

Part 6

LF – Land and freshwater

APP33 – Water quality limits

FMU	Sub-catchment	E. coli / 100ml	MCI	Trophic state - periphyton biomass mg/m ²	Periphyton %WCC	Nitrate toxicity mg/L		Ammonia toxicity mg/L		Dissolved oxygen mg/L		Clarity* m	Deposited fine sediment % cover	Cyano-bacteria % cover	DIN mg/L	DRP mg/L	Toxicants / metals	Water temp.	pH	% reduction in water clarity
		95th %ile	5-year mean	3-year mean	3-year mean	Annual median	95th %ile	Annual median	Annual max.	7-day mean	1-day min.	Min. at Q ₅₀	3-year mean		Annual average	Annual average	Species protection level	Annual max.		upstream to downstream Δ in black disc (m)
Roding	Upper Roding (NCC)	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
Stoke	Saxton	≤260	>80	120 - 200 mg/m ²	40 – 55%	<1	<1.5	<0.03	<0.05	≥5.0 and <7.0	≥4.0 and <5.0	1.6	<25%	<20%	400-800	10-15	95%	≤24°C	6.0 < 9.0	≤30
	Orphanage	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	Orchard	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	Upper Poorman	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20

FMU	Sub-catchment	E. coli / 100ml	MCI	Trophic state - periphyton biomass mg/m ²	Periphyton %WCC	Nitrate toxicity mg/L		Ammonia toxicity mg/L		Dissolved oxygen mg/L		Clarity* m	Deposited fine sediment % cover	Cyano-bacteria % cover	DIN mg/L	DRP mg/L	Toxicants / metals	Water temp.	pH	% reduction in water clarity
		95th %ile	5-year mean	3-year mean	3-year mean	Annual median	95th %ile	Annual median	Annual max.	7-day mean	1-day min.	Min. at Q ₅₀	3-year mean		Annual average	Annual average	Species protection level	Annual max.		upstream to downstream Δ in black disc (m)
	Lower Poorman	≤260	>120	<50 mg/m ²	<20%	<1	<1.5	<0.03	<0.05	≥8mg/L	≥7.5mg/L	5	<20%*	<20%	<100	<6	99%	≤18°C	6.5 < 8.0	≤20
	Arapiki			No data		<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5						80%			
	Jenkins	≤260	>100	50 - 120 mg/m ² & 20 – 40%	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	Maire		>80	120 - 200 mg/m ²	40 – 55%	<1	<1.5	<0.03	<0.05	≥5.0 and <7.0	≥4.0 and <5.0	1.6	<25%		400-800	10-15	95%	≤24°C	6.0 < 9.0	≤30
Maitahi/ Mahitahi/ Maitai	York	≤260	>80	120 - 200 mg/m ²	40 – 55%	<1	<1.5	<0.03	<0.05	≥5.0 and <7.0	≥4.0 and <5.0	1.6	<25%	<20%	400-800	10-15	95%	≤24°C	6.0 < 9.0	≤30
	Upper Brook	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	Lower Brook	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20

FMU	Sub-catchment	E. coli / 100ml	MCI	Trophic state - periphyton biomass mg/m ²	Periphyton %WCC	Nitrate toxicity mg/L		Ammonia toxicity mg/L		Dissolved oxygen mg/L		Clarity* m	Deposited fine sediment % cover	Cyano-bacteria % cover	DIN mg/L	DRP mg/L	Toxicants / metals	Water temp.	pH	% reduction in water clarity
		95th %ile	5-year mean	3-year mean	3-year mean	Annual median	95th %ile	Annual median	Annual max.	7-day mean	1-day min.	Min. at Q ₅₀	3-year mean		Annual average	Annual average	Species protection level	Annual max.		upstream to downstream Δ in black disc (m)
	North Branch	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	South Branch	≤260	>120	<50 mg/m ²	<20%	<1	<1.5	<0.03	<0.05	≥8mg /L	≥7.5mg /L	5	<20%*	<20%	<100	<6	99%	≤18°C	6.5 < 8.0	≤20
	Lower Maitahi/ Mahitahi/ Maitai	≤260	>120	<50 mg/m ²	<20%	<1	<1.5	<0.03	<0.05	≥8mg /L	≥7.5mg /L	5	<20%*	<20%	<100	<6	99%	≤18°C	6.5 < 8.0	≤20
	Sharland	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	Packer	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	Groom	≤260		No data		<1	<1.5	<0.03	<0.05					<20%			95%			
	Oldham	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20

