

# **Schedule E: Surface Water Quality Targets**

## Schedule E: Surface *Water Quality Targets*\* (or Standards Where Specified Under Conditions / Standards / Terms in a rule)

Schedule E is a component of Part II - the Regional Plan.

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**USER GUIDE:** How to use the contents of Schedule E.

**Step 1:** Identify the *WMSZ*\* for your proposed activity (go to Schedule A).

**Step 2:** Check if Trout Spawning is a Value for your *WMSZ*\* (go to Schedule B).

**Step 3:** Identify which *Water Quality Targets*\* (or standards where specified under conditions/standards/terms in a rule) apply to your activity using steps a. to c.:

- a. A *river*<sup>^</sup>:
  - i. Turn first to Table E.1 to see the *Water Quality Targets*\* (or standards where specified under conditions/standards/terms in a rule) that apply to all *river*<sup>^</sup>s in the Region,

- ii. Then turn to Table E.2 to see the *Water Quality Targets*\* (or standards where specified under conditions/standards/terms in a rule) that apply to *rivers*<sup>^</sup> in your *WMSZ*<sup>\*</sup>,
  - iii. If the *river*<sup>^</sup> at the *site*<sup>\*</sup> of your proposed activity has the Schedule B Value of Trout Spawning, turn to Table E.3 to see additional *Water Quality Targets*\* (or standards where specified under conditions/standards/terms in a rule) that apply 1 May to 30 September (inclusive).
- b. A *lake*<sup>^</sup>:
- i. Turn to Schedule F Table F.2(b) to determine if your type of *lake*<sup>^</sup> is referred to in v to vii,
  - ii. If your type of *lake*<sup>^</sup> is not referred to in Schedule F Table F.2(b) v to vii then turn to Table E.4,
  - iii. Determine if the *lake*<sup>^</sup> meets the description of a “deep” or “shallow” *lake*<sup>^</sup> from Table E.4 and see the *Water Quality Targets*\* (or standards where specified under conditions/standards/terms in a rule) that apply to the *lake*<sup>^</sup> *water*<sup>^</sup> in Table E.4.
- c. *Water*<sup>^</sup> in the *coastal marine area*<sup>^</sup>:
- i. Turn to Tables I.4 to I.7 in Schedule I to see the *Water Quality Targets*\* (or standards where specified under conditions/standards/terms in a rule) that apply in the *coastal marine area*<sup>^</sup>.

**USER NOTE:** For table abbreviations – please refer to the fold-out *Water Quality Targets*\* (or standards where specified under conditions/standards/terms in a rule) **KEY** at the back of this schedule.

Table E.1: Region-wide *Water Quality Targets*\* (or standards where specified under conditions/standards/terms in a rule) that apply to all *Rivers*<sup>^</sup>

Water Management Zone*	Sub-zone*	E.coli / 100 ml		Periphyton Filamentous Cover	Diatom or Cyanobacterial Cover	QMCI % <sup>Δ1</sup>
		< 50 <sup>th</sup> %ile	< 20 <sup>th</sup> %ile			
All Water Management Zones*	All Water Management Sub-zones*	260	550	30%	60%	20

<sup>1</sup> This *Water Quality Target*\* (or standard where specified under conditions/standards/terms in a rule) is only relevant for measuring the percentage of change in Quantitative Macroinvertebrate Community Index (QMCI) between appropriately matched habitats upstream and downstream of activities, such as *discharges*<sup>^</sup> to *water*<sup>^</sup>, for the purposes of measuring the effect of *discharges*<sup>^</sup> on aquatic macroinvertebrate communities. It is not an appropriate *Water Quality Target*\* (or standard where specified under conditions/standards/terms in a rule) for the measurement of the general state of macroinvertebrate communities in each *Water Management Sub-zone*<sup>\*</sup>.

