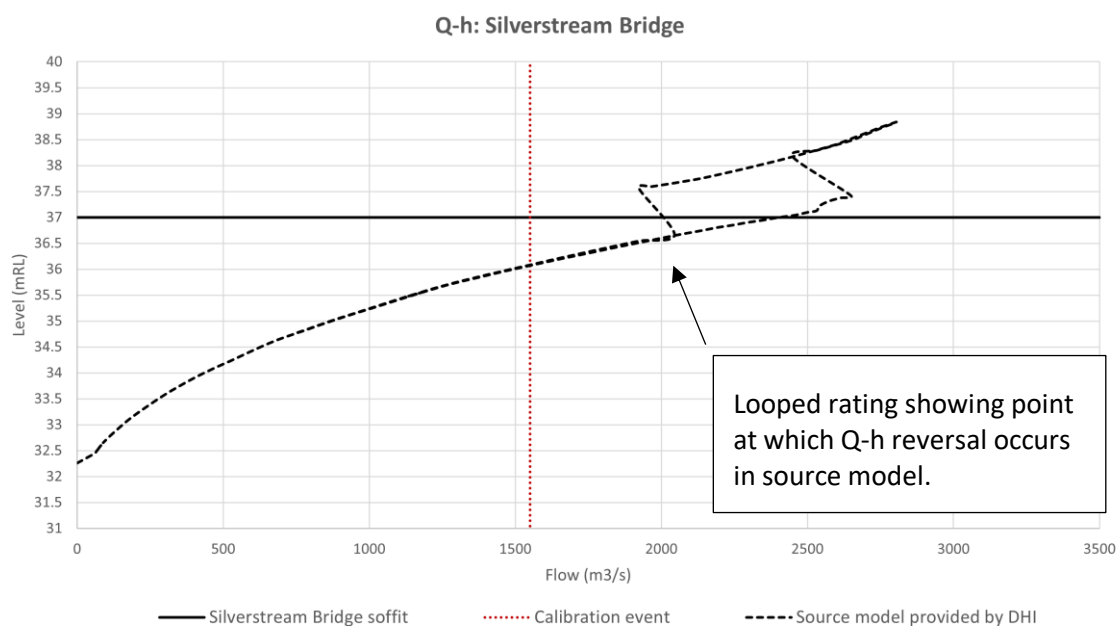


Figure 3.1: Q-h relationship at Silverstream bridge in source model

4 Model stability and peer review recommendations

Some of the peer review recommendations resulted in T+T making changes to the cross-sections immediately upstream and downstream of the Silverstream Bridge. Consequentially, and as expected, once these changes had been made, the rating curve at the bridge also changed, as shown in Figure 4.1 (green curve, labelled “UHLH_V012”).

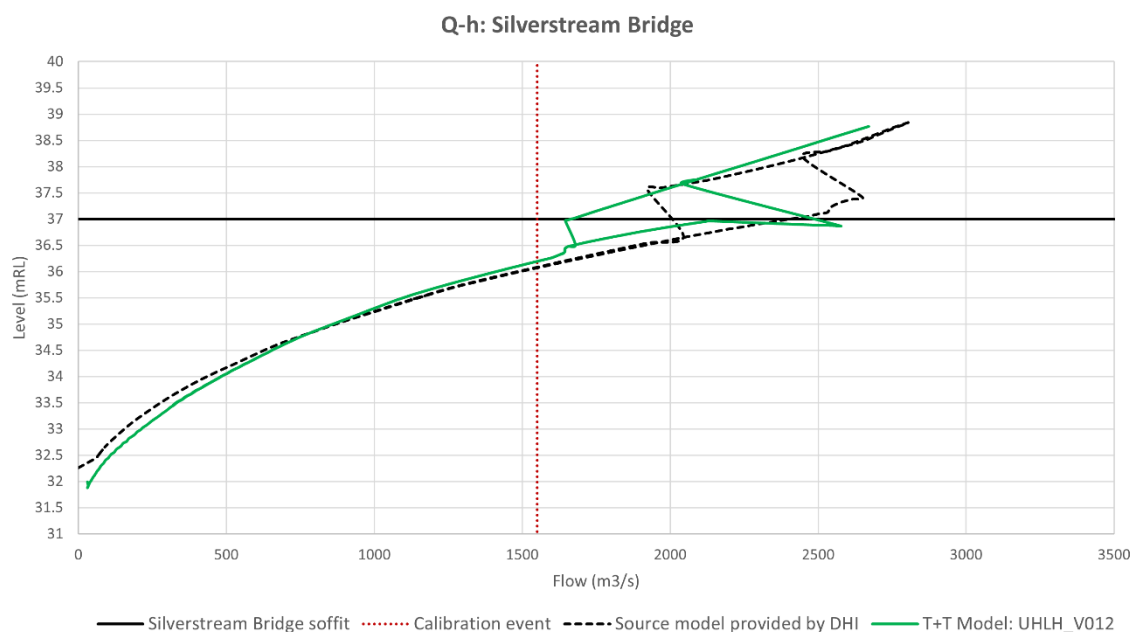


Figure 4.1: Q-H relationships at Silverstream bridge in source and in adjusted models

Figure 4.1 shows that for discharge between 1,600 and 2,600 m³/s, there is an apparent “instability” (characterised by a rapid change in discharge) in both model versions where the effects of pressurisation on the Q-h relationship is evident. The effects of this on discharge is shown in the comparative plots in Figure 4.2.

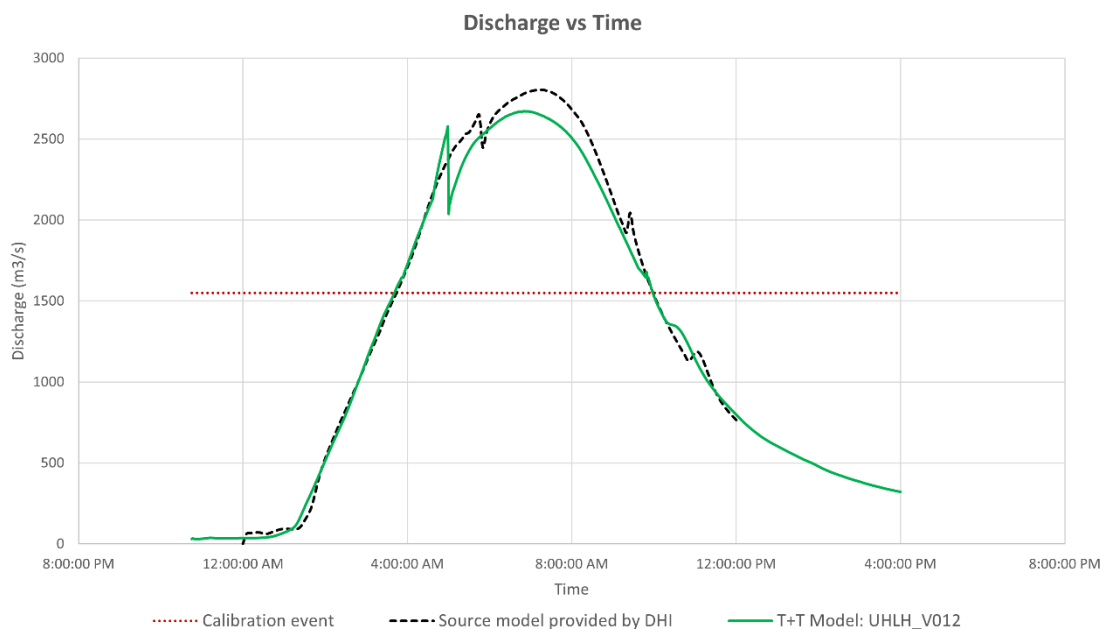


Figure 4.2: Silverstream Bridge discharge for source and adjusted models

After applying changes to the source model in accordance with peer review comments, a revised performance emerged that was similar to that of the source model.

Given that the intended use of the final model will include simulations of flows that are likely to cause pressurised flow through Silverstream Bridge, it may be advantageous to attempt to smooth

this behaviour to avoid potential model instabilities that might occur as a result of the rating curve reversal.

5 HEC-RAS model

To investigate probable ranges in rating curves at the Silverstream Bridge, we simulated the hydraulic profile through the subject bridge using HEC-RAS software. While we have not reported all findings from this investigation, we have found there to be strong similarities between the two modelling approaches. In Figure 5.1 the rating curves from Figure 4.1 have been replicated and overlaid with one of the HEC-RAS results.

It is noteworthy that the effect of pressurisation is observable at the bridge soffit level, rather than just under this level as demonstrated in the MIKE11 models. This was an element that was specifically corrected in the HEC-RAS model, making the submergence criterion dependent on water level rather than on total energy (as described in Section 3).

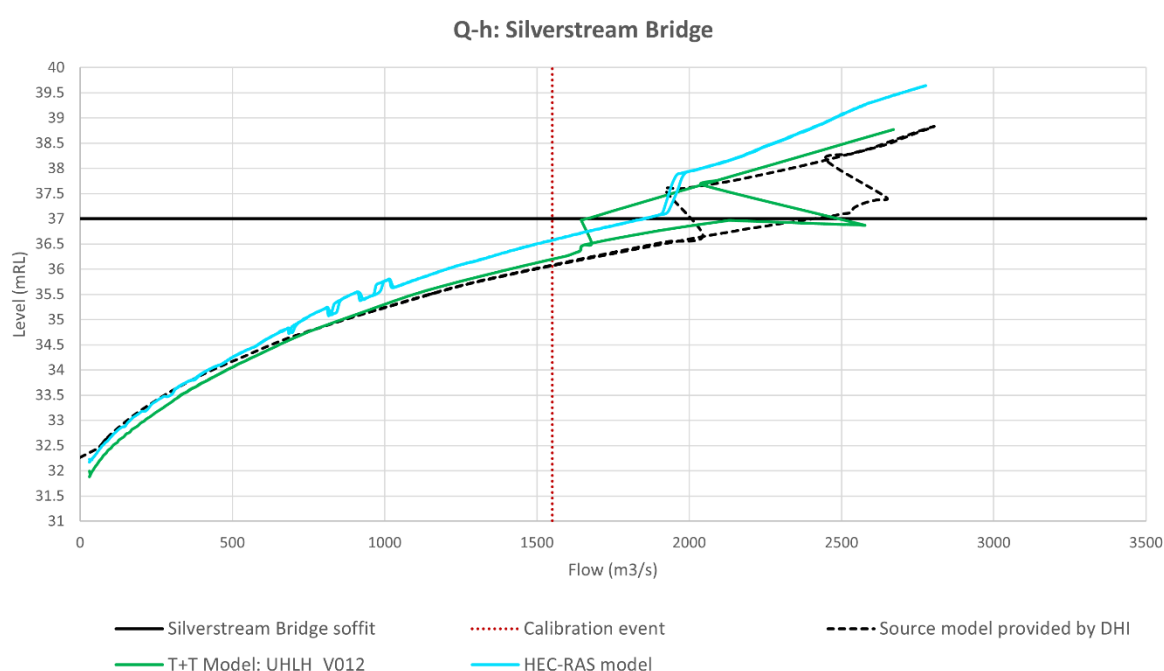


Figure 5.1: Q-h relationships at Silverstream Bridge

6 Bridge behaviour

In order to compare modelled behaviour, we also investigated changes to the bridge modelling approach and found a mix of results:

- Using the Energy Equation rather than FHWA WSPRO for submergence results in a water level difference at 2,800 m³/s (highest design event) of greater than one metre (water levels are lower with Energy Equation method).
- The HEC-RAS model generally shows slightly higher water levels across a range in discharge than the MIKE11 model. It also shows there to be a rapid change at the elevation at which bridge pressurisation may occur, although it does not show a reversal. The results from the HEC-RAS model were not carried forward due to the model going out of calibration.
- We note that it is usual for different models to produce different results, and in this case the major point of departure has not been captured in any event for which calibration data exist.

