

Report           **09.445**  
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Committee      Transport & Access Committee  
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## Muri Railway Station review

### 1. Purpose

To update the Committee on the issues associated with the future of Muri Station.

### 2. Significance of the decision

The matters for decision in this report **do not** trigger the significance policy of the Council or otherwise trigger section 76(3)(b) of the Local Government Act 2002.

### 3. Background

Greater Wellington and ONTRACK are undertaking a major upgrade of the Wellington rail network to bring it up to modern operating and safety standards.

\$11.3M has been approved to fund capital works on stations and platforms. This amount is insufficient to undertake all of the works that are desirable and works must be prioritised. Our ability to increase the level of funding is considered remote and would require a very high level of justification.

The tightly curved section of the current platform at Muri Station provides a boarding and alighting situation that is less than satisfactory with respect to GanzMavag trains and is the worst on the network.

The new Matangi trains have a different step position to the GanzMavag trains which will worsen the boarding situation at Muri Station by creating a larger gap.

As a consequence of introducing new trains onto the rail network, ONTRACK will have to seek a variation of their Rail Safety Case. This will require a safety assessment for every station on the network. The variation of the Rail Safety Case will need to be approved before the new Matangi trains can start operating.

If the safety assessment indicates that the boarding situation at Muri poses unacceptable risks the platform will require modification or the station will need to close.

Changing the operation of the trains has been considered but ruled out as not viable. It is not possible to have boarding and alighting confined to one or two carriages only. The new Matangi trains have passenger operated doors and are not designed to enable certain doors to be locked off. In addition it is operationally unacceptable to have a station that operates in a different way to all other stations on the network.

Other options to address the poor boarding situation such as the installation of flashing warning lights on the platform or compressible rubbers on the platform edges will need to be fully assessed but would require additional capital and maintenance budgets.

### **3.1 New Matangi trains and the network upgrade**

Forty-eight 2-car Matangi trains are in the final stage of the design process and are expected to commence revenue service from mid 2010. Part of the final design stage has confirmed (May 2009) the extent of the vehicles dynamic movement. This is technically referred to as the kinematic envelope. The kinematic envelope is broadly made up of the space occupied by the vehicle's physical size and dynamic movement on the suspension as it negotiates corners.

The Matangi trains are designed to provide an improved boarding situation for all passengers by having a lower step. Bringing the step of the train closer to the top of the platform requires closer attention to the platforms location relative to the track to avoid strikes. Platforms in the Wellington region are somewhat random in their location relative to both the vertical and horizontal distance from the track. Currently the new trains could not operate as they would strike many of the platforms.

With confirmation of the movement characteristics of the train, multiple lazer surveys of the network's platforms, and aspirations for improved boarding, ONTRACK have developed a stations programme. The programme is designed to bring all the platforms and stations up to a safe and reasonable standard of passenger amenity for just over \$19.5M.

The new Matangi trains are costing over \$230M, while the associated essential network infrastructure upgrades (new substations, new track circuits (signalling), tunnel enlargements) together with critical reliability and capacity works (double tracking, Kaiwharawhara throat) stretches to over \$500M.

Within the \$500M, \$11.3M<sup>1</sup> is allocated to capital works on stations and platforms. To achieve value for money with the lesser amount of available

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<sup>1</sup> There is another fund known as Pedestrian access improvement works (\$1.6M), however this funding is strictly for improving the journey (ease and comfort of accessibility) from the street or carpark to the platform. Examples include ensuring the correct slope of ramps to the platform, better carpark lighting and markings, handrails, signage and rectifying general access issues. A specific example is ensuring all disability ramps and car spaces are correctly marked and at code. This type of work is required across the network. The budget is spread very thinly with only minor works at ~21 stations. This funding cannot be spent on the actual station or platforms.

funding, ONTRACK have prepared a programme with emphasis on benefiting the greatest number of commuters and giving priority to stations and platforms that:

1. require essential clearance works to allow the safe passage of the new trains, and
2. warrant an increased level of passenger safety and security based on the current condition and peak commuter patronage.