**Table E.2: Water Quality Targets\* (or standards where specified under conditions/standards/terms in a rule) for Rivers<sup>^</sup> in each Water Management Sub-zone\* (Note: refer to Table E.4 for the water quality targets\* (or standards where specified under conditions/standards/terms in a rule) that apply to lakes<sup>^</sup>)**

Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
Upper Manawatu (Mana_1)	Upper Manawatu (Mana_1a)	7 to 8.5	0.5	19	3	80	1.5	5	120	0.010	0.167	20	120	0.400	2.1	99	3	20
	Mangawainui (Mana_1b)	7 to 8.5	0.5	19	3	80	1.5	5	120	0.010	0.167	20	120	0.400	2.1	99	3	20
	Mangatoro (Mana_1c)	7 to 8.5	0.5	19	3	80	1.5	5	120	0.010	0.110	20	120	0.400	2.1	99	3	20
Weber-Tamaki (Mana_2)	Weber-Tamaki (Mana_2a)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.444	20	120	0.400	2.1	99	3	20
	Mangatera (Mana_2b)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	99	2.5	30
Upper Tamaki (Mana_3)	Upper Tamaki (Mana_3)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
Upper Kumeti (Mana_4)	Upper Kumeti (Mana_4)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
Tamaki-Hopelands (Mana_5)	Tamaki-Hopelands (Mana_5a)	7 to 8.5	0.5	19	3	80	1.5	5	120	0.010	0.444	20	120	0.400	2.1	99	3	20
	Lower Tamaki (Mana_5b)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	99	2.5	30

<sup>2</sup> The Deposited Sediment Cover (%) Water Quality Target\* (or standard where specified under conditions/standards/terms in a rule) only applies for State of the Environment monitoring purposes to determine if the percentage cover of deposited sediment on the bed of the river will provide for and maintain the values in each WMSZ.

Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
	Lower Kumeti (Mana_5c)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	99	2.5	30
	Oruakeretaki (Mana_5d)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	99	2.5	30
	Raparapawai (Mana_5e)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	99	2.5	30
Hopelands-Tiraumea (Mana_6)	Hopelands-Tiraumea (Mana_6)	7 to 8.5	0.5	19	3	80	1.5	5	120	0.010	0.444	20	120	0.400	2.1	99	3	20
Tiraumea (Mana_7)	Upper Tiraumea (Mana_7a)	7 to 8.5	0.5	23	3	70	2	5	120	0.010	0.444	25	100	0.400	2.1	95	2	30
	Lower Tiraumea (Mana_7b)	7 to 8.5	0.5	23	3	70	2	5	120	0.010	0.444	25	100	0.400	2.1	95	2	30
	Mangaone River (Mana_7c)	7 to 8.5	0.5	23	3	70	2	5	200	0.010	0.444	25	100	0.400	2.1	95	1.6	30
	Makuri (Mana_7d)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	20	120	0.400	2.1	99	3	20
	Mangaramarama (Mana_7e)	7 to 8.5	0.5	22	3	70	2	5	200	0.010	0.444	25	100	0.400	2.1	95	1.6	30
Mangatainoka (Mana_8)	Upper Mangatainoka (Mana_8a)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Middle Mangatainoka (Mana_8b)	7 to 8.5	0.5	19	3	80	1.5	5	120	0.010	0.444	20	120	0.400	2.1	99	3	20

Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
	Lower Mangatainoka (Mana_8c)	7 to 8.5	0.5	19	3	80	1.5	5	120	0.010	0.444	20	120	0.400	2.1	99	3	20
	Makakahi (Mana_8d)	7 to 8.5	0.5	19	3	80	1.5	5	120	0.010	0.444	20	120	0.400	2.1	99	3	20
Upper Gorge (Mana_9)	Upper Gorge (Mana_9a)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	95	2.5	30
	Mangapapa (Mana_9b)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	95	2.5	30
	Mangaatua (Mana_9c)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	95	2.5	30
	Upper Mangahao (Mana_9d)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.167	15	120	0.320	1.7	99	3	20
	Lower Mangahao (Mana_9e)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	95	2.5	30
Middle Manawatu (Mana_10)	Middle Manawatu (Mana_10a)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	95	2.5	30
	Upper Pohangina (Mana_10b)	7 to 8.2	0.5	19	2	80	1.5	5	120	0.006	0.070	15	120	0.320	1.7	99	3	20
	Middle Pohangina (Mana_10c)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30
	Lower Pohangina (Mana_10d)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30

Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
	Aokautere (Mana_10e)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30
Lower Manawatu (Mana_11)	Lower Manawatu (Mana_11a)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	95	2.5	30
	Turitea (Mana_11b)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Kahuterawa (Mana_11c)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Upper Mangaone Stream (Mana_11d)	7 to 8.5	0.5	24	3	60	2	5	200	0.010	0.444	25	100	0.400	2.1	95	2.5	30
	Lower Mangaone Stream (Mana_11e)	7 to 8.5	0.5	24	3	60	2	5	200	0.010	0.444	25	100	0.400	2.1	95	2.5	30
	Main Drain (Mana_11f)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.444	25	100	0.400	2.1	95	2.5	30
Oroua (Mana_12)	Upper Oroua (Mana_12a)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.167	20	100	0.400	2.1	95	2.5	30
	Middle Oroua (Mana_12b)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.444	20	100	0.400	2.1	95	2.5	30
	Lower Oroua (Mana_12c)	7 to 8.5	0.5	24	3	70	2	5	200	0.015	0.444	25	100	0.400	2.1	95	2.5	30
	Kiwitea (Mana_12d)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.167	20	100	0.400	2.1	95	2.5	30

Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
	Makino (Mana_12e)	7 to 8.5	0.5	24	3	70	2	5	120	0.015	0.444	25	100	0.400	2.1	95	2.5	30
Coastal Manawatu (Mana_13)	Coastal Manawatu (Mana_13a)	7 to 8.5	0.5	24	3	70	2	5	200	0.015	0.444	25	100	0.400	2.1	95	2.5	30
	Upper Tokomaru (Mana_13b)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Lower Tokomaru (Mana_13c)	7 to 8.5	0.5	24	3	70	2	5	120	0.010	0.444	25	100	0.400	2.1	95	2.5	30
	Mangaore (Mana_13d)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.167	20	100	0.400	2.1	95	2.5	30
	Koputaroa (Mana_13e)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.444	25	100	0.400	2.1	95	2.5	30
	Foxton Loop (Mana_13f)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.444	25	100	0.400	2.1	95	2.5	30
Upper Rangitikei (Rang_1)	Upper Rangitikei (Rang_1)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3.4	20
Middle Rangitikei (Rang_2)	Middle Rangitikei (Rang_2a)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3.4	20
	Pukeokahu – Mangaweka (Rang_2b)	7 to 8.5	0.5	19	3	80	1.5	5	120	0.010	0.110	15	120	0.320	1.7	99	3.4	20



Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
	Upper Moawhango (Rang_2c)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Middle Moawhango (Rang_2d)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30
	Lower Moawhango (Rang_2e)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.110	25	100	0.400	2.1	95	2	30
	Upper Hautapu (Rang_2f)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	20	120	0.400	2.1	99	3	20
	Lower Hautapu (Rang_2g)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.110	25	100	0.400	2.1	95	2	30
Lower Rangitikei (Rang_3)	Lower Rangitikei (Rang_3a)	7 to 8.5	0.5	19	3	80	1.5	5	120	0.010	0.110	15	120	0.400	2.1	99	3	20
	Makohine (Rang_3b)	7 to 8.5	0.5	22	3	70	2	5	200	0.010	0.110	25	100	0.400	2.1	95	1.6	30
Coastal Rangitikei (Rang_4)	Coastal Rangitikei (Rang_4a)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30
	Tidal Rangitikei (Rang_4b)	7 to 8.5	0.5	24	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2.5	30
	Porewa (Rang_4c)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.110	25	100	0.400	2.1	95	1.6	30

Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
	Tutaenui (Rang_4d)	7 to 8.5	0.5	24	3	60	2	5	200	0.010	0.110	25	100	0.400	2.1	95	2.5	30
Upper Whanganui (Whai_1)	Upper Whanganui (Whai_1)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
Cherry Grove (Whai_2)	Cherry Grove (Whai_2a)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30
	Upper Whakapapa (Whai_2b)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Lower Whakapapa (Whai_2c)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Piopiotea (Whai_2d)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Pungapunga (Whai_2e)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30
	Upper Ongarue (Whai_2f)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Lower Ongarue (Whai_2g)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30
Te Maire (Whai_3)	Te Maire (Whai_3)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30

Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
Middle Whanganui (Whai_4)	Middle Whanganui (Whai_4a)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30
	Upper Ohura (Whai_4b)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
	Lower Ohura (Whai_4c)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
	Retaruke (Whai_4d)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30
Pipiriki (Whai_5)	Pipiriki (Whai_5a)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.110	25	100	0.400	2.1	95	2	30
	Tangarakau (Whai_5b)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
	Whangamomona (Whai_5c)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
	Upper Manganui o te Ao (Whai_5d)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3.4	20
	Makatote (Whai_5e)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3.4	20
	Waimarino (Whai_5f)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3.4	20
	Middle Manganui o teAo (Whai_5g)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3.4	20

Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
	Mangaturuturu (Whai_5h)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3.4	20
	Lower Manganui o teAo (Whai_5i)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	15	120	0.320	1.7	99	3.4	20
	Orautoha (Whai_5j)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	15	120	0.320	1.7	99	3.4	20
Paetawa (Whai_6)	Paetawa (Whai_6)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.110	25	100	0.400	2.1	95	2	30
Lower Whanganui (Whai_7)	Lower Whanganui (Whai_7a)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
	Coastal Whanganui (Whai_7b)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
	Upokongaro (Whai_7c)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
	Matarawa (Whai_7d)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
Upper Whangaehu (Whau_1)	Upper Whangaehu (Whau_1a)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Waitangi (Whau_1b)	7 to 8.5	0.5	19	2	80	1.5	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30

Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
	Tokiahuru (Whau_1c)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
Middle Whangaeahu (Whau_2)	Middle Whangaeahu (Whau_2)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
Lower Whangaeahu (Whau_3)	Lower Whangaeahu (Whau_3a)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2	30
	Upper Makotuku (Whau_3b)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Lower Makotuku (Whau_3c)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Upper Mangawhero (Whau_3d)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Lower Mangawhero (Whau_3e)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.110	25	100	0.400	2.1	95	2	30
	Makara (Whau_3f)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	25	120	0.320	1.7	99	3	20
Coastal Whangaeahu (Whau_4)	Coastal Whangaeahu (Whau_4)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
Turakina (Tura_1)	Upper Turakina (Tura_1a)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30

Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
	Lower Turakina (Tura_1b)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
	Ratana (Tura_1c)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2.5	30
Ohau (Ohau_1)	Upper Ohau (Ohau_1a)	7 to 8.2	0.5	19	2	80	1.5	5	50	0.006	0.070	15	120	0.320	1.7	99	3	20
	Lower Ohau (Ohau_1b)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.110	20	100	0.400	2.1	95	2.5	30
Owahanga (Owha_1)	Owahanga (Owha_1)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
East Coast (East_1)	East Coast (East_1)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
Akitio (Akit_1)	Upper Akitio (Akit_1a)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
	Lower Akitio (Akit_1b)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
	Waihi (Akit_1c)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
Northern Coastal (West_1)	Northern Coastal (West_1)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2.5	30
Kai Iwi (West_2)	Kai Iwi (West_2)	7 to 8.5	0.5	22	3	70	2	5	200	0.015	0.167	25	100	0.400	2.1	95	1.6	30
Mowhanau (West_3)	Mowhanau (West_3)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2.5	30

