

## Appendix 6

### Environmental Flows and Levels

Note:

The environmental flows and levels listed in Appendix 6 are primarily based on flows and levels in previous plans and are subject to change in order to conform to the requirements of the NPSFM 2020.

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#### Schedule 1 – Quantity Allocations for Water Takes

Freshwater Management Unit (FMU) *	Class	Allocation <i>Cubic metres per day</i>	Allocation <i>Cubic metres per year</i>
Acheron	n/a	Zero	n/a
Are Are	A	4,320	n/a
Awatere	Municipal Supply A B C	8,000 83,250 219,790 259,200	n/a
Kauauroa Bay Significant Wetland W1026	n/a	Zero	n/a
Benmorven	A C	n/a 8,640	209,000 n/a
Boundary	A	7,344	n/a
Branch	n/a	Zero	n/a
Brancott	A	n/a	282,000
Chaytor Significant Wetlands W127, W128 and W129	n/a	Zero	n/a
Flaxbourne – Upper	A B C1 C2 C3	195 500 Zero 4,150 86,400	n/a
Flaxbourne – Central	A B C1	275 1,000 5,850	n/a
Flaxbourne – Lower	A B C1	2,070 30 7,110	n/a
Gibsons Creek (Waihopai intake to the Omaka River confluence)	n/a	Zero	n/a

Freshwater Management Unit (FMU) *	Class	Allocation Cubic metres per day	Allocation Cubic metres per year
Goulter River, Goulter Significant Wetland W35 and Lake Chalice	n/a	Zero	n/a
Kaituna	Municipal Supply	2,000	n/a
	A	8,640	
	B	8,640	
Lake Alexander	n/a	Zero	n/a
Lake McRae	n/a	Zero	n/a
Lower Waihopai Excluding Gibsons Creek (Waihopai intake to the Omaka River confluence)	n/a	n/a	160,000
Needles/Tatchell – 1 October to 30 April of the following year	n/a	1,560	n/a
Needles/Tatchell – 1 May to 30 September in the same year	n/a	4,000	n/a
Omaka Aquifer	A	n/a	290,000
Omaka River	A	14,688	n/a
	B	3,456	
Omaka River – 1 May to 31 October of the same year (Excluding Sam's Creek)	C	8,640	n/a
Ōpaoa (above Mills and Ford Road)	n/a	Zero	n/a
Ōpaoa (from Mills and Ford Road to the confluence of the Ōpaoa and Taylor Rivers)	n/a	1,000	n/a
Ōpaoa (below the confluence of the Ōpaoa and Taylor Rivers)	n/a	24,000	n/a
Opouri	A	10,195	n/a
	B	17,280	
Para Significant Wetland W108	n/a	Zero	n/a
Pelorus (Lower) - Te Hoiere/Pelorus River and tributaries downstream of confluence with the Scott Creek (excluding Rai)	A	45,000	n/a
	B	45,000	
Pelorus (Upper) - Te Hoiere/Pelorus River upstream of confluence with the Scott Creek	n/a	Zero	n/a
Pipitea Significant Wetland W55	n/a	Zero	n/a
Possum Swamp Stream Significant Wetland W116	n/a	Zero	n/a
Rai (total including Opouri, Tunakino and Ronga FMUs)	A	29,635	n/a
	B	60,480	