FMU	Sub-catchment	E. coli / 100ml	MCI	Trophic state - periphyton biomass mg/m ²	Periphyton %WCC	Nitrate toxicity mg/L		Ammonia toxicity mg/L		Dissolved oxygen mg/L		Clarity* m	Deposited fine sediment % cover	Cyano-bacteria % cover	DIN mg/L	DRP mg/L	Toxicants / metals	Water temp.	pH	% reduction in water clarity
		95th %ile	5-year mean	3-year mean	3-year mean	Annual median	95th %ile	Annual median	Annual max.	7-day mean	1-day min.	Min. at Q ₅₀	3-year mean		Annual average	Annual average	Species protection level	Annual max.		upstream to downstream Δ in black disc (m)
	Todds	≤260	>80	120 - 200 mg/m ²	40 – 55%	<1	<1.5	<0.03	<0.05	≥5.0 and <7.0	≥4.0 and <5.0	1.6	<25%	<20%	400-800	10-15	95%	≤24°C	6.0 < 9.0	≤30
	Hillwood	≤260	>120	<50 mg/m ²	<20%	<1	<1.5	<0.03	<0.05	≥8mg /L	≥7.5mg /L	5	<20%*	<20%	<100	<6	99%	≤18°C	6.5 < 8.0	≤20
Wakapuaka	Teal	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	Lud	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	Upper Wakapuaka	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	Lower Wakapuaka	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	Māori Pā	≤260		No data		<1	<1.5	<0.03	<0.05					<20%			95%			

FMU	Sub-catchment	E. coli / 100ml	MCI	Trophic state - periphyton biomass mg/m ²	Periphyton %WCC	Nitrate toxicity mg/L		Ammonia toxicity mg/L		Dissolved oxygen mg/L		Clarity* m	Deposited fine sediment % cover	Cyano-bacteria % cover	DIN mg/L	DRP mg/L	Toxicants / metals	Water temp.	pH	% reduction in water clarity
						Annual median	95th %ile	Annual median	Annual max.	7-day mean	1-day min.									
Whangamoa	Upper Whangamoa	≤260	>120	<50 mg/m ²	<20%	<1	<1.5	<0.03	<0.05	≥8mg/L	≥7.5mg/L	5	<20%*	<20%	<100	<6	99%	≤18°C	6.5 < 8.0	≤20
	Lower Whangamoa	≤260	>120	<50 mg/m ²	<20%	<1	<1.5	<0.03	<0.05	≥8mg/L	≥7.5mg/L	5	<20%*	<20%	<100	<6	99%	≤18°C	6.5 < 8.0	≤20
	Graham	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20
	Collins	≤260	>120	<50 mg/m ²	<20%	<1	<1.5	<0.03	<0.05	≥8mg/L	≥7.5mg/L	5	<20%*	<20%	<100	<6	99%	≤18°C	6.5 < 8.0	≤20
	Dencker	≤260	>100	50 - 120 mg/m ²	20 – 40%	<1	<1.5	<0.03	<0.05	≥7.0 and <8.0	≥5.0 and <7.5	3.75	<20%*	<20%	100-400	6-10	95%	≤20°C	6.5 < 8.5	≤20

Key:

- * Horizontal visibility of black disc.
- + or 10% of reference deposited sediment condition.
- *E. coli* means *Escherichia coli* bacteria.
- MCI means macroinvertebrate community index.

- Periphyton%WCC and PeriWCC% mean the percentage of periphyton cover following the weighted composite cover method developed by Matheson et al 2012.
- DIN means Dissolved Inorganic Nitrogen.
- DRP means Dissolved Reactive Phosphorus.
- Toxicants/metals includes the toxicants, metals and metalloids described in Table 3.4.1 of the [ANZECC \(2000\) Guidelines](#).
- pH means a measure of the acidity or alkalinity of the water, where a figure of 7 is neutral, values lower than 7 are more acid and values higher than 7 are more alkaline.