### 3.2 Peak commuter patronage

Table 1 below indicates the currently estimated peak hour patronage of the stations along the North Island Main Trunk (NIMT) line (aka the Western Line) and selected stations on the Hutt Line. These figures are estimated based on a detailed survey conducted in December 2006. A 10% factor, for statistical uncertainty, has been applied on top of the 7.5% patronage growth since December 2006.

Table 1: AM Peak Patronage (June 2009 estimate)

NIMT	AM Peak patronage	NIMT	AM Peak patronage	Hutt Line (major)	AM Peak patronage
Paraparaumu	1,128	Porirua	702	Upper Hutt	434
Paekakariki	123	Kenepuru <sup>2</sup>	22	Taita	294
Muri	26	Linden	265	Waterloo	1493
Pukerua Bay	86	Tawa	235		
Plimmerton	148	Redwood	264		
Mana	53	Takapu Rd	166		
Paremata	591				

Based on Table 1 and the constraints and priorities described in 3.1, the clearance work across the network is estimated to cost just over \$7.0M. This leaves about \$4.3M for essential safety and security works (lighting, tactile strips, resealing, painting platform edges, CCTV conduit, yellow lines, signage) on the following stations: Wellington, Upper Hutt, Porirua, Paremata, Plimmerton, Waterloo and Taita.

Pukerua Bay Station requires major reconstruction work to enable the operation of the Matangi trains and will have improvements to passenger amenities and accessibility. A cost of \$1.25M is estimated.

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<sup>2</sup> Kenepuru also has very low patronage and needs significant work. The proximity of the Hospital, and alternative stations (1.6km Porirua / 1.25km Linden), potentially provide justification for keeping it open, however this will be reviewed.

## 4. Muri Station

Muri Station is located about 0.88km to the north of Pukerua Bay Station and is immediately to the south of the beginning of the single track section leading up to the North Junction of the North Island Main Trunk rail line (see Figure 1). Muri Station has no park and ride facilities, and access from the western side of Pukerua Bay is severely restricted by State Highway 1 (SH1).

Muri Station platforms are straight at the middle and curved at both ends. At the west end of the platforms, the radius of curvature is as low as 200 metres which falls into the tightest curved platform category of the Wellington passenger rail network. The tightness of the curve means that the horizontal gap between the platform and the train step ranges from 250mm to 300mm affecting about three car lengths.