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Freshwater Management Unit (FMU) *	Class	Allocation Cubic metres per day	Allocation Cubic metres per year
Rarangi Shallow	n/a	750	n/a
Riverlands Excluding Ōpaoa (below Taylor confluence) and Wairau Lagoons	Municipal Supply n/a	n/a na	2,079,000 2,154,100
Ronga	A B	4,665 8,640	n/a
Roses Overflow (below control weir)	n/a	2,000	n/a
Sam's Creek – 1 May to 31 October of the same year	C	172,800	n/a
Southern Springs	n/a	n/a	6,673,800
Taylor Excluding Taylor River (below Burleigh Bridge)	A C	2,160 8,640	n/a n/a
Taylor River (below Burleigh Bridge)	n/a	Zero	n/a
Tunakino	A B	4,752 8,640	n/a
Tuamarina Excluding Para Significant Wetland W108	Municipal Supply A B1 B2	5,000 3,888 5,184 4,234	n/a
Waihopai (including Gibsons Creek above SVIS Wairau diversion channel confluence) Excluding Lake Alexander	A B C	34,560 97,632 271,000	n/a
Wairau Aquifer Excluding Gibsons Creek (Waihopai intake to the Omaka River confluence), Ōpaoa River (including Roses Overflow and Ōpaoa Loop), Wairau Lagoons and the Pipitea Significant Wetland W55 and Chaytor Significant Wetlands W127, W128 and W129.	Municipal Supply n/a	n/a n/a	17,789,500 55,216,500
Wairau Lagoons	n/a	Zero	n/a
Wairau River downstream of the Hamilton River confluence Excluding Goulter River, Goulter Significant Wetland W35, Lake Chalice and Possum Swamp Stream Significant Wetland W116.	Municipal Supply A B C	480 650,000 216,000 1,728,000	n/a

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Freshwater Management Unit (FMU) *	Class	Allocation <i>Cubic metres per day</i>	Allocation <i>Cubic metres per year</i>
Wairau River upstream of the Hamilton River confluence and including the Hamilton River Including Tarndale Lakes and Upper Wairau Significant Wetland W580	n/a	Zero	n/a

\* An FMU is identified either:

- (a) on Freshwater Management Unit Maps 1 or 2; or
- (b) described in Schedule 1; or
- (c) identified on Freshwater Management Unit Maps 1 or 2, and further described in Schedule 1; or
- (d) is not specifically defined.

1.1 An FMU that is also a Significant Wetland is identified in the zone maps.

1.2 The allocation limit for an FMU not listed in Schedule 1 is calculated as follows:

- (a) for a river with a mean flow of less than or equal to 5m<sup>3</sup>/s, the allocation limit is 30% of the mean annual 7 day low flow;
- (b) for a river with a mean flow greater than 5m<sup>3</sup>/s, the allocation limit is 50% of the mean annual 7 day low flow.

\*\* The existing consented take and use of water for hydro-electric power generation within the Waihopai River is considered a non-consumptive take and is therefore outside of this allocation framework.

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## Schedule 2 – Quantity Allocations for Consumptive Diversions

Freshwater Management Unit (FMU)*	Class	Allocation <i>Cubic metres per day</i>	Allocation <i>Cubic metres per year</i>
Branch	n/a	2,635,200	n/a
Gibsons Creek Rewatering Diversion (MDC)	n/a	34,560	n/a
Wairau River Environmental Flow Diversion (MDC)	n/a	17,280	n/a

\* An FMU is identified either:

- (a) on Freshwater Management Unit Maps 1 or 2; or
- (b) described in Schedule 2; or
- (c) identified on Freshwater Management Unit Maps 1 or 2, and further described in Schedule 2; or
- (d) is not specifically defined.