Water Management Zone*	Sub-zone*	pH		Temp (°C)		DO (%SAT)	scBOD <sub>5</sub> (g/m <sup>3</sup> )	POM (g/m <sup>3</sup> )	Periphyton	DRP (g/m <sup>3</sup> )	SIN (g/m <sup>3</sup> )	Deposited Sediment Cover (%) <sup>2</sup>	MCI	Ammoniacal Nitrogen (g/m <sup>3</sup> )		Tox.	Visual Clarity (m)	
		Range	Δ	<	Δ	>	<	<	Chla (mg/m <sup>2</sup> )	<	<	≤	>	<	Max	%	< 50 <sup>th</sup> %ile	%Δ
Kaitoke Lakes (West_4)	Kaitoke Lakes (West_4)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2.5	30
Southern Whanganui Lakes (West_5)	Southern Whanganui Lakes (West_5)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2.5	30
Northern Manawatu Lakes (West_6)	Northern Manawatu Lakes (West_6)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2.5	30
Waitarere (West_7)	Waitarere (West_7)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2.5	30
Lake Papaitonga (West_8)	Lake Papaitonga (West_8)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2.5	30
Waikawa (West_9)	Waikawa (West_9a)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.167	20	100	0.400	2.1	95	2.5	30
	Manakau (West_9b)	7 to 8.5	0.5	22	3	70	2	5	120	0.010	0.167	20	100	0.400	2.1	95	2.5	30
Lake Horowhenua (Hoki_1)	Lake Horowhenua (Hoki_1a)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2.5	30
	Hokio (Hoki_1b)	7 to 8.5	0.5	24	3	60	2	5	200	0.015	0.167	25	100	0.400	2.1	95	2.5	30

**Table E.3: Additional *Water Quality Targets*\* (or standards where specified under conditions/standards/terms in a rule) that apply 1 May to 30 September (inclusive) to all Specified Sites/Reaches of *Rivers*<sup>^</sup> with a Trout Spawning (TS) Value**

Temp (°C)		DO (%SAT)	Deposited Sediment or POM	Deposited Sediment Cover (%)	Toxicants (%)
<	Δ	>	Δ <sup>3</sup>	< <sup>4</sup>	
11	2	80	No measurable increase of deposited sediment or particulate organic matter (POM) on the <i>bed</i> <sup>^</sup> of the <i>river</i> <sup>^</sup>	10	99

<sup>3</sup> The Deposited Sediment or POM *Water Quality Target*\* (or standard where specified under conditions/standards/terms in a rule) is only relevant for measuring the change in deposited sediment in relation to a resource consent application for rivers valued for Trout Spawning. Measurements should be undertaken using the deposited sediment protocols of Clapcott et al., (2010).

<sup>4</sup> The Deposited Sediment Cover (%) *Water Quality Target*\* (or standard where specified under conditions/standards/terms in a rule) only applies for State of the Environment monitoring purposes to determine if the percentage cover of deposited sediment on the bed of the river will provide for and maintain the values in each WMSZ.



**Table E.4: Lake<sup>^</sup> Water Quality Targets\* (or standards where specified under conditions/standards/terms in a rule) (Note: Lake<sup>^</sup> Water Quality Targets\* (or standards where specified under conditions/standards/terms in a rule) apply year-round to the waters<sup>^</sup> of types of lakes<sup>^</sup> not excluded by Schedule F Table F.2(b) v to vii)**

Lake Type	Algal Biomass Chl <sub>a</sub> (mg/m <sup>3</sup> )		TP (g/m <sup>3</sup> )	TN (g/m <sup>3</sup> )	Ammoniacal Nitrogen (g/m <sup>3</sup> )	Tox.	Visual Clarity (m)		Euphotic Depth	<i>E. coli</i> / 100 ml	
	<	Max.	<	<	< <sup>5</sup>	%	>	%Δ	%Δ	Summer (1 Nov – 30 Apr)	Winter (1 May – 31 Oct)
Deep lakes (≥ 5 m deep)	5	15	0.020	0.337	0.400	95	2.8	20	10	260	550
Shallow lakes (< 5 m deep)	8	30	0.030	0.490	0.400	95	0.8	20	10	260	550

<sup>5</sup> Water Quality Target\* (or standard where specified under conditions/standards/terms in a rule) only applies when lake pH exceeds 8.5 within the epilimnion (shallow lakes) or within 2 m of the water surface (deep lakes).

Table E.5: *Water Quality Targets\** (or standards where specified under conditions/standards/terms in a rule) Key: Definition of abbreviations and full wording of the *water quality targets\** (or standard where specified under conditions/standards/terms in a rule) (placement of the numerical values for a specified *water quality target\** (or standard where specified under conditions/standards/terms in a rule) are indicated by [...]).