Reliance is, therefore, placed on the model producing results that are reasonable and based on methods that have been shown to be successful elsewhere.

- Dampening the transition between free flow and pressurised flow² yielded the result shown in the yellow curve in Figure 6.1 “T+T model: UHLH_V054” (note this affects all bridges not just this one).
- All presented model assessments produce similar water levels (within 200 mm) at the calibration flow (approximately 1,550 m³/s)

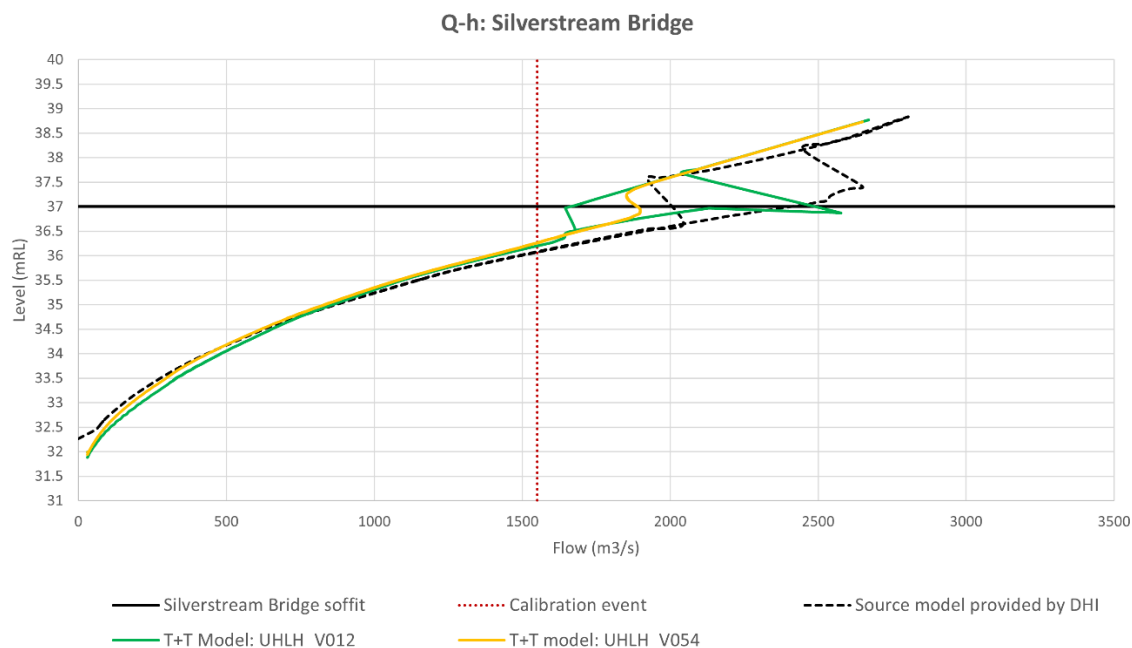


Figure 6.1: Q-H relationships at Silverstream bridge

7 Conclusion and recommendations

In order to undertake a comparative analysis of the rating curve and water levels of the modelled Silverstream Bridge, a range of credible different representations were assessed.

All the scenarios in Figure 6.1 produced similar water levels (<200 mm difference) as a calibration event and therefore the changes do not affect the “calibrated” status of the model.

At flows in excess of the calibration event, the assessment showed that water levels between 36.5 mRL and 37.5 mRL were highly sensitive to how the bridge was represented, and that some sensitivity extended up to 38 mRL. Given that each of the approaches are credible, we recommend adopting the approach shown in model version 054 (*UHLH_V054*) shown in Figure 6.1 (yellow curve).

It is our opinion that this will yield results that are comparable with other approaches while ensuring a model that is able to be more easily used with a smoother transition through the pressurisation range of levels.

7-Mar-23

t:\auckland\projects\1014022\issueddocuments\2023-03-07 uhlh baseline 2800 model v054 for peer reviewer\hutt river - silverstream bridge representation - memo 20230307.docx

² hd variable 12 *SMOOTH_BRIDGE_SURFACE* and *SMOOTH_BRIDGE_SURFACE_LOOPS* is updated in the Mike11.ini file to (1,5) from the default setting of (0,0)

D2.3.6 Bridge checks UHLH_202207_V054

Appendix D Table 12: Summary of bridge parameters

Bridge	Bridge equations – UHLH_202207_V012			Bridge equations – UHLH_202207_V054		
	Type	Submergence	Overflow	Type	Submergence	Overflow
Akatarawa Bridge	Energy equation	FHWA WSPRO	Mike11 Weir	Energy equation	FHWA WSPRO	Mike11 Weir
Norbert Street Bridge	Energy equation	FHWA WSPRO	FHWA WSPRO	Energy equation	Energy equation	FHWA WSPRO
Totara Park Bridge	Energy equation	FHWA WSPRO	FHWA WSPRO	Energy equation	Energy equation	FHWA WSPRO
Moonshine Bridge	Energy equation	FHWA WSPRO	FHWA WSPRO	Energy equation	Energy equation	FHWA WSPRO
Silverstream Road Bridge	Energy equation	FHWA WSPRO	FHWA WSPRO	Energy equation	FHWA WSPRO	FHWA WSPRO
Pomare Rail Bridge	Energy equation	Energy equation	n/a	Energy equation	Energy equation	n/a
Kennedy Good Bridge	Energy equation	Energy equation	n/a	Energy equation	Energy equation	n/a
Melling Bridge	Energy equation	Energy equation	Energy equation	Energy equation	Energy equation	Energy equation
Ewen Bridge	Energy equation	Energy equation	n/a	Energy equation	Energy equation	n/a
Ava Bridge	FHWA WSPRO	Energy equation	Energy equation	FHWA WSPRO	Energy equation	Energy equation
Estuary Bridge	Bridge Piers	n/a	n/a	Bridge Piers	n/a	n/a

Bridge plots (2,800 m³/s flow event)