**Schedule 3 – Minimum Flows and Levels for Water Takes**

Freshwater Management Unit (FMU) *	Class	Minimum Flow or Level (Management Purpose)	Monitoring Site or Method **	Management Flow or Level *** (Management Method)
Awatere	A	Minimum of 2.000m <sup>3</sup> /s at outlet to sea	Awapiri	Rationed below 2.300m <sup>3</sup> /s Fully restricted below 1.450m <sup>3</sup> /s
	B			Rationed below 5.600m <sup>3</sup> /s Fully restricted below 2.300m <sup>3</sup> /s
	C			Rationed below 9.500m <sup>3</sup> /s Fully restricted below 5.600m <sup>3</sup> /s
Are Are	A	Minimum of 0.080m <sup>3</sup> /s at Kaituna-Tuamarina Track Bridge	Kaituna-Tuamarina Track Bridge	Fully restricted below 0.080m <sup>3</sup> /s
Benmorven	A	Minimum level 20mamsl at P28w/2022	P28w/2022	Fully restricted below 20mamsl
	C		Taylor at Borough Weir	Fully restricted below 2.000m <sup>3</sup> /s
Boundary	A	Minimum of 0.180m <sup>3</sup> /s at Ormond	Ormond	Fully restricted below 0.180m <sup>3</sup> /s
Brancott	A	Minimum level 36.5m-amsl at P28w/1323	P28w/1323	Fully restricted below 36.5mamsl
Flaxbourne – Upper, Central and Lower	A	Minimum of 0.010m <sup>3</sup> /s at SH1 bridge	Corrie Downs	Fully restricted below 0.025m <sup>3</sup> /s
	B			Fully restricted below 0.045m <sup>3</sup> /s
	C1			Fully restricted below 0.250m <sup>3</sup> /s
	C2			Fully restricted below 0.400m <sup>3</sup> /s
	C3			Fully restricted below 0.600m <sup>3</sup> /s
Kaituna	A	Minimum of 0.275m <sup>3</sup> /s at Readers Road Bridge	Readers Road Bridge	Fully restricted below 0.275m <sup>3</sup> /s
	B			Fully restricted below 0.400m <sup>3</sup> /s
Needles Creek (including Tatchell)	n/a	Minimum level 22.8mamsl at Needles Creek	P29w/0169	Fully restricted when water level at or below 22.8mamsl
Omaka Aquifer	A	Minimum level 73mamsl at P28w/1873	P28w/1873	Fully restricted below 73mamsl
Omaka River	A	Minimum level 24.5mamsl at well 10231	Tyntesfield Gorge	Fully restricted below 0.067m <sup>3</sup> /s
	B			Fully restricted below 0.400m <sup>3</sup> /s
	C			Fully restricted below 1.200m <sup>3</sup> /s
Ōpaoa (below the confluence of the Ōpaoa and Taylor Rivers)	n/a	Minimum of 1.500m <sup>3</sup> /s adjacent to Section 1 SO 417530	Hutcheson Street	Fully restricted below 1.000m <sup>3</sup> /s

