Draft Otago Land and Water Regional Plan: Appendices, Schedules, and Maps

Final draft for Council meeting

23 October 2024

PART 3 – APPENDICES, SCHEDULES AND MAPS

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Appendices

APP1 – Code of practice for drain maintenance

The purpose of a *code of practice for drain maintenance* is to set out good practice guidelines for the removal of sediment and vegetation from a *drain* or *modified watercourse*.

A *code of practice for drain maintenance* shall include, at a minimum, the following matters in relation to works to remove of sediment and vegetation from a *drain* or *modified watercourse*:

(1) good practice methods to:

- (a) minimise sediment disturbance, and the *discharge* of sediment to *water*; and
- (b) avoid or minimise adverse *effects* of the works on:
  - (i) existing legal public access; and
  - (ii) the passage of *desired fish species*; and
  - (iii) the quality of *habitats* for *indigenous freshwater* species; and
  - (iv) spawning *habitats* of *desired fish species*; and
  - (v) the *habitat* of a *threatened freshwater-dependent species* described in APP6 – Threatened freshwater-dependent species that is located within the area identified in MAP-[TS] – Threatened specifies habitat; or
  - (vi) any *mātaitai, taiāpure* or *nohoaka*; or
  - (vii) a *drinking water protection zone*; or
  - (viii) the use of *nationally significant infrastructure, regionally significant infrastructure* and other *lawfully established structures*; and
- (c) minimise the adverse *effects* of *fish* stranding during works; and
- (d) avoid the introduction and spread of *pests*, *pest agents*, *unwanted organisms* or *organisms of interest* in *lakes, rivers* and *riparian margins*; and
- (e) maintain the profile of the *drain* or *modified watercourse* as near as practicable to the channel shape, area, depth, and gradient that existed prior to the works, on completion of the activity; and

(2) methods to dispose of debris, including how to manage disposal on *land* adjacent to the drain; and

(3) methods to leave the site tidy, including removal of any debris associated with the activity, on completion of the activity.

APP2 – Code of practice for gravel extraction

The purpose of a *code of practice for gravel extraction* is to set out good practice guidelines for the extraction of gravel from the *bed* of a *river*.

A *code of practice for gravel extraction* shall include, at a minimum, the following matters in relation to the extraction of gravel from the *bed* of a *river*:

(1) good practice methods to:

- (a) minimise the *discharge* of sediment to *water*; and
- (b) avoid or minimise adverse *effects* of the works on:
  - (i) existing legal public access; and
  - (ii) the passage of *desired fish species*; and
  - (iii) the quality of *habitats* for *indigenous freshwater* species; and
  - (iv) spawning *habitats* of *desired fish species*; and
  - (v) *mātaitai, taiāpure* or *nohoaka*; and
  - (vi) a *drinking water protection zone*; and
  - (vii) the use of *nationally significant infrastructure, regionally significant infrastructure* and other *lawfully established structures*; and
- (c) minimise the adverse *effects* of *fish* stranding during works; and
- (d) avoid the introduction and spread of *pests*, *pest agents*, *unwanted organisms* or *organisms of interest* in *lakes, rivers* and *riparian margins*; and
- (e) maintain the profile of the *bed* as near as practicable to the channel shape, area, depth, and gradient that existed prior to the works, on completion of the activity; and

(2) methods to leave the site tidy, including removal of any debris associated with the activity, on completion of the activity.

APP3 – Desired fish species in all rivers and receiving environments

Table 1: Desired fish species in rivers and receiving environments in the Otago region

Family	Name	Scientific name
Unionidae	kākahi/freshwater mussel	*Echyridella menziesii*
Parastacidae	kōura/freshwater crayfish	*Paranephrops zealandicus*
Atyidae	kōuraura/shrimp	*Paratya curvirostris*
Geotriidae	kanakana/lamprey	*Geotria australis*
Anguillidae	tuna/shortfin eel	*Anguilla australis*
Anguillidae	tuna/longfin eel	*Anguilla dieffenbachii*
Galaxiidae	Central Otago roundhead galaxias	*Galaxias anomalus*
Galaxiidae	taiwharu/giant kōkopu	*Galaxias argenteus*
Galaxiidae	kōaro	*Galaxias brevipinnis*
Galaxiidae	lowland longjaw galaxias	*Galaxias cobitinis*
Galaxiidae	Taieri flathead galaxias	*Galaxias depressiceps*
Galaxiidae	Eldon's galaxias	*Galaxias eldoni*
Galaxiidae	banded kōkopu	*Galaxias fasciatus*
Galaxiidae	Gollum galaxias	*Galaxias gollumoides*
Galaxiidae	īnaka	*Galaxias maculatus*
Galaxiidae	Nevis galaxias	*Galaxias* "Nevis"
Galaxiidae	alpine galaxias (Manuherekia River)	*Galaxias* aff. *paucispondylus* "Manuherikia"
Galaxiidae	alpine galaxias (Southland)	*Galaxias* aff. *paucispondylus* "Southland"
Galaxiidae	Pomahaka galaxias	*Galaxias* "Pomahaka"
Galaxiidae	dusky galaxias	*Galaxias pullus*
Galaxiidae	southern flathead galaxias	*Galaxias* "southern"
Galaxiidae	Clutha flathead galaxias	*Galaxias* "species D"
Galaxiidae	Teviot flathead galaxias	*Galaxias* "Teviot"
Galaxiidae	Canterbury galaxias	*Galaxias vulgaris*
Galaxiidae	kōwaro/Canterbury mudfish	*Neochanna burrowsius*
Retropinnidae	paraki/smelt	*Retropinna retropinna*
Retropinnidae	paraki/Stokell's smelt	*Stokellia anisodon*