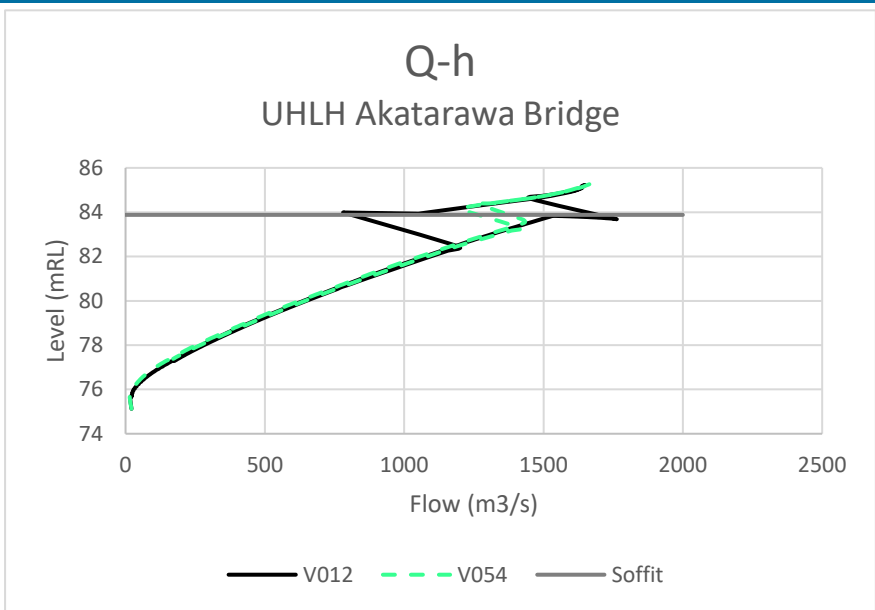


Figure Appendix D.21: Akatarawa Bridge plots

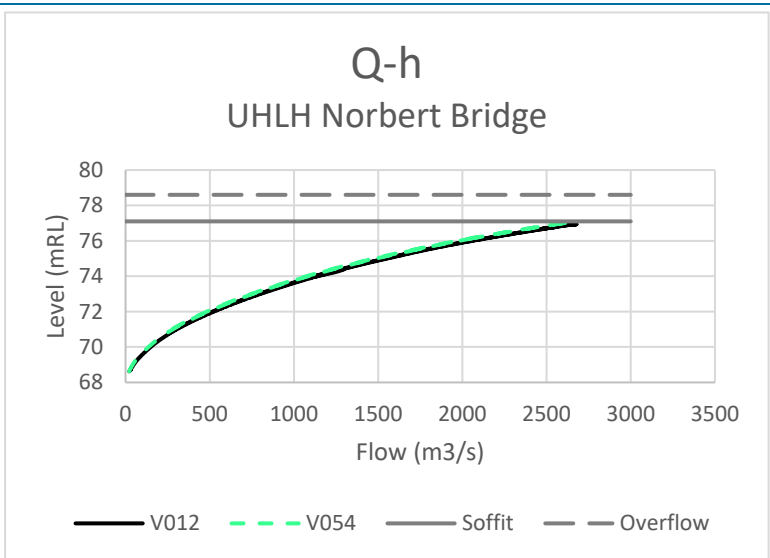
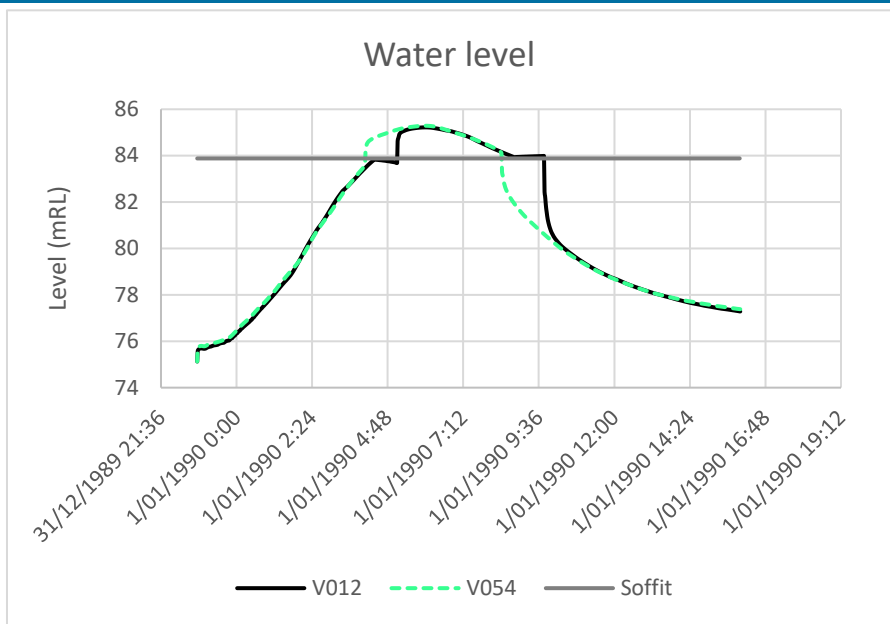
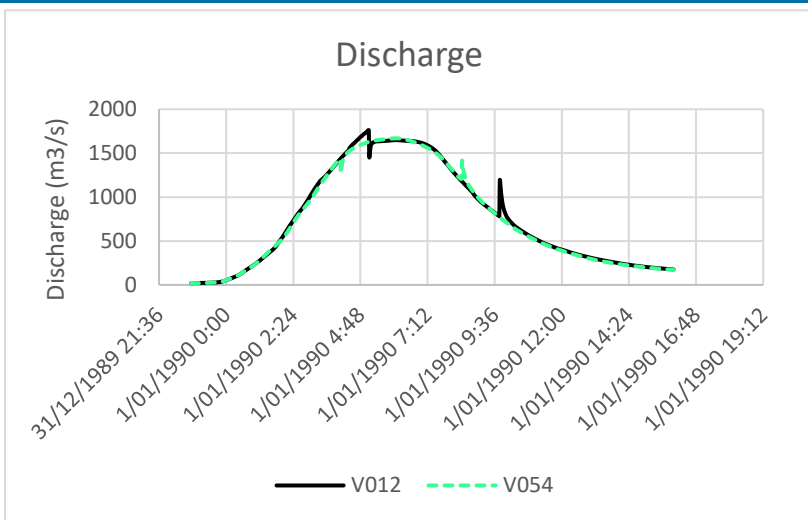
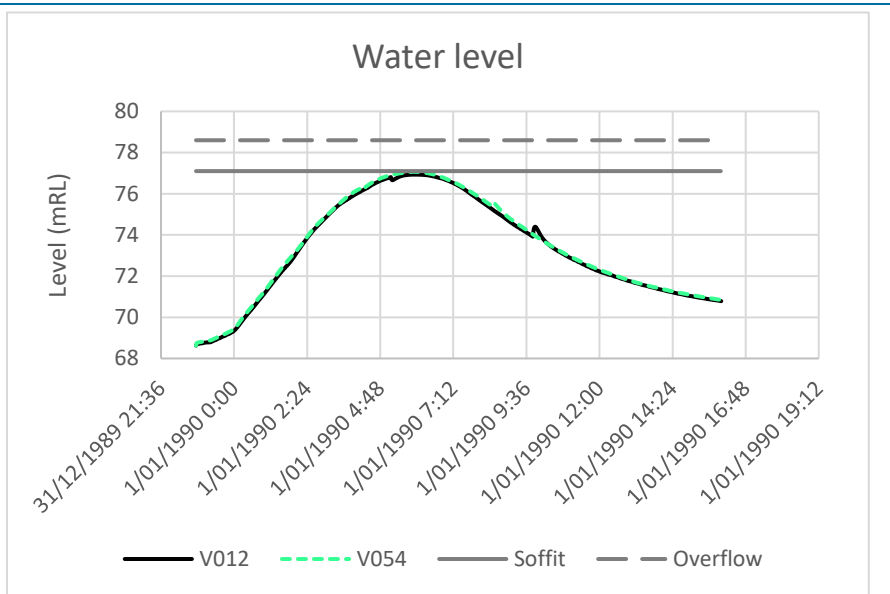
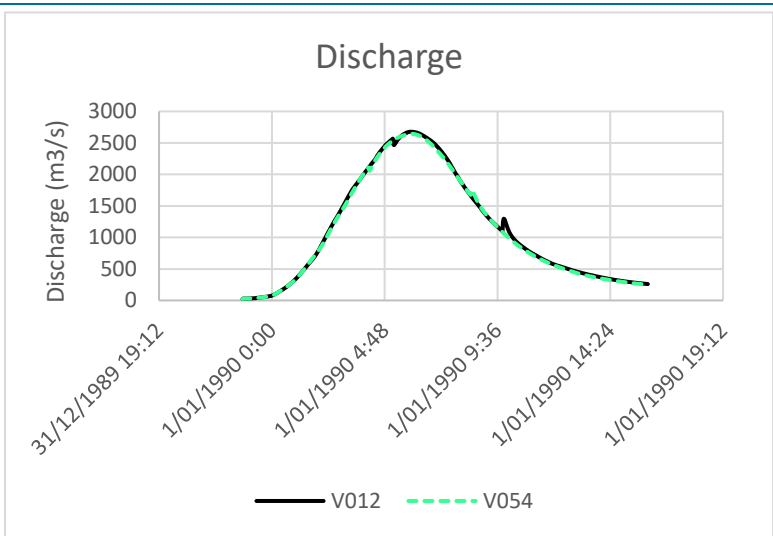


Figure Appendix D.22: Norbert Bridge plots



Bridge plots (2,800 m³/s flow event)