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Freshwater Management Unit (FMU) *	Class	Minimum Flow or Level (Management Purpose)	Monitoring Site or Method **	Management Flow or Level *** (Management Method)
Ōpaoa (below Mills and Ford Road to the confluence of the Ōpaoa and Taylor Rivers)	n/a	Minimum of 0.500m <sup>3</sup> /s at Ōpaoa River immediately above the confluence of the Ōpaoa and Taylor Rivers	Hutcheson Street	Fully restricted below 1.000m <sup>3</sup> /s
Opouri	A	Minimum of 1.000m <sup>3</sup> /s in Rai River at Falls	Rai River at Falls	Fully restricted below 1.000m <sup>3</sup> /s
	B			Fully restricted below 1.250m <sup>3</sup> /s
Pelorus including tributaries (excluding Rai)	A	Minimum of 3.75m <sup>3</sup> /s at Fishermans Flat	Totara Flat	Rationed below 3.150m <sup>3</sup> /s Fully restricted below 2.690m <sup>3</sup> /s
	B			Rationed below 3.600m <sup>3</sup> /s Fully restricted below 3.200m <sup>3</sup> /s
Riverlands	n/a	Minimum level 1.25mamsl at 10346	Well 10346	Fully restricted below 1.25mamsl
Ronga	A	Minimum of 1.000m <sup>3</sup> /s in Rai River at Falls	Rai River at Falls	Fully restricted below 1.000m <sup>3</sup> /s
	B			Fully restricted below 1.250m <sup>3</sup> /s
Rai (total including Opouri, Tunakino and Ronga)	A	Minimum of 1.000m <sup>3</sup> /s in Rai River at Falls	Rai River at Falls	Fully restricted below 1.000m <sup>3</sup> /s
	B			Fully restricted below 1.500m <sup>3</sup> /s
Rarangi Shallow Aquifer North	n/a	Minimum level 1.20mamsl at P28w/4331	P28w/4331	Fully restricted below 1.20mamsl
		Minimum level 0.25mamsl at P28w/4349	P28w/4349	Fully restricted below 0.25mamsl
Rarangi Shallow Aquifer South	n/a	Minimum level 1.20mamsl at P28w/4331	P28w/4331	Fully restricted below 1.20mamsl
		Minimum level 0.25mamsl at P28w/3668 and/or P28w/3711	P28w/3668 and/or P28w/3711	Fully restricted below 0.25mamsl
Roses Overflow	n/a	Minimum of 0.100m <sup>3</sup> /s at Wairau confluence	Hutcheson Street	Fully restricted below 1.000m <sup>3</sup> /s
Sam's Creek	C	Minimum level 24.5mamsl at well 10231	Tyntesfield Gorge	Fully restricted below 1.200m <sup>3</sup> /s
Southern Springs	n/a	Minimum of 0.010m <sup>3</sup> /s at Battys Road	Battys Road Bridge	Fully restricted below 0.010m <sup>3</sup> /s
Spring Creek	n/a	Minimum of 2.6m <sup>3</sup> /s at Motor Camp	Motor Camp	Fully restricted below 2.600m <sup>3</sup> /s
Taylor	A	Minimum of 1.000m <sup>3</sup> /s at Hutcheson Street	Hutcheson Street	Fully restricted below 1.000m <sup>3</sup> /s
	C	Minimum of 0.300m <sup>3</sup> /s at Borough Weir	Borough Weir	Fully restricted below 0.300m <sup>3</sup> /s

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Freshwater Management Unit (FMU) *	Class	Minimum Flow or Level (Management Purpose)	Monitoring Site or Method **	Management Flow or Level *** (Management Method)
Tuamarina	A	Minimum of 0.100m³/s at Para Road	Para Road Bridge	Fully restricted below 0.100m³/s
	B1			Fully restricted below 0.120m³/s
	B2			Fully restricted below 0.150m³/s
Tunakino	A	Minimum of 1.000m³/s in Rai River at Falls	Rai River at Falls	Fully restricted below 1.000m³/s
	B			Fully restricted below 1.250m³/s
Waihopai (including Gibsons Creek above Drop structure)	A	Minimum of 1.000m³/s at SH63; and Minimum of 8.000m³/s at Barnettts Bank	Craiglochchart	Rationed below 1.900m³/s Fully restricted below 1.500m³/s
			Barnetts Bank	Fully restricted below 8.000m³/s
	B	Minimum of 1.000m³/s at SH63; and Minimum of 8.000m³/s at Barnettts Bank	Craiglochchart	Rationed below 3.600m³/s Fully restricted below 1.900m³/s
			Barnetts Bank	Fully restricted below 8.000m³/s
	C	Minimum of 1.000m³/s at SH63; and Minimum of 8.000m³/s at Barnettts Bank	Craiglochchart	Rationed below 7.800m³/s Fully restricted below 3.600m³/s
			Barnetts Bank	Fully restricted below 8.000m³/s
Wairau River (below The Narrows)	A	Minimum of 8.000m³/s at Barnettts Bank	Barnetts Bank	Fully restricted below 8.000m³/s
	B			Fully restricted below 15.000m³/s
	C			Fully restricted below 30.000m³/s
Wairau River (above The Narrows)	A	Minimum of 8.000m³/s at Barnettts Bank	Barnetts Bank	Fully restricted below 8.000m³/s
	B		Barnetts Bank	Fully restricted below 15.000m³/s
	C		Barnetts Bank	Fully restricted below 30.000m³/s
Wairau Aquifer Urban Springs	n/a	Minimum level 6.5mamsl at P28w/3954	P28w/3954	Fully restricted below 6.5mamsl
Wairau Aquifer Central Springs	n/a	Minimum level 6.1mamsl at P28w/4404	P28w/4404	Fully restricted below 6.1mamsl
Wairau Aquifer North Springs	n/a	Minimum level 11.8mamsl at P28w/3009	P28w/3009	Fully restricted below 11.8mamsl
Wairau Aquifer South Coastal	n/a	Minimum level 1.25mamsl at Well 10346	Well 10346	Fully restricted below 1.25mamsl