Family	Name	Scientific name
Eleotridae	upland bully	*Gobiomorphus breviceps*
Eleotridae	common bully	*Gobiomorphus cotidianus*
Eleotridae	kōkopu/giant bully	*Gobiomorphus gobioides*
Eleotridae	bluegill bully	*Gobiomorphus hubbsi*
Eleotridae	redfin bully	*Gobiomorphus huttoni*
Pleuronectidae	pātiki mohoao/black flounder	*Rhombosolea retiaria*
Mugilidae	aua/yellow-eyed mullet	*Aldrichetta forsteri*
Tripterygiidae	estuarine triplefin	*Forsterygion nigripenne*
Cheimarrichthyidae	piripiripōhatu/torrentfish	*Cheimarrichthys fosteri*

APP4 – Rivers and receiving environments where desired fish species have been identified

Data extracted and tidied from the New Zealand Freshwater Fish Database (accessed 16 June 2024).

Part 1 – Clutha Mata-au FMU

Part 1A – Upper Lakes rohe

Table 2: Part 1A – Rivers and receiving environments in the Upper Lakes rohe where desired fish species have been identified

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	tuna/longfin eel	kōaro	Gollum galaxias	alpine galaxias (Southland)	southern flathead galaxias	upland bully	common bully
Clutha River/Mata-au									
Bedford Stream				✓					
Big Boggy Burn tributary			✓						
Billy Creek				✓					
Black Spur Creek							✓		
Boundary Creek				✓					✓
Brady Creek				✓					
Bride Burn				✓					
Brides Veil Stream				✓					
Bullock Creek				✓					
Bush Creek							✓		
Camerons Creek				✓					
Caples River				✓					
Cascade Creek				✓					
Craig Burn tributary				✓					
Dart River/Te Awa Whakatipu									✓
Dart River/Te Awa Whakatipu tributary		✓		✓					
Dingle Burn/Whakakea				✓					
Dooleys Creek				✓					
Dundas Creek				✓					
Estuary Burn				✓					
Five Mile Creek				✓					
Glacier Burn				✓					
Glacier Burn tributary				✓					
Glenorchy Lagoon			✓						✓
Halls Creek				✓					
Homestead Creek				✓					
Horn Creek				✓					✓

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	tuna/longfin eel	kōaro	Gollum galaxias	alpine galaxias (Southland)	southern flathead galaxias	upland bully	common bully
Lake Face Creek				✓					
Lake Hāwea			✓	✓					✓
Lake Hāwea tributary				✓					
Lake Wānaka									✓
Lake Wānaka tributary			✓	✓					✓
Leaping Burn			✓						
Little Stony Creek				✓					✓
Long Burn				✓					
Long Valley Creek				✓					
Lumberbox Creek				✓					
MacPherson Creek				✓					
Makarore River			✓	✓					
Mātakitaki River			✓						✓
Mātakitaki River tributary			✓	✓					
Mātakitaki River West Branch				✓					
Mātakitaki River West Branch tributary				✓					
McKinlays Creek				✓					
Mick Creek				✓					
Minaret Burn				✓					✓
Mount Burke Creek tributary				✓					
Niger Stream				✓					
One Mile Creek				✓					
Ōturu/Diamond Lake			✓						
Ōturu/Diamond Lake tributary				✓					
Phoebe Creek			✓	✓					✓
Puahiri/Puahere/Rees River			✓						✓
Red Rock Stream				✓					
Reidys Creek				✓					
Rumbling Burn				✓					
Sawyer Burn				✓					
Sheepskin Creek			✓						✓
Short Burn				✓					
Spaniard Creek				✓					
Staircase Creek				✓					✓
Station Burn						✓		✓	
Station Creek				✓					
Te Awamāeroero/Lochy River						✓			
Terrace Creek				✓					

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	tuna/longfin eel	kōaro	Gollum galaxias	alpine galaxias (Southland)	southern flathead galaxias