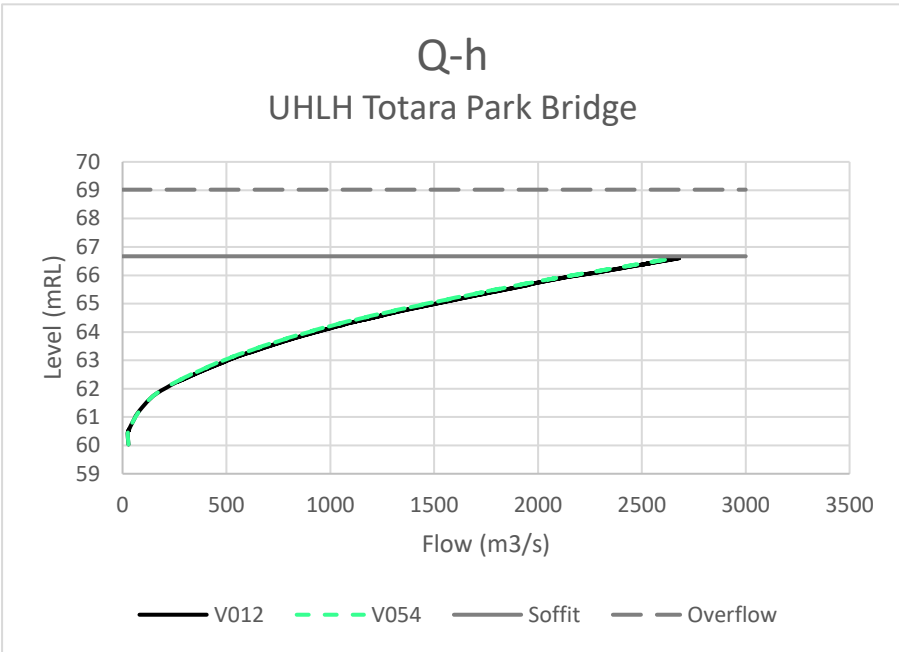


Figure Appendix D.23: Totara Park Bridge plots

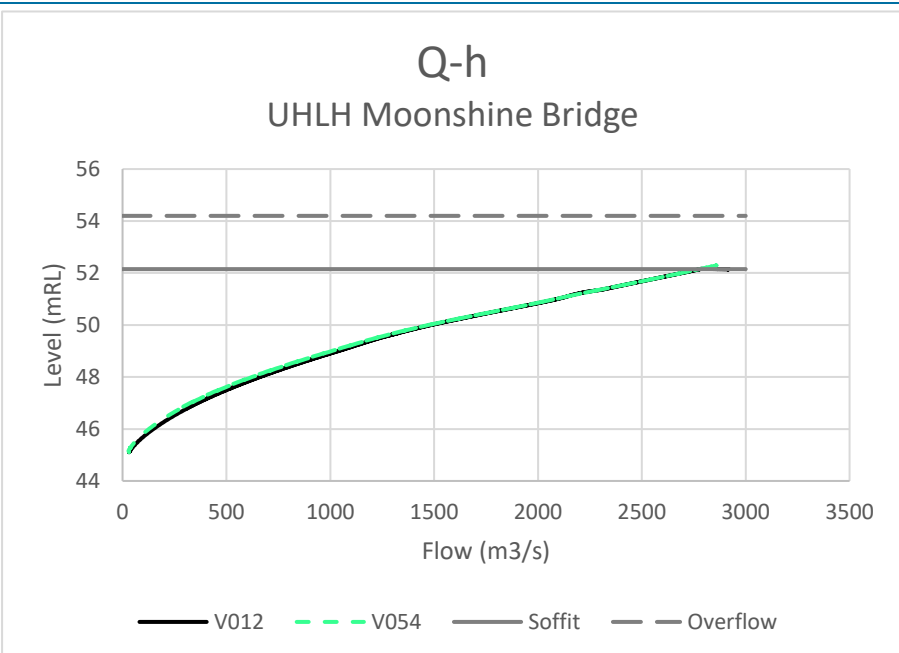
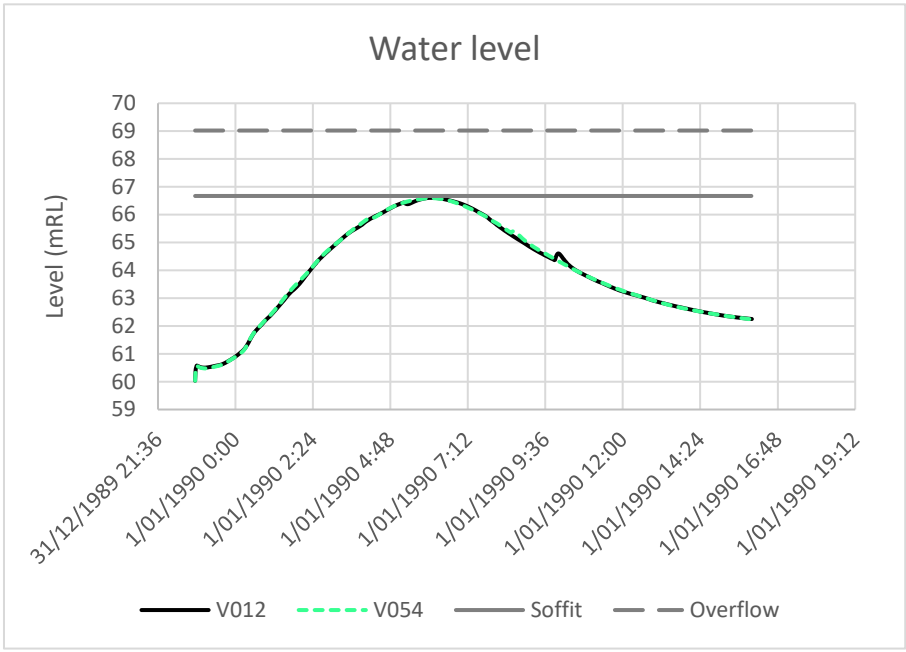
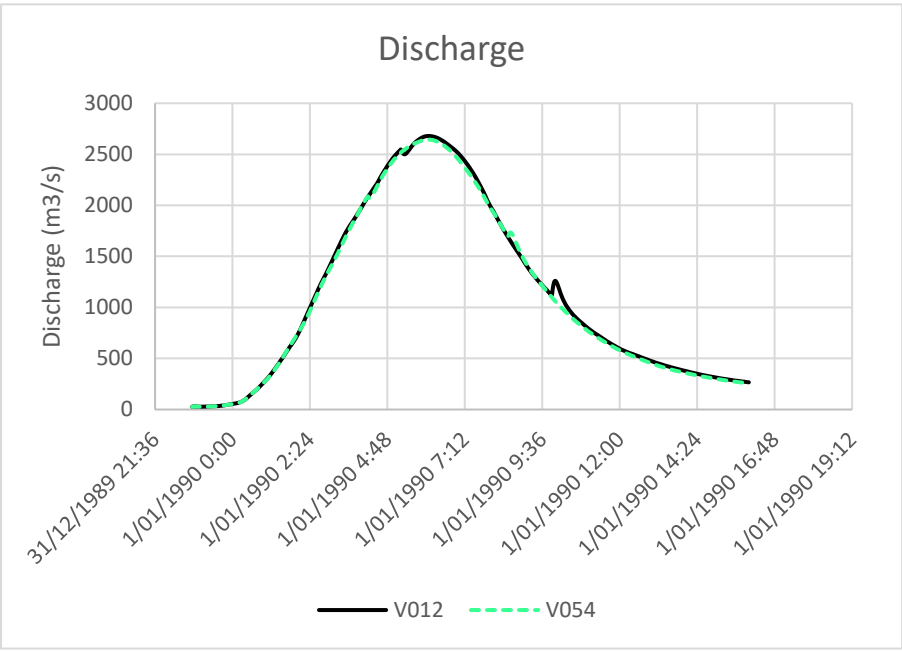
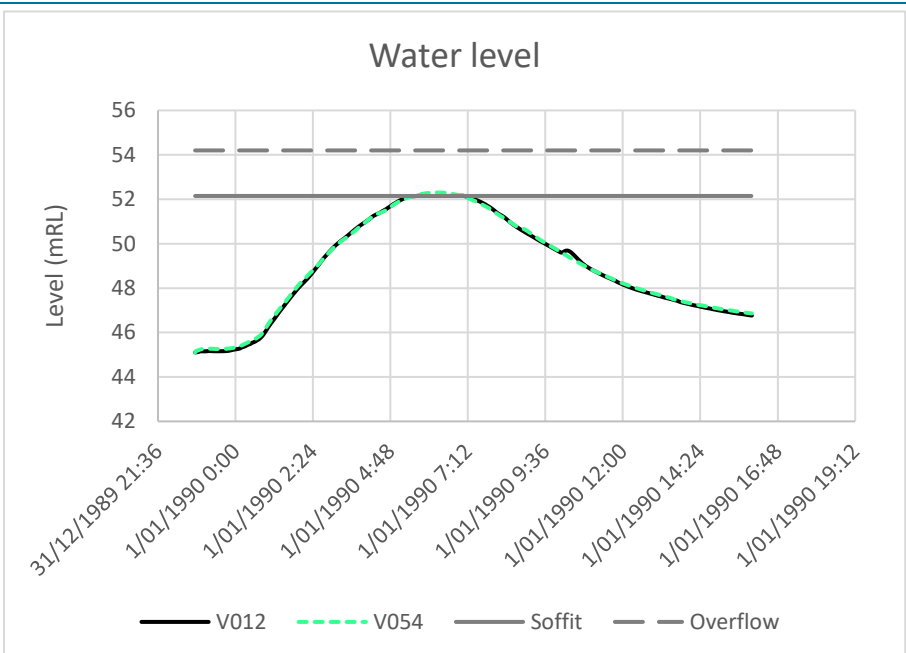
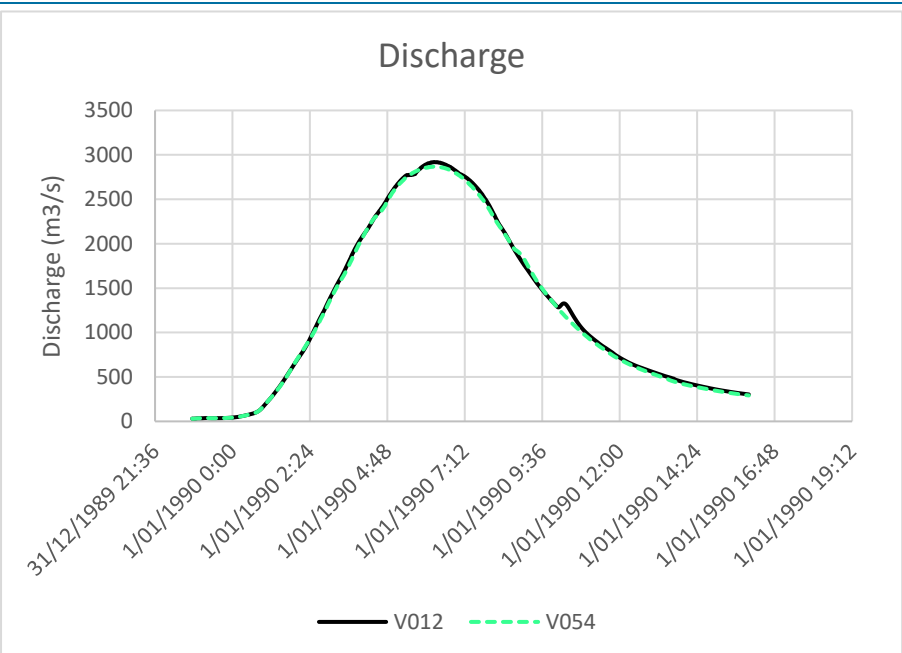


Figure Appendix D.24: Moonshine Bridge plots



Bridge plots (2,800 m³/s flow event)