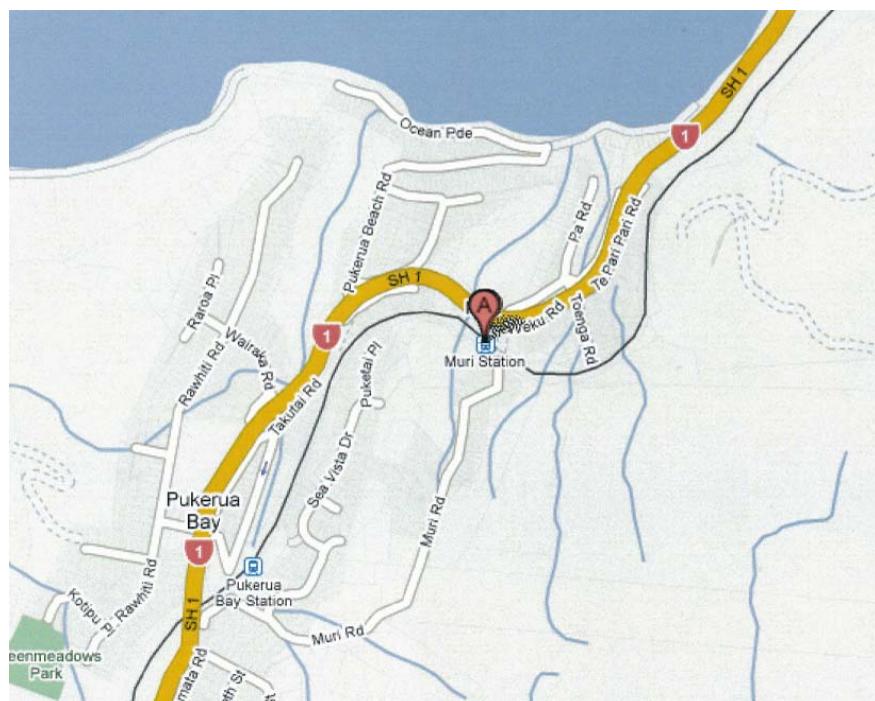


Figure 1. Muri Station, Pukerua Bay Station, Pukerua Bay

A recent Greater Wellington survey (April/May 2009) indicates an average of 25 passengers using Muri Station in the morning peak hours between 06:00 and 08:30. Similar surveys performed in December 2006 indicated 22 passengers.

Based on the survey carried out in April/May 2009, it is estimated that the total number of passengers using Muri Station during the morning peak hours is 26 (25+1) allowing for the very early morning train which the survey did not include. This aligns well with the estimation and factoring from the table above.

Based on the current TranzMetro peak hour and total patronage figures, which indicates that 65% of total daily patronage belongs to the peak hours, the daily number of passengers using Muri is estimated to be 40.

Pukerua Bay Resident's Association (PBRA), performed an informal count during morning peak (April 2009) yielding an average of 21 to 35 people boarding the train during the peak in addition to 15 college students regularly using the train in the off peak. The PBRA figures give a range of 36 to 50 daily passengers.

#### 4.1 Modification work required at Muri Station

The amount that may need to be spent on Muri Station, if it is to remain open, ranges from \$0 to \$750,000. If no modification work whatsoever is required to resolve safety issues the station can remain open with no immediate cost. However if any work is required, essentially beyond a paint and minor repair, then the platform must be brought up to ONTRACK's code to comply with their Rail Safety Licence. The principle is similar to renovating an old house i.e. once work is begun the structure must be brought up to the latest building codes and standards.

Under the latter scenario the costs are made up of two components:

1. Significant civil work is required on the northbound platform. This requires building a new concrete platform structure to replace the existing 50 metre timber platform structure, and rebuilding another 20 metres of the existing concrete platform at the northern end to eliminate the temporary wooden reinforcement (see Figure 2). These civil works are necessary to ensure the long term structural integrity and safety of the northbound platform. The estimated cost is \$650,000.
2. If the above work had to be performed work would also be done to adjust the platform height, edge and surface to ensure the correct height for safely utilising Matangi's wheelchair access ramp. The estimated cost is \$100,000.



Figure 2. Muri Station – timber platform structure and temporary wooden reinforcement

If any money needs to be spent on keeping Muri open then \$750,000 represents the least amount that has to be spent. A total of \$1.4M would be required to fully replace the platform.

To decommission the station also has a cost. The estimate to demolish the platforms and make the area safe for pedestrians is \$120,000.

If the station can remain open with nil expenditure from the rail upgrade budget then the risk remains that maintenance works in the future may trigger the necessary safety improvements (\$750,000) at a time when there is no budget whatsoever for upgrades. Muri currently has \$100,000 allocated from the \$11.3M stations programme.

## 5. Costs per passenger

The funding situation is such that any expenditure has to be prioritised and Muri has to compete with all other stations. The costs per passenger for the options facing Muri are shown in Table 2 below:

Table 2: Costs per peak passenger

	Cost per Muri peak hour passenger	Cost per Muri daily passenger
<b>Existing situation</b> \$0	\$0 = \$0 / 26	\$0 = \$0 / 40
<b>Option 1: Safety / structural</b> \$750,000	\$28,850 = \$750,000 / 26	\$18,750 = \$750,000 / 40
<b>Option 2: Close</b> \$120,000	\$4,615 = \$120,000 / 26	\$3,000 = \$120,000 / 40

If any work is required it will be difficult to justify spending nearly \$29,000 on each peak passenger that currently uses Muri. Under this scenario a case may be made to close Muri Station permanently. This will have impacts on the residents of Pukerua Bay.