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Freshwater Management Unit (FMU) *	Class	Minimum Flow or Level (Management Purpose)	Monitoring Site or Method **	Management Flow or Level *** (Management Method)
Wairau Aquifer Central Coastal	n/a	Minimum level 1.25mamsl at P28w/1733	P28w/1733	Fully restricted below 1.25mamsl
Wairau Aquifer North Coastal	n/a	Minimum level 1.25mamsl at P28w/3667	P28w/3667	Fully restricted below 1.25mamsl

\* An FMU is identified either:

- (a) on Freshwater Management Unit Maps 1, 2, 3 or 4; or
- (b) described in Schedule 3; or
- (c) identified on Freshwater Management Unit Maps 1, 2, 3 or 4, and further described in Schedule 3; or
- (d) is not specifically defined.

\*\* Monitoring sites are mapped on Freshwater Management Unit Maps 1, 2, 3 or 4.

\*\*\* Levels and elevations are expressed in metres above Mean Sea Level (mamsl) in terms of the Marlborough District Council Rivers and Drainage datum.

3.1 The minimum flow for an FMU not listed in Schedule 3 is calculated as follows:

- (a) for a river with a mean flow of less than or equal to 5m<sup>3</sup>/s, the minimum flow is 90% of the mean annual 7 day low flow.
- (b) for a river with a mean flow greater than 5m<sup>3</sup>/s, the minimum flow is 80% of the mean annual 7 day low flow.

#### Schedule 4 – Minimum Flows and Levels for Water Diversions

River	Minimum Flow or Level (Management Purpose)	Monitoring Site or Method *	Management Flow or Level ** (Management Method)
Branch	0.700m <sup>3</sup> /s at State Highway 63 Road Bridge	Branch below Weir	Fully restricted below 1.000m <sup>3</sup> /s
Gibsons Creek (Waihopai intake to Wairau intake channel)	Minimum of 0.200m <sup>3</sup> /s at the Gibsons Creek Control Gate	Gibsons Creek Control Gate	Monitoring.

\* Monitoring sites are mapped on Freshwater Management Unit Maps 1, 2, 3 or 4, or described in Schedule 4.



**Schedule 5 – Conductivity Levels for Water Takes**

FMU *	Conductivity Level Millisiemens per metre	Restriction **	Monitoring Site ***
Rarangi Shallow Aquifer South	Between 70-90mS/m > 90mS/m	Reduce actual take by 50% Reduce actual take by 100%	P28w/3668 and/or P28w/3711
Riverlands	Between 40-60mS/m > 60mS/m	Reduce actual take by 50% Reduce actual take by 100%	Well 10346
Wairau Aquifer Coastal South	Between 40-60mS/m > 60mS/m	Reduce actual take by 50% Reduce actual take by 100%	Well 10346
Wairau Aquifer Coastal Central	Between 40-60mS/m > 60mS/m	Reduce actual take by 50% Reduce actual take by 100%	MDC Monitoring well P28w/1733
Wairau Aquifer Coastal North	Between 70-90mS/m > 90mS/m	Reduce actual take by 50% Reduce actual take by 100%	MDC Monitoring well P28w/3667

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\* An FMU is identified on Freshwater Management Unit Maps 1, 2, 3 or 4.

\*\* The reduction in actual take is based on the average daily take over the preceding seven days.

\*\*\* Monitoring sites are mapped on Freshwater Management Unit Maps 1, 2, 3 or 4.