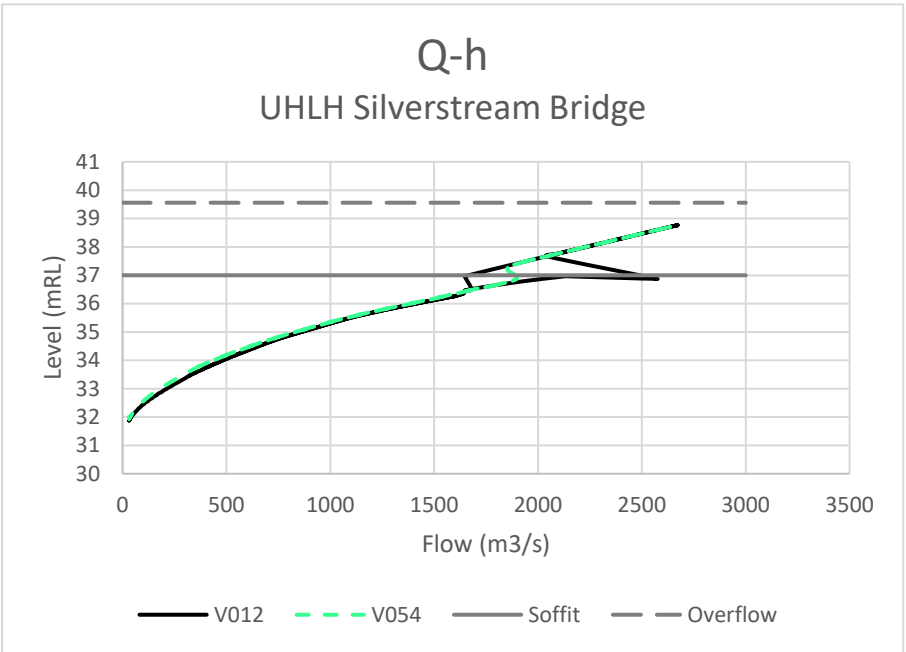


Figure Appendix D.25: Silverstream Bridge plots

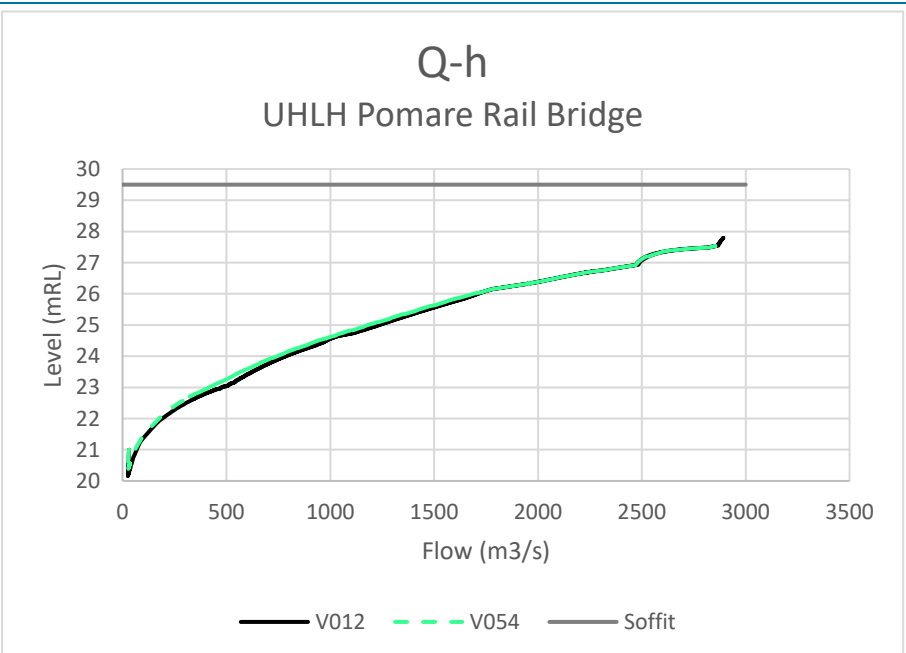
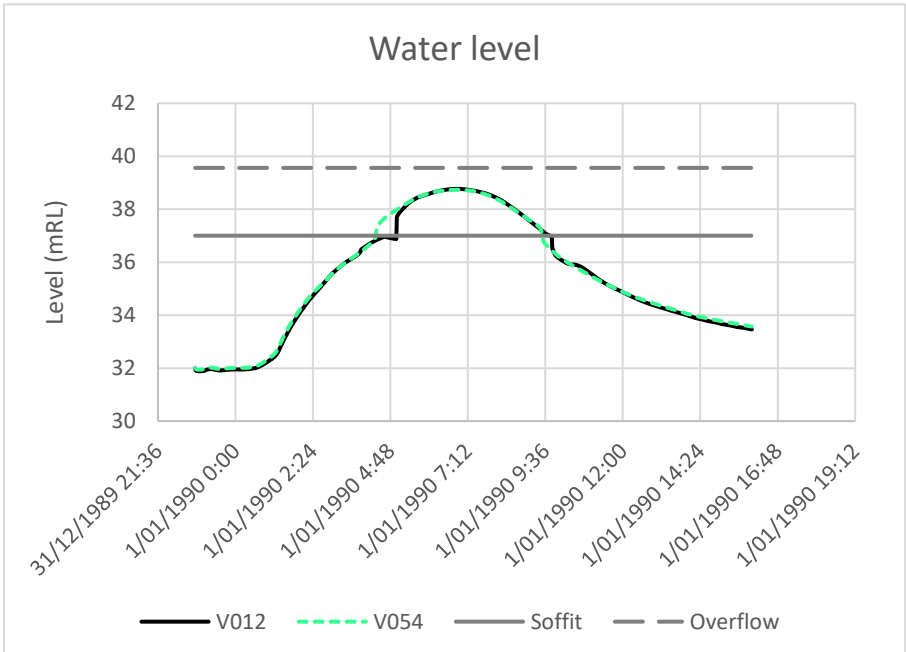
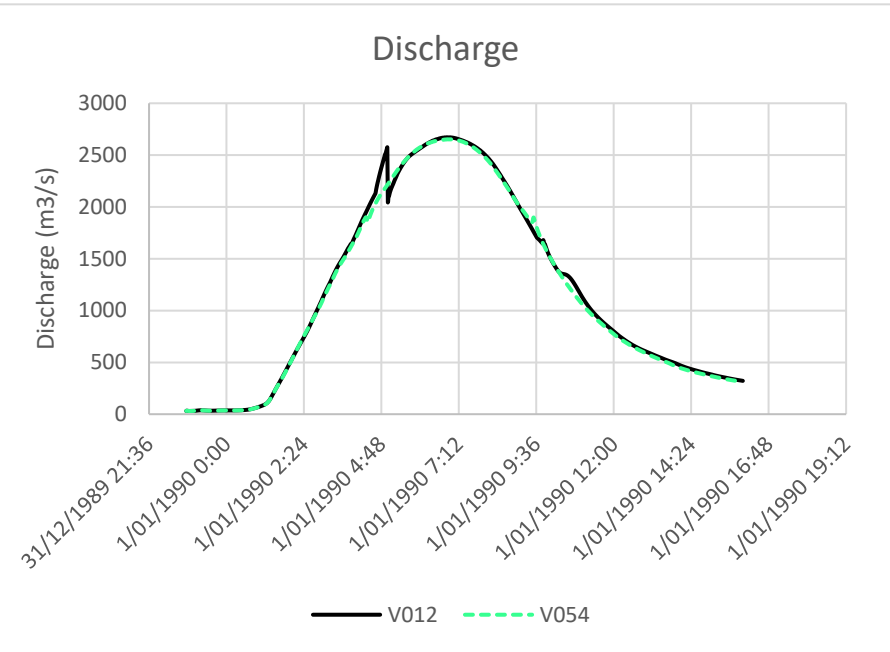
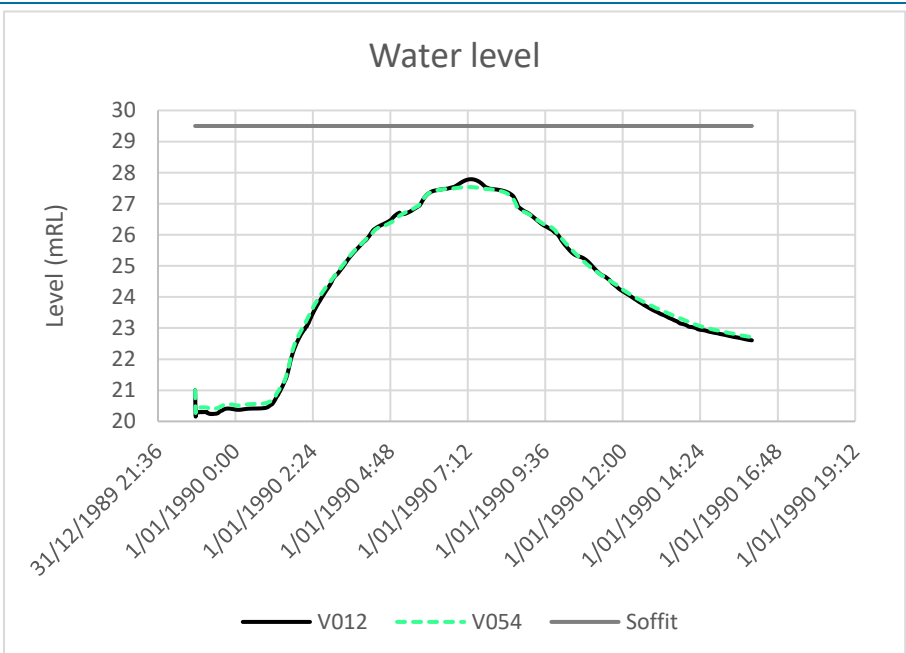
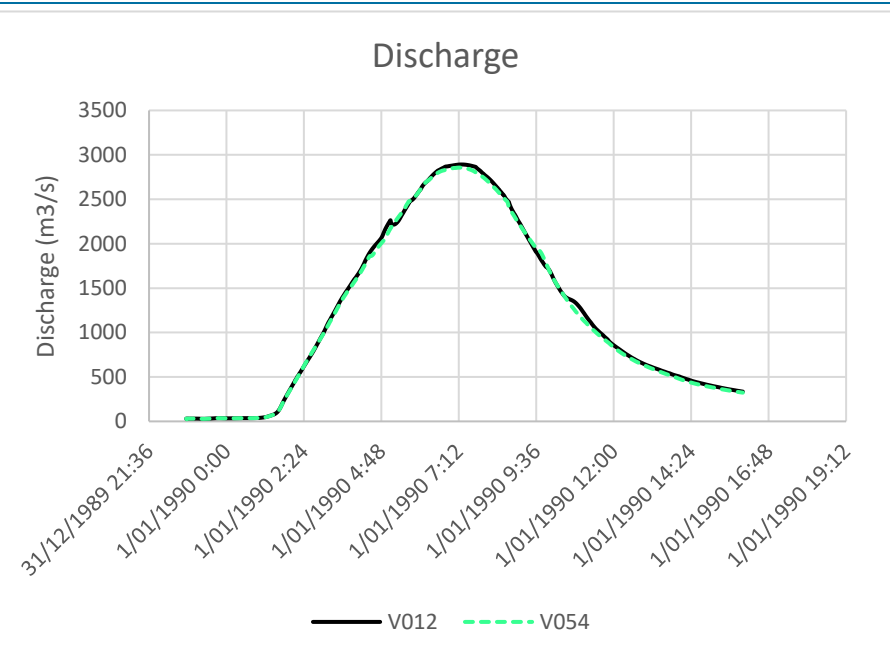


Figure Appendix D.26: Pomare Bridge plots



Bridge plots (2,800 m³/s flow event)