## 6. Impacts on Pukerua Bay area residents

According to the 2006 census, there were 705 households and 1716 residents in the Pukerua Bay area which includes the Muri station area. An aerial photo of the Pukerua Bay Station and Muri Station area can be found in Figure 3 below.

Figure 4 also depicts the following information:

- The figures in white boxes are the distances respectively from Muri or Pukerua Bay Station to the end of each road or foot path as indicated by each colour.
- The circles are the distance from each station, 400m/600m/1000m respectively according to colour code.

- The map shows that the shortest walking distance between Muri and Pukerua Bay Station is 905m (530m on a ‘path’ as indicated in green<sup>3</sup> plus 375m on road as indicated by the light blue line).

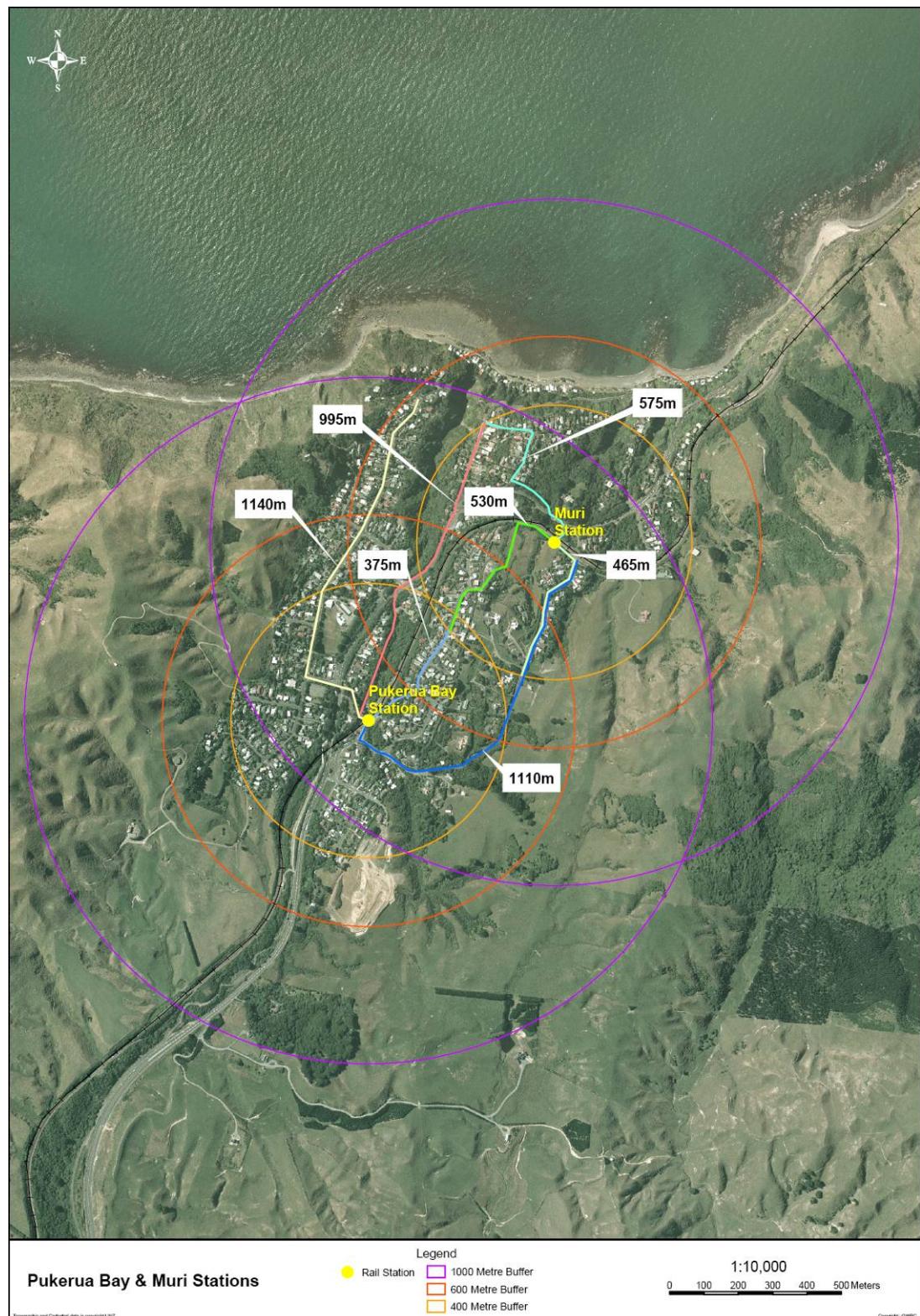


Figure 3. Pukerua Bay and Muri Railway Station walking paths and distances

<sup>3</sup> Approximately half of the green ‘path’ is across an unpaved open field.

## 6.1 Theoretical impact analysis

Table 3 below shows the changes in catchment distribution<sup>4</sup> with both Pukerua Bay and Muri stations operational and with only Pukerua Bay operational. The number in brackets is the percentage of the total 705 households.

Table 3: Changes in total households station access / walking distance and time in Pukerua Bay area

Households distance from nearest station (metres)	Walking time to nearest station (minutes)	No. of households Pukerua Bay & Muri Stations	No. of households Pukerua Bay Station only
<400m	<5	240 (34%)	141 (20%)
400m - 800m	5 - 10	345 (49%)	282 (40%)
800m - 1200m	10 - 15	99 (14%)	162 (23%)
>1200m	>15	21 (3%)	120 (17%)
		705	705

If Muri station was not operational, residents from 162 (23%) more households would have to walk for more than 10 minutes to reach a train station. However, based on actual peak patronage the number of passengers affected is much smaller. Table 4 indicates the changes in walking distance (and walking time) for peak hour Muri Station area passengers<sup>5</sup>. Theoretically only six passengers more would have to walk more than 10 minutes to reach a train station.

