greater WELLINGTON
REGIONAL COUNCIL

Report 08.136
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Committee Catchment Management
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Summer 2007/08 - dry weather

1. Purpose

To inform the Committee of the hydrological conditions relating to the dry weather over the 2007/08 summer.

2. Background

Dry weather has persisted in the Wairarapa and in other parts of the region since February 2007. These conditions have led to hardship for farmers in terms of lack of grass growth. It has also impacted on urban dwellers and those on lifestyle blocks.

The information below provides a summary of hydrological statistics for the summer period and puts these in the context of the preceding months. Some of this information was presented to the Drought Meeting held on the evening of 4 March.

4. Summer 2007/08 rainfall and river flows

February 2008 followed three months of relatively dry weather. As shown in Figure 1, the rainfall for the four months from November 2007 to February 2008 was significantly below average in all parts of the region except the Kapiti Coast. Rainfall for this period was as low as 35% of long-term average on the Wairarapa plains and less than 60% of average in the eastern hills, parts of the Tararua Range, Wainuiomata, Orongorongo Range and Wellington city. Statistical analysis of the rainfall totals for summer (December to February) shows that although in many parts of the region the summer was significantly dry, there was more rainfall than during the summer of 1972/73 (when there was a notable drought).

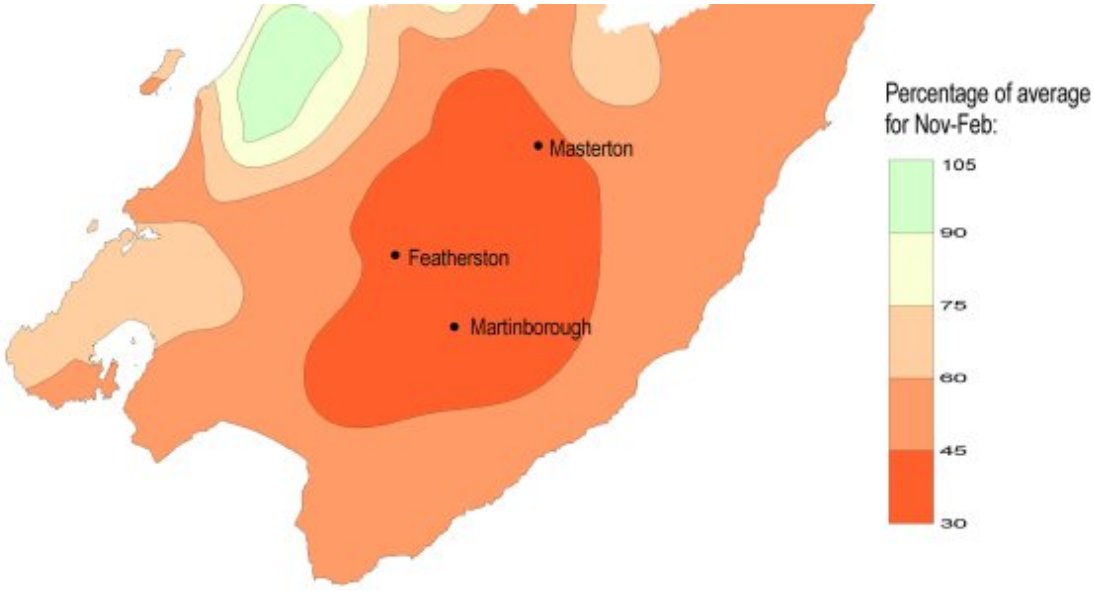


Figure 1: Rainfall during the period Nov 2007 to Feb 2008 as a percentage of the long-term average

Summer (Dec-Feb) 2007/08 rainfall statistics at key monitoring stations in the Wellington region