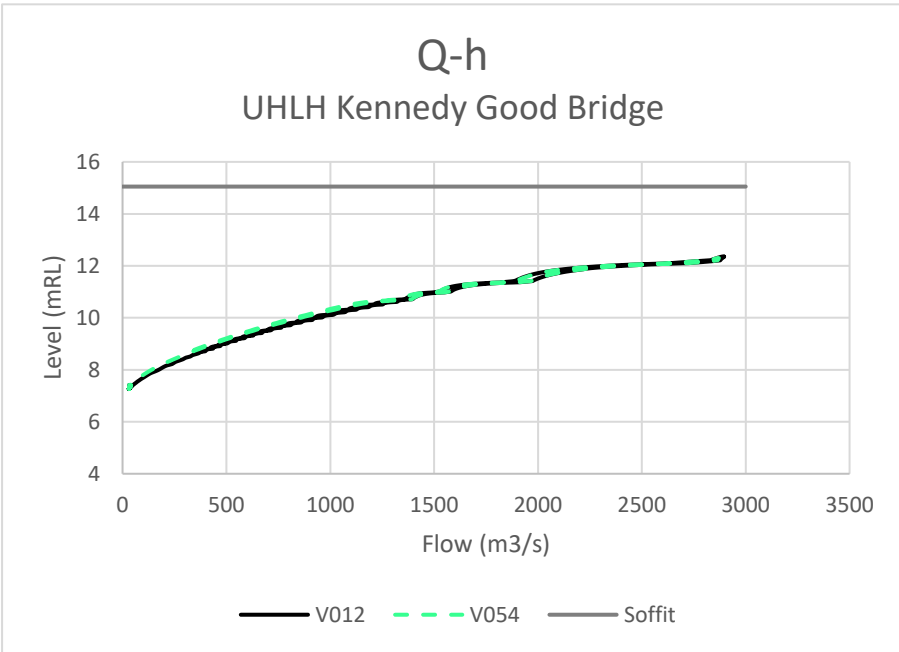


Figure Appendix D.27: Kennedy Good Bridge plots

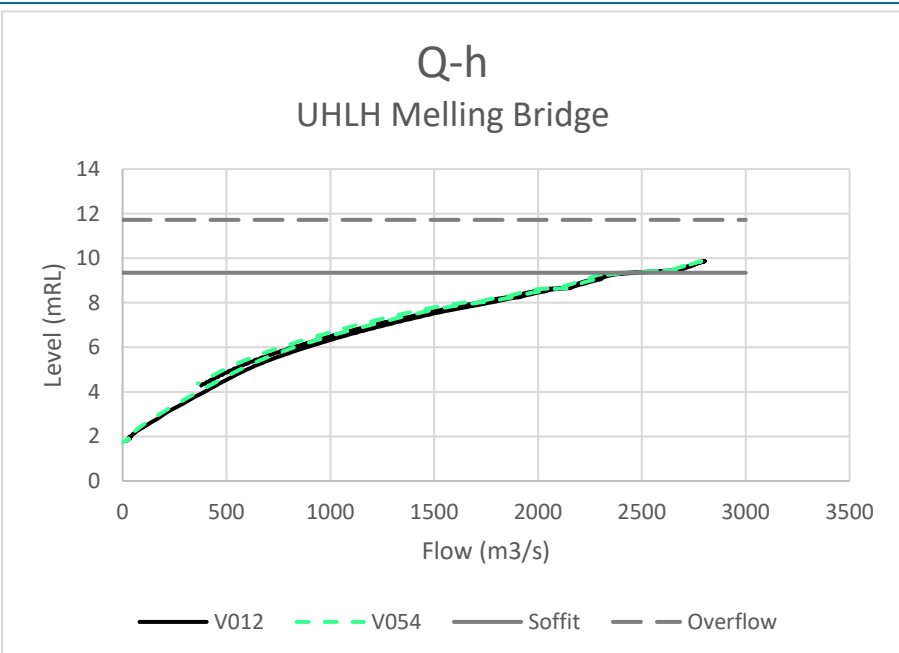
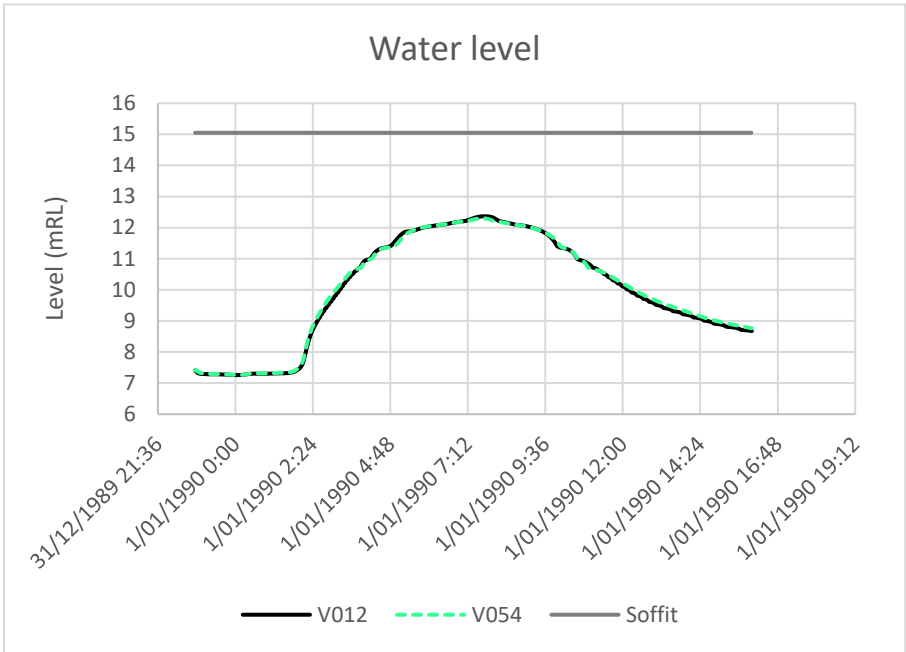
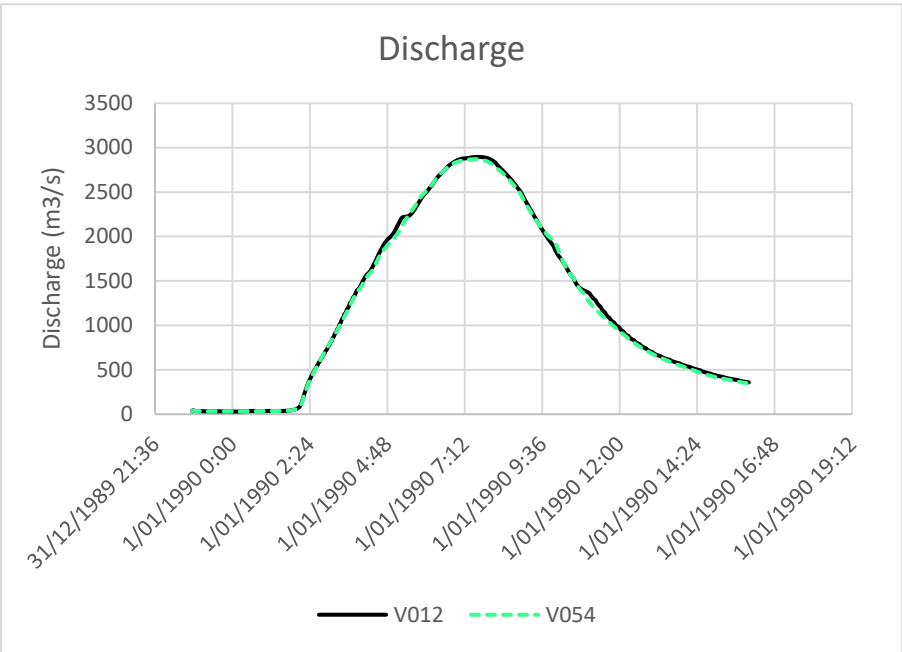
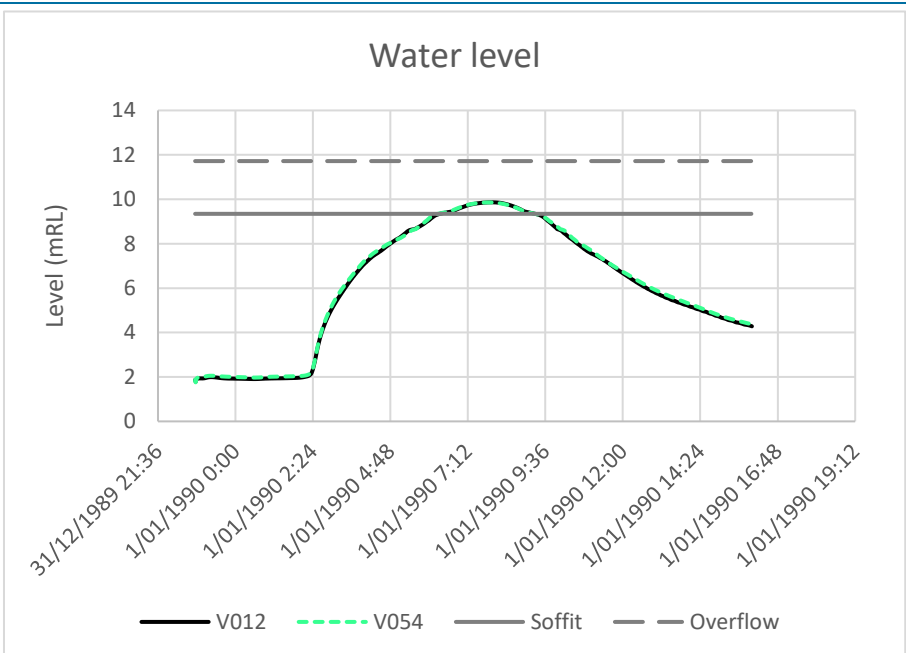
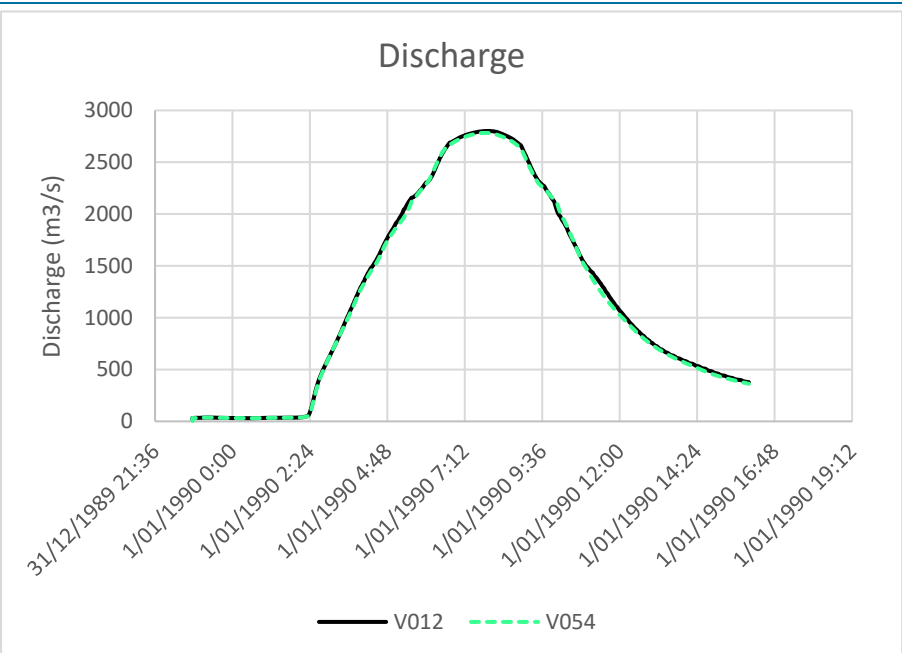


Figure Appendix D.28: Melling Bridge plots



Bridge plots (2,800 m³/s flow event)