Table 4: Changes in Muri peak passengers station access / walking distance and time in Pukerua Bay area

Households distance from nearest station (metres)	Walking time to nearest station (minutes)	Current distribution of peak hour Muri Station passengers	Distribution of peak hour Muri Station passengers having to use Pukerua Bay
<400m	<5	9	5
400m - 800m	5 - 10	13	10
800m - 1200m	10 - 15	4	6
>1200m	>15	1	5
		27*	26*

\* difference due to rounding

<sup>4</sup> The household distribution figures, current and with Pukerua Bay station only open, are based on current GIS information which determines the rail station catchment distribution for every 400m away from both Pukerua Bay and Muri Station. Household are only counted once with their nearest distance to either Muri or Pukerua Bay Station or Pukerua Bay only.

<sup>5</sup> The distributions assume a total of 112 peak hour passengers in the Pukerua Bay area, with 26 of them belong to the existing Muri Station area. The figures are estimated with the assumption that the Muri Station users are distributed according to the house hold catchment figures.

Table 5 shows the average station access distance and walking time for the affected Muri Station area passengers will be increased respectively from 610 metres (7.5 minutes) to 790 metres (9.9 minutes), and summarises the actual numbers walking more than 10 and 15 minutes.

Table 5: Average Muri peak passengers station access / walking distance and time in Pukerua Bay area

	Pukerua Bay & Muri Station open	Pukerua Bay Station open only
Average walking distance to nearest station	610m	790m
Average walking time to the nearest station	7.8 minutes	9.9 minutes
No. of peak hour passengers needing to walk >10 minutes	4	6
No. of peak hour passengers needing to walk >15 minutes	1	5

## 6.2 Survey of impacts on actual peak commuters (14 July 2009)

To test the analysis in 6.1 an informal survey was taken on the Muri Station platform during the morning peak period. Commuters were asked the following questions:

1. Where did you come from this morning?
2. How did you get here?
3. How long did it take?

The results of this survey are shown in the Table 6 below. Without actual street addresses absolute conclusions cannot be drawn; however, when analysed in conjunction with the Google map in **Attachment 1**, the following broad statements can be made:

- Only three commuters (living on Pukerua Beach Road) are currently walking for more than five minutes.
- Of those three plus the three living on Haunui (Road or Way) it is likely that at approximately half way though their normal journey they will be able to simply change direction and walk to Pukerua Bay within a similar timeframe. Although their journey may be a bit longer it will almost certainly be safer as they will be able to cross SH1 using the overbridge.

Table 6: 14 July 2009 survey results of Muri Station peak commuter origins, mode and time

Passengers #	Street (Q1)	Mode (Q2)	Time (minutes) (Q3)	Passengers #	Street (Q1)	Mode (Q2)	Time (minutes) (Q3)
1	Pukerua Beach Rd	Walk	10	13	Waimarino Rd	Walk	5
2	Pukerua Beach Rd	Walk	10	14	Haunui Way	Walk	4
3	Pukerua Beach Rd	Walk	10	15	Haunui Rd	Walk	5
4	Muri Rd	Walk	2	16	Haunui Rd	Walk	4
5	Muri Rd	Walk	2	17	Toenga Rd	Walk	4
6	Muri Rd	Walk	2	18	Toenga Rd	Walk	4
7	Muri Rd	Walk	2	19	Toenga Rd	Walk	4
8	Muri Rd	Walk	2	20	Toenga Rd	Walk	4
9	Muri Rd	Walk	2	21	Te Pari Pari	Walk	5
10	Muri Rd	Walk	2	22	Onepu Rd	Walk	5
11	Pa Rd	Walk	5	23	Weka Rd	Walk	2
12	Pa Rd	Walk	5	24	SH 1	Walk	3

- Those living on Muri Road have the choice of walking the other way to Pukerua Bay, using the footpath on SH1 or the ‘path’ through the field.
- Of the nine living directly to the north of Muri, who are the only commuters who would be forced past Muri Station on their way to Pukerua Bay Station, approximately 50% will now be able to use the overbridge to cross SH1.

Overall the walking and distances relative to the number of commuters affected largely bears out the theoretical analysis.

### 6.3 Availability of alternatives

There is currently no public bus route serving or running through Muri Station area. The nearest existing contracted bus routes are located 9–10km away, at Paekakariki (a shopper service only) and Pare mata. Mana Coach Services operates a commercial commuter bus service from Waikanae in the morning and afternoon peaks (three departures), but this does not stop in the Pukerua Bay area.

There are about 15 unmarked park and ride spaces at Pukerua Bay Station of which about nine are currently in daily use. The number of spaces is likely to increase once carpark lines are added as part of the upgrade. The newly opened carpark on the east side also provides additional parking space for six to eight cars.



Figure 4. Park and ride space at Pukerua Bay Station

The estimated number of existing peak hour passengers using Pukerua Bay Station is 90. This is based on the last passenger count conducted in December 2006 adjusted with passenger growth rate figures.

If Muri Station area passengers are going to use Pukerua Bay Station, during peak hours, the number of passengers could be increased from 90 to 120. Pukerua Bay Station has a large centre platform therefore platform congestion will not be a problem.



Figure 5. Pukerua Bay Station platform and shelters

Plimmerton station has recently had a subway installed (for access to the centre platform and the town centre from the carpark) and the carpark upgraded.

There are currently 67 available carparks of which about 20 are in daily use. Plimmerton Station is about 7km away from Muri Station via a relatively new section of four-laning on SH1, and has very good and safe access for park and ride or kiss and ride. It is worth noting that Plimmerton is a zone 6 fare whereas Pukerua Bay is zone 7.

#### 6.4 Mitigation options

ONTRACK have investigated the possibility of creating a safe walkway beside the rail corridor from Muri to Pukerua Bay Station. Unfortunately the corridor is not wide enough at that particular section of track to provide the necessary safe clearances.