Site	Year records began	Long-term summer average (mm)	Summer 2007/08 rainfall (mm)	Summer 2007/08 compared to average	(Previous) driest on record	Comment about summer 2007/08
Karori Reservoir[1]	1879	246	160.6	65%	113 mm in 1972/73	In lowest quartile of record
Kaitoke Headworks	1951	466	205.6	44%	204 mm in 1972/73	Second lowest on record, after 1973
Bull Mound (Sth Tararua Range)	1980	904	491.5	54%	538 mm in 1988/89	Lowest on record
Wainuiomata Reservoir†	1890	344	168.5	49%	128 mm in 2000/01	In lowest 10th percentile
Waikanae WTP	1970	263	261.5	99%	117 mm in 1977/78	
Alloa (Featherston)	1964	216	104.5	40%	82 mm in 1972/73	3rd lowest on record
Tanawa Hut (Eastern Wairarapa)	1956	233	140.5	60%	75 mm in 1997/98	

[1] Driest on record taken to be the driest in the last 50 years

The lowest river flows (7-day and 28-day mean flows) experienced during the 2007/08 dry spell to date are most significant for the Wairarapa rivers. Return periods in the range 4-15 years have been assigned to the low flows in the Ruamahanga River and its western tributaries, although the 7-day lowest flow in the Ruamahanga River at Waihenga may have been more severe (to be confirmed). In general, the lowest flows were not as low as flows experienced during droughts of 1978 and 1985[2]. The Hutt and Wainuiomata rivers have had low flows this year with estimated return periods of 3-4 years. In the Wainuiomata River, lower flows were observed in March / April 2001 and in the Hutt River lower flows occurred in autumn 2003.

Low flow statistics for 2007/08 to date, for major rivers in the Wellington region

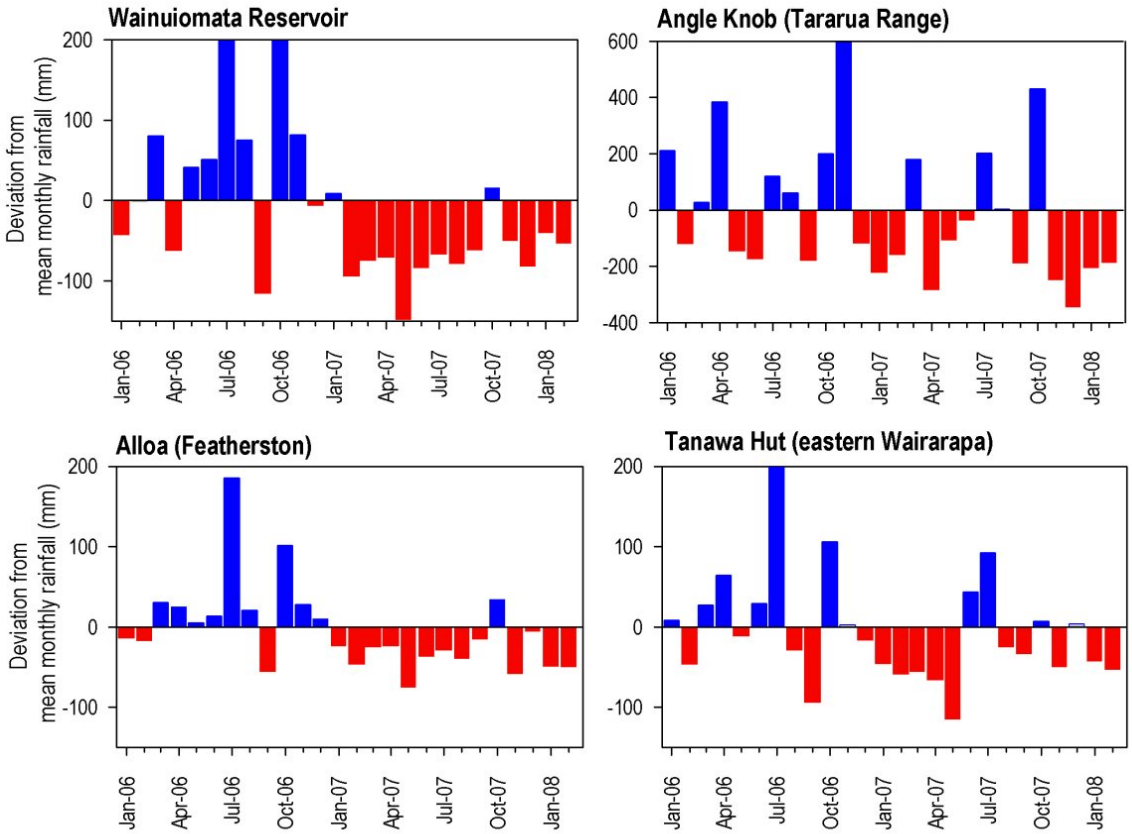
	Lowest 7-day mean flow		Lowest 28-day mean flow	
	Flow (m^3/s)	Est. return period	Flow (m^3/s)	Est. return period
Waikanae River at WTP	0.94	2 years	1.13	2 years
Hutt River at Birchville	2.40	3 years	2.83	4 years
Wainuiomata River at Manuka Track	0.13	4 years	0.16	4 years
Ruamahanga River at Wardells	1.9	10 years	2.5	11 years
Ruamahanga River at Waihenga	5.5	30+ years?	8.4	15 years
Waingawa River at Kaituna	1.02	4 years	1.6	8 years