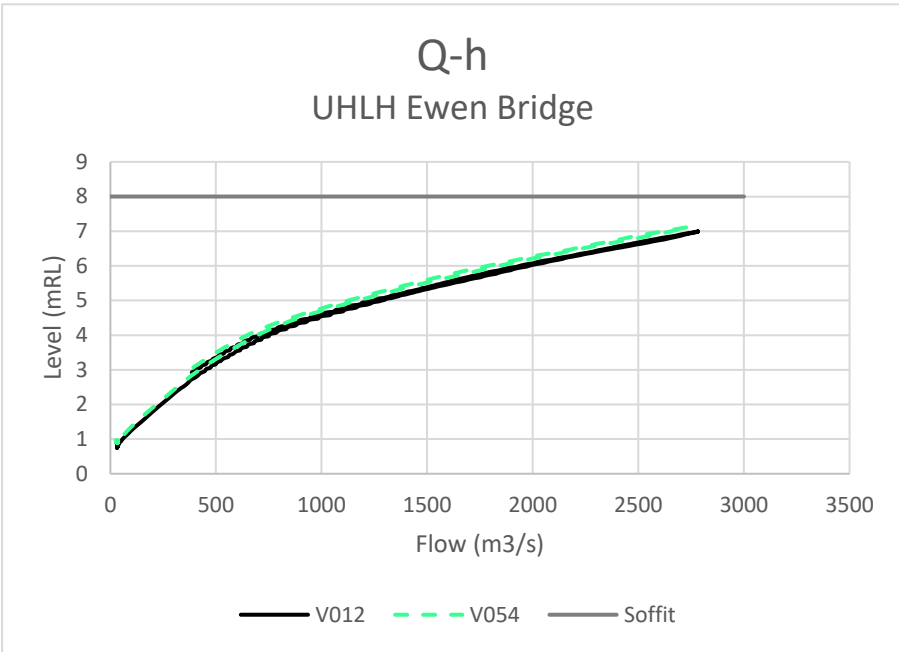


Figure Appendix D.29: Ewen Bridge plots

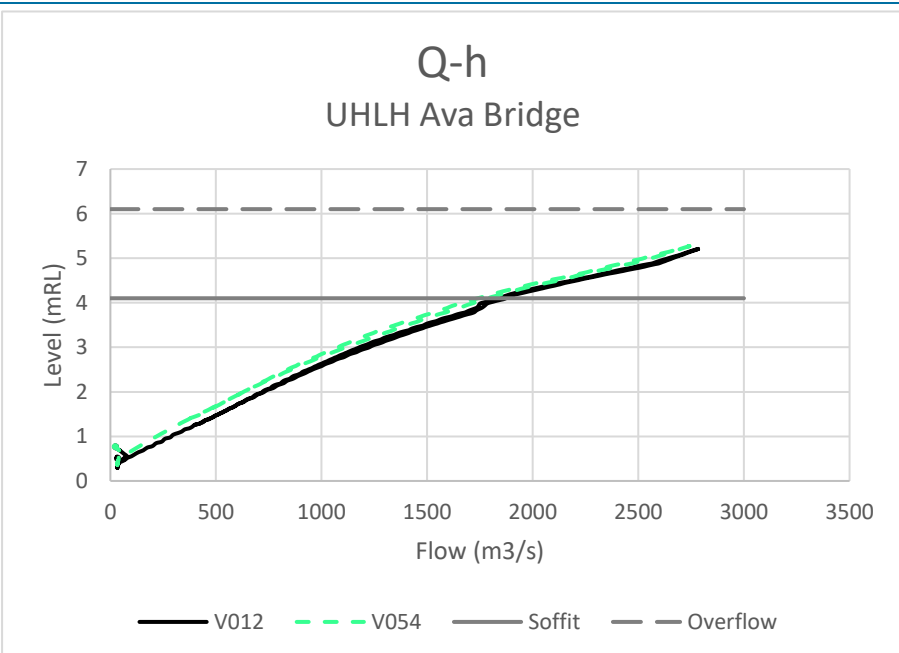
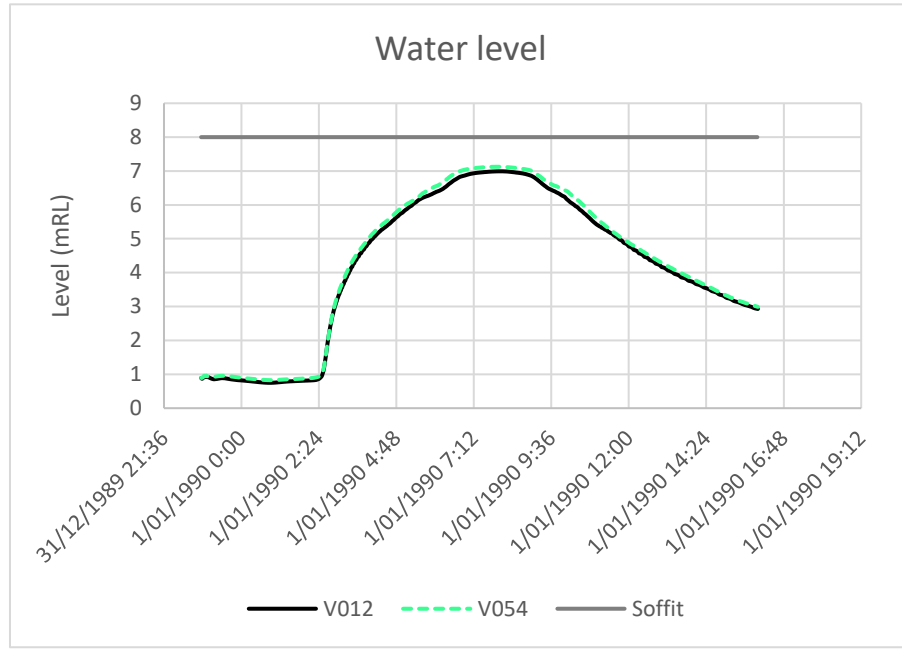
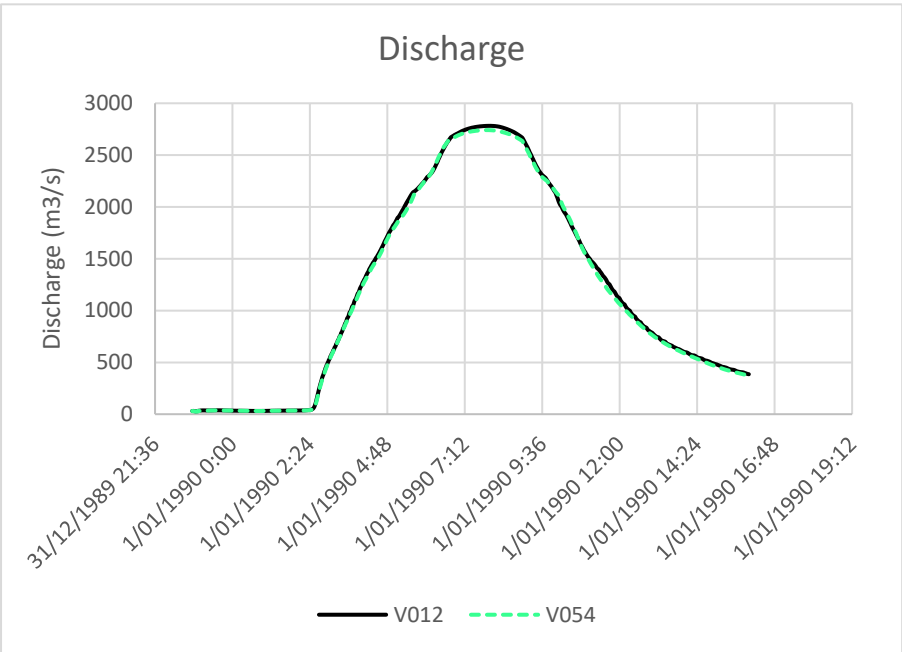
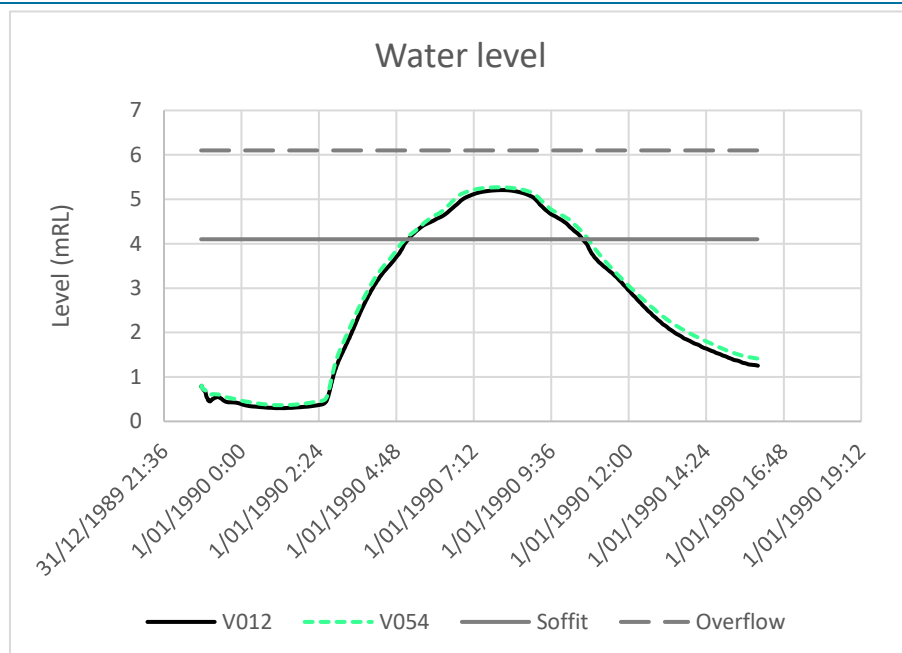
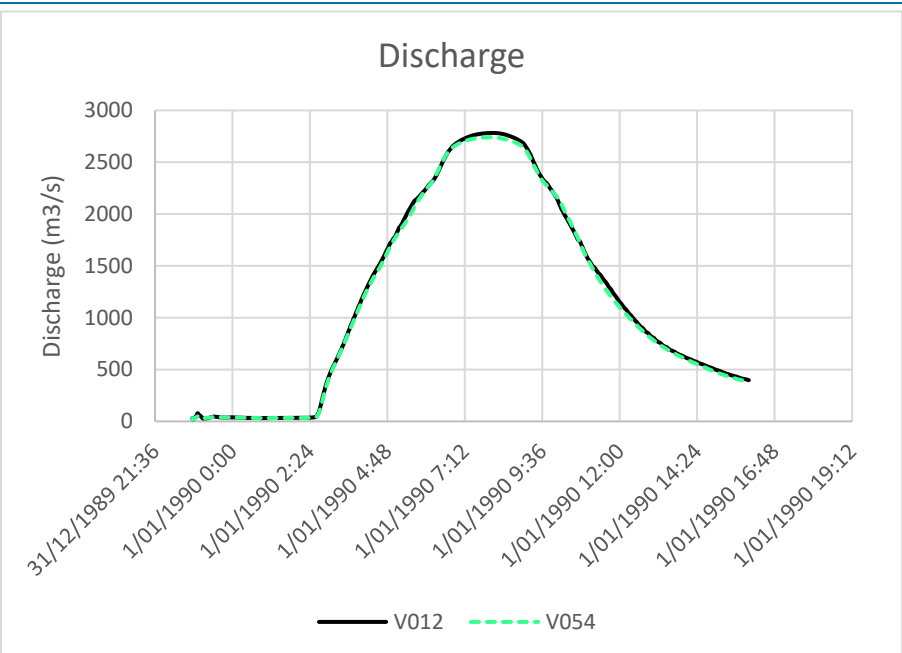


Figure Appendix D.30: Ava Bridge plots



Bridge plots (2,800 m³/s flow event)

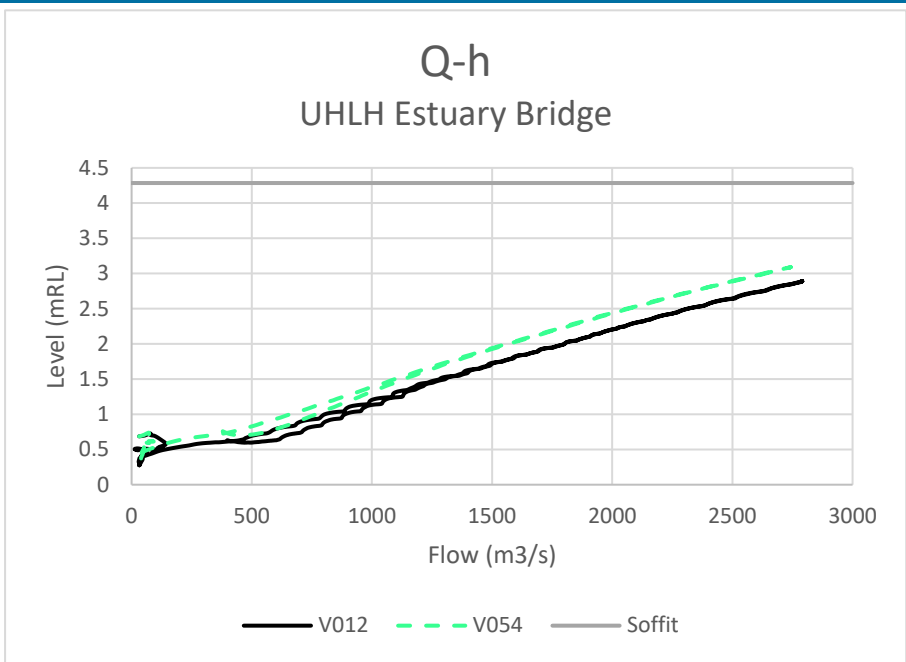
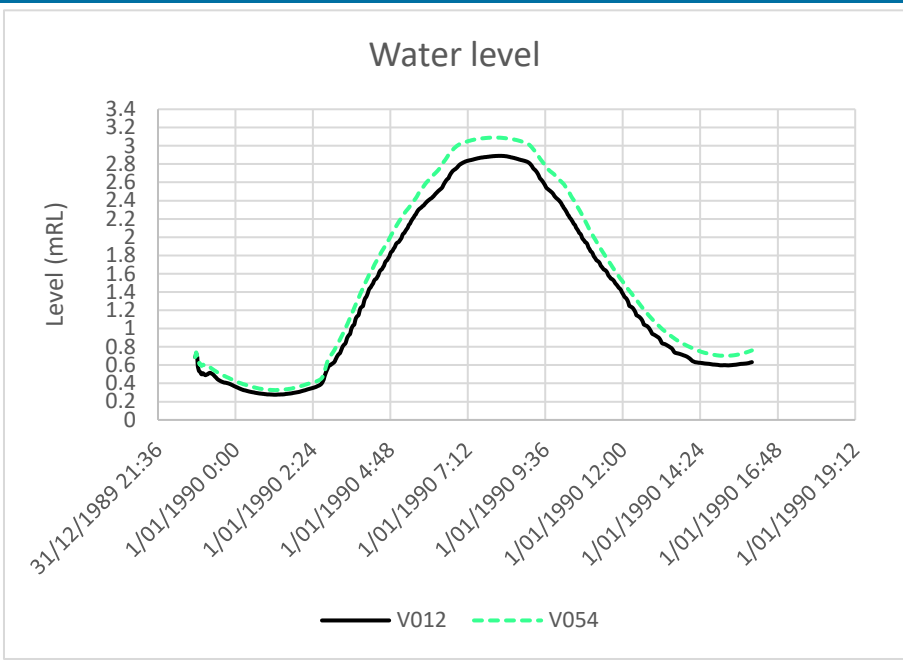
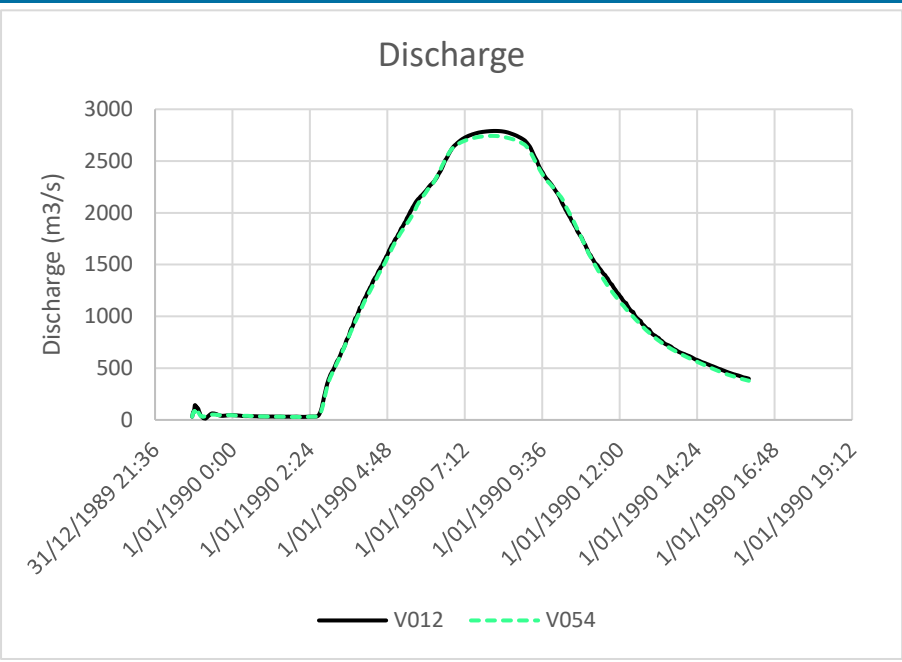


Figure Appendix D.31: Estuary Bridge plots



D2.3.7 Difference plot *UHLH_202204_V054*

LEGEND

- == Bridges
- Modelled river centreline

Flood depth difference (mm)

- < 500
- 500 - -250
- 250 - -100
- 100 - -50
- 50 - 50 ('No difference')
- 50 - 100
- 100 - 250
- 250 - 500
- > 500

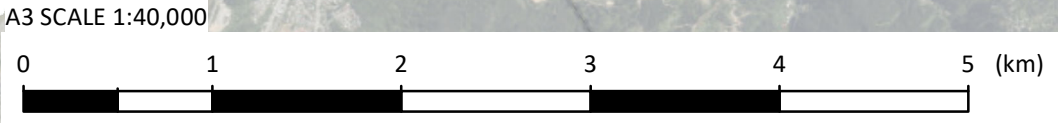
Hydraulic model version: UHLH_202207_V054
Previous model version: UHLH_202207_V012

Increase in peak 2D water levels upstream of Akatarawa bridge
Combination of update to bridge (slightly higher water levels in 1D and elevated water levels for longer), and lateral link (spill) level adjustment.

Increase in 2D peak water levels
Slight increase in peak water levels (less than 100mm) causes more spill volume over stopbank. In conjunction with changes in Manning's n roughness this causes peak water levels to increase.

Decrease in peak 2D water levels
Decrease in water levels caused by updates to lateral links between bridges and change in shape of hydrograph at bridge structure. Some localised decreases attributable to very slight decrease in water level for given discharge (less than 50mm)

Decrease in peak 2D water levels
Decrease in water levels caused by change in shape of hydrograph at bridge structure.



PROJECT	HUTT RIVER MODEL UPDATE 1014022.0000
TITLE	FLOOD MODEL RESULTS - DIFFERENCE PLOT: CURRENT MINUS PREVIOUSLY REVIEWED VERSION (V054 - V012)
SCALE (A3)	1:40,000

LEGEND

- == Bridges
- Modelled river centreline

Flood depth difference (mm)

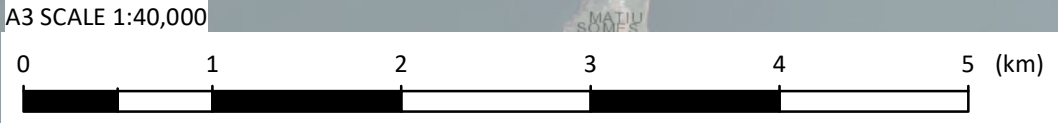
- < 500
- 500 - -250
- 250 - -100
- 100 - -50
- 50 - 50 ('No difference')
- 50 - 100
- 100 - 250
- 250 - 500
- > 500

Hydraulic model version: UHLH_202207_V054
Previous model version: UHLH_202207_V012

Changes in 2D peak water levels
Slight changes in peak water levels due to updates to bridge structures and changes in hydrograph shape. Peak water level changes also attributable to changes in Manning's roughness values in floodplain.

Estuary bridge
Increase in peak water levels caused by updates to bridge structure calculations via Mike11.ini file result in localised increases to water level only (approx 100 mm increase)

Increase in tidal boundary peak water levels
Tidal boundary condition has been updated to the 1% AEP tide that was agreed with GWRC for sensitivity runs of the downstream boundary. This will be updated to the previous tidal boundary for the finalised baseline model 2,800 m³/s scenario.



PROJECT	HUTT RIVER MODEL UPDATE 1014022.0000
TITLE	FLOOD MODEL RESULTS - DIFFERENCE PLOT: CURRENT MINUS PREVIOUSLY REVIEWED VERSION (V054 - V012)
SCALE (A3)	1:40,000

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