Greater Wellington is mindful of the Pukerua Bay Neighbourhood Accessibility Report and supports the investigation of other options for improving pedestrian access within Pukerua Bay.

#### 6.5 Rail service benefits

Removing Muri Station from Western Line passenger rail services will reduce the whole journey time by up to two minutes. This is due to the saving in station dwell time and train acceleration and deceleration time.

This is a direct benefit to all of the estimated 1251 current peak rail passengers north of Muri.

An estimate of passenger journey time benefits has been made assuming the following:

- Existing Muri Station users will need to walk an additional eight minutes on average, with a penalty associated with walking (to reflect a dislike of walking to PT services in hilly conditions) of 2.5 times gives a total disbenefit of 20 minutes per passenger.
- Rail passengers travelling to or from Kapiti will receive on average a conservative one minute benefit through saving in station dwell times.
- An average value of time of \$6/hour<sup>6</sup> has been used.

The analysis shows that approximately 80 passengers per day use Muri station, and each would receive a 20 minute penalty (so 27 passenger hours worth of additional time). Approximately 3,750 passengers travelling to or from Kapiti would see a one minute reduction in journey times (or 63 passenger hours in reduced time). The net effect of the two is a benefit to rail users of 36 passenger hours per day, or approximately \$57,500 per annum. More detail is provided in **Attachment 2**.

This analysis indicates that closing Muri Station has real passenger transport benefits which would justify the cost of closing it at any time. Conversely

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<sup>6</sup> \$6 per hour is broadly consistent with the NZ Transport Agency's Economic Evaluation Manual

using similar analysis to justify keeping it open creates negative benefits with significantly higher capital and operational costs.

## 7. Summary

Table 7 below summarises the impacts of the three options for Muri Station.

Table 7: Summary of costs and issues

	Existing situation	Option 1 – OPEN Safety / structural	Option 2 – CLOSE Decommissioning work
Total cost	\$0	\$750,000	\$120,000
Cost per peak passenger	\$0	\$28,850	\$4,620
Cost per daily passenger	\$0	\$18,750	\$3,000
Passenger transport <b>benefits</b> relative to Option 3. (existing situation)	0	0	9576 pax hours pa = \$57,500 pa
Av. walking distance / time (affected passengers)	610m / 7.8 minutes	610m / 7.8 minutes	790m / 9.9 minutes
No. of peak hour passengers needing to walk >15 minutes	1	1	5
P&R Space	Muri 0 Pukerua Bay 15 Plimmerton 67	Muri 0 Pukerua Bay 15 Plimmerton 67	Muri 0 Pukerua Bay 21+ Plimmerton 67
Accessibility	Muri - Not compliant PBay - Good	Muri - Not compliant PBay - Good	Muri - N/A PBay - Good
No. peak passengers benefited	0	(+)26	(+)1251 (-)26
Funding Gap	\$0	\$650,000	\$20,000

## **8. Conclusion**

If any work is required at Muri Station to resolve safety issues then the estimated cost is \$750,000. ONTRACK will perform a preliminary safety/risk analysis before December 2009. If the unavoidable larger gap creates an untenable safety issue then major work is required and it will be difficult to justify the significant expenditure on Muri Station. The required funding represents a minimum of \$28,850 per peak passenger.

If no work whatsoever is required to resolve safety issues then there is no cost and the station can remain open. However, if any maintenance/renewal work is required in the future, beyond a paint or minor repair, this may trigger the need for significant safety and structural works.

## **9. Communication**

Officers and Councillors have held initial discussions with Porirua City Council, Pukerua Bay Residents Association, ONTRACK, NZ Transport Agency and TranzMetro. Further communication is planned.

## **10. Recommendations**

*That the Committee:*

1. ***Receives the report.***
2. ***Notes the content of the report.***

Report prepared by:                          Report approved by:

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Wayne Hastie  
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Transport

Attachments: 1. Google map of affected area  
2. Benefits analysis