5. Longer-term perspective

In addition to the recent months of low rainfall, in general 2007 was drier than average. In some parts of the region, October was the only month of 2007 when there wasn't a significant rainfall deficit (refer to graphs below). Of note, at Alloa (Featherston) the 12 month period from 3 February 2007 was the second driest since records began in 1964 (the driest 12 month period on record was in 1972/73). As a result, soil moisture levels are now significantly below average for the time of the year.

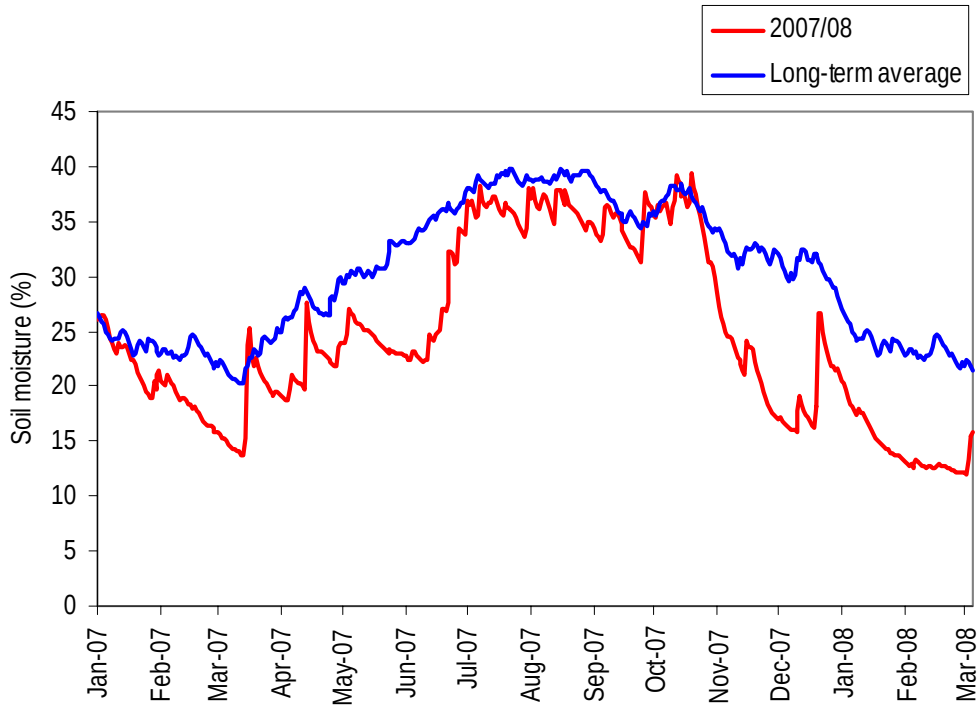
The extended dry spell during autumn 2007 was linked to El Nino, whereas the current drought is occurring during La Nina conditions. The La Nina is expected to persist through autumn 2008. La Nina conditions can lead to low rainfall throughout the Wellington region, but particularly on the Wairarapa plains, Kapiti coast, Hutt Valley and Wainuiomata. For comparative purposes, the last La Nina occurred in 2000/01 and the last strong La Nina was in 1988/89. These events are associated with some of the lowest historic flows in the Wainuiomata, Hutt and Ruamahanga rivers.