Abbreviations used in Tables E.1 to E.4		Full Wording of the <i>Water Quality Target</i> (or standard where specified under conditions/standards/terms in a rule).
Header	Sub-header	
pH	Range	The pH of the water <sup>^</sup> must be within the range [...] to [...] unless natural levels are already outside this range.
	Δ	The pH of the water <sup>^</sup> must not be changed by more than [...].
Temp(oC)	<	The temperature of the water <sup>^</sup> must not exceed [...] degrees Celsius.
	Δ	The temperature of the water <sup>^</sup> must not be changed by more than [...] degrees Celsius.
DO (%SAT)	>	The concentration of dissolved oxygen (DO) must exceed [...] % of saturation.
sCBOD5 (g/m3)	<	The monthly average five-days filtered / soluble carbonaceous biochemical oxygen demand (sCBOD5) when the river <sup>^</sup> flow is at or below the 20th flow exceedance percentile* must not exceed [...] grams per cubic metre.
POM (g/m3)	<	The average concentration of particulate organic matter when the river <sup>^</sup> flow is at or below the 50th flow exceedance percentile* must not exceed [...] grams per cubic metre.
Periphyton (rivers <sup>^</sup> )	Chla(mg/m2)	The algal biomass on the river <sup>^</sup> bed <sup>^</sup> must not exceed [...] milligrams of chlorophyll a per square metre.
	% cover	The maximum cover of visible river <sup>^</sup> bed <sup>^</sup> by periphyton as filamentous algae more than 2 centimetres long must not exceed [...] %.
		The maximum cover of visible river bed by periphyton as diatoms or cyanobacteria more than 0.3 centimetres thick must not exceed [...] %.
Algal biomass Chla (mg/m3) (lakes <sup>^</sup> )	<	The annual average algal biomass must not exceed [...] milligrams chlorophyll a per cubic metre.
	Maximum	Samples must not exceed [...] milligrams chlorophyll a per cubic metre.
DRP(g/m3)	<	The annual average concentration of dissolved reactive phosphorus (DRP) when the river <sup>^</sup> flow is at or below the 20th flow exceedance percentile* must not exceed [...] grams per cubic metre, unless natural levels already exceed this Water <sup>^</sup> Quality Target* (or standard where specified under conditions/standards/terms in a rule).
TP (g/m3) (lakes <sup>^</sup> )	<	The annual average concentration of total phosphorus (TP) must not exceed [...] grams per cubic metre.
SIN (g/m3)	<	The annual average concentration of soluble inorganic nitrogen (SIN) <sup>6</sup> when the river <sup>^</sup> flow is at or below the 20th flow exceedance percentile* must not exceed [...] grams per cubic metre, unless natural levels already exceed this Water <sup>^</sup> Quality Target* (or standard where specified under conditions/standards/terms in a rule)
TN (g/m3) (lakes <sup>^</sup> )	<	The annual average concentration of total nitrogen must not exceed [...] grams per cubic metre.
Deposited Sediment Cover <sup>7</sup>	% cover	The maximum cover of visible river bed by deposited sediment less than 2 millimetres in diameter must be less than [...] %, unless natural physical conditions are beyond the scope of the application of the deposited sediment protocol of Clapcott et al. (2010).
MCI <sup>8</sup>	>	The Macroinvertebrate Community Index (MCI) must exceed [...], unless natural physical conditions are beyond the scope of application of the MCI. In cases where the river <sup>^</sup> habitat is suitable for the application of the soft-bottomed variant of the MCI (sb-MCI) the <i>Water Quality Target*</i> (or standard where specified under conditions/standards/terms in a rule) also apply.
QMCI	%Δ	There must be no more than a 20% reduction in Quantitative Macroinvertebrate Community Index (QMCI) score between appropriately matched habitats upstream and downstream of discharges to water <sup>^</sup> .
Ammoniacal nitrogen <sup>9</sup> (g/m3) (rivers <sup>^</sup> )	<	The average concentration of ammoniacal nitrogen must not exceed [...] grams per cubic metre.
	Max	The maximum concentration of ammoniacal nitrogen must not exceed [...] grams per cubic metre.
Ammoniacal nitrogen (g/m3) (lakes <sup>^</sup> )	<	The concentration of ammoniacal nitrogen must not exceed [...] grams per cubic metre when lake <sup>^</sup> pH exceeds 8.5 within the epilimnion (shallow lakes <sup>^</sup> ) or within 2m of the water <sup>^</sup> surface (deep lakes <sup>^</sup> ).
Tox. or Toxicants	%	For toxicants not otherwise defined in these Water <sup>^</sup> Quality Targets* (or standards where specified under conditions/standards/terms in a rule) the concentration of toxicants in the water <sup>^</sup> must not exceed the trigger values for freshwater defined in the 2000 ANZECC guidelines Table 3.4.1 for the level of protection of [...] % of species. For metals the trigger value must be adjusted for hardness and apply to the dissolved fraction as directed in the table.
Visual Clarity (m) (rivers <sup>^</sup> )	% Δ	The visual clarity of the water <sup>^</sup> measured as the horizontal sighting range of a black disc must not be reduced by more than [...] %.
	>	The visual clarity of the water <sup>^</sup> measured as the horizontal sighting range of a black disc must equal or exceed [...] metres when the river <sup>^</sup> is at or below the 50th flow exceedance percentile*.
Visual Clarity (m) (lakes <sup>^</sup> )	% Δ	The visual clarity of the water <sup>^</sup> measured as the horizontal sighting range of a black disc must not be reduced by more than [...] %.
	>	The visual clarity of the water <sup>^</sup> measured as the horizontal sighting range of a black disc must equal or exceed [...] metres.
E. coli / 100 ml (rivers <sup>^</sup> )	< m	The concentration of Escherichia coli must not exceed [...] per 100 millilitres 1 November - 30 April (inclusive) when the river <sup>^</sup> flow is at or below the 50th flow exceedance percentile*.
	<20th %ile	The concentration of Escherichia coli must not exceed [...] per 100 millilitres year round when the river <sup>^</sup> flow is at or below the 20th flow exceedance percentile*.
E. coli / 100 ml (lakes <sup>^</sup> )	Summer	The concentration of Escherichia coli must not exceed [...] per 100 millilitres 1 November - 30 April (inclusive).
	Winter	The concentration of Escherichia coli must not exceed [...] per 100 millilitres 1 May - 31 October (inclusive).
Euphotic Depth (lakes <sup>^</sup> )	% Δ	Euphotic depth must not be reduced by more than [...] %.