[2] At most sites flow records do not go back as far as 1973. There is data for 1972/73 for NIWA's site Hutt River at Kaitoke, and the record for the 2007/08 summer will be analysed once it has been received from NIWA.



Monthly rainfall as deviation from average at selected sites in the Wellington region, since January 2006. Blue bars indicate rainfall was above average and red bars indicate rainfall was below average.

Measurements of soil moisture at Alloa since January 2007, illustrated below, indicates that apart from a couple of very short periods values were below the long-term average for most of the period.



Soil moisture content at Alloa (Featherston), Jan 2007 – Mar 2008 compared to average

6. Water restrictions

Water restrictions are included as conditions on most resource consents issued for taking water from rivers and streams during low flow periods. These are put in place to ensure the life supporting capacity of ecosystems in rivers and streams is sustained. The restriction levels are based on the minimum flow, safe yields and water allocation policies in the Regional Freshwater Plan.

As a consequence of the dry conditions over summer there has been an extended period where restrictions have been in force for many of the Wairarapa rivers.

Restrictions in force at the end of February were:

Catchment	Restriction imposed
Waingawa	Masterton District Council must restrict water takes. All other consents must cease taking water.
Booths Creek	All consent holders must cease taking water.
Waingawa-Taratahi Water Race	Carterton District Council must restrict the Taratahi Water Race to its minimum intake level. As a result flows will be affected in Booths Creek and may dry up.

Otakura	All consent holders must cease irrigating.
Papawai Stream/ Tilsons Stream	Varies for each consent holder: Only permitted to irrigate at night between 6pm and 6am inclusive. Only permitted a maximum take of 60 litres/second. Takes must cease.
Mangatarere Stream	Carterton District Council must restrict water takes to its first step-down intake level. All other consents holders must cease taking water.
Kopuaranga River	All consent holders must cease taking water.
Parkvale Stream	All consent holders must cease taking water.
Pahaoa River	Consent holders may irrigate at night only between 7pm and 7am inclusive or cease (see consent).
Whangaehu River	Consent holders may irrigate on odd or even days only.
Lower Ruamahanga River	All consent holders must cease taking water.
Upper Ruamahanga River	Masterton District Council must restrict the Te Ore Ore water race, the Opaki water race and Henley Lake to their minimum intake level. All other surface water consent holders must cease taking water. All groundwater consent holders must restrict taking water to between 7pm and 7am inclusive.
Taueru River	Consent holder must cease taking water.
Makahakaha Stream	All consent holders must cease taking water.
Tauherenikau River	South Wairarapa District Council must restrict the Longwood water race to their minimum intake level. All other consent holders must cease.
Waipoua River	All consent holders must cease taking water.
Battersea Drain	All surface water consent holders must cease taking water.
Dock Creek	Tier 2 restrictions are in place. All consent holders on tier 2 may irrigate on odd or even days only.
Abbots Creek	All consent holders must cease taking water.
Waiohine River	All consent holders must cease taking water.
Masterton Streams	All consent holders must cease taking water.
Wainuiomata	All consent holders must follow restrictions as required by their

River	consent conditions.

With rain in the first weekend of March there was a temporary lift of restrictions.

While the policies in the Regional Freshwater Plan provide for aquifer allocation limits by way of safe yields there is only one groundwater zone in the Wairarapa that provides for restrictions based on a minimum operating level (Moroa Groundwater Zone). This aquifer has not reached restriction level this summer.

Wairarapa groundwater levels have reached low levels this summer, and a number of shallow bores (mostly domestic) have dried up, but irrigators have been able to take advantage of the groundwater resource within the terms of their consents.

7. Communications

The information contained in this report has been provided to the media and is available on the Greater Wellington website.

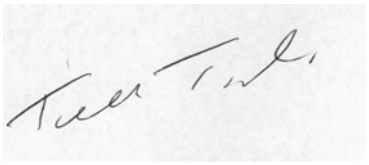
8. Recommendations

That the Committee:

1. ***Receives*** *the report; and*

2. ***Notes*** *the contents.*

Report prepared by:



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