<sup>6</sup> Soluble inorganic nitrogen (SIN) concentration is measured as the sum of nitrate nitrogen, nitrite nitrogen, and ammoniacal nitrogen or the sum of total oxidised nitrogen and ammoniacal nitrogen.

<sup>7</sup> The Deposited Sediment Cover (%) *Water Quality Target\** (or standard where specified under conditions/standards/terms in a rule) only applies for State of the Environment monitoring purposes to determine if the percentage cover of deposited sediment on the bed of the river will provide for and maintain the values in each WMSZ. The effects of deposited sediment on the bed of rivers in relation to resource consent applications should be determined using the deposited sediment protocols of Clapcott et al. (2010).

<sup>8</sup> The Macroinvertebrate Community Index (MCI) *Water Quality Target\** (or standard where specified under conditions/standards/terms in a rule) applies only for State of the Environment monitoring purposes to determine if the aquatic macroinvertebrate communities are adequate to provide for and maintain the values in each WMSZ. This *Water Quality Target\** (or standard where specified under conditions/standards/terms in a rule) is not appropriate for monitoring the effect of activities such as discharges to water on macroinvertebrate communities upstream and downstream of the activity.

<sup>9</sup> Ammoniacal nitrogen is a component of SIN. SIN *Water Quality Target\** (or standard where specified under conditions/standards/terms in a rule) should also be considered when assessing ammoniacal nitrogen concentrations against the *Water Quality Target\** or standard where specified under conditions/standards/terms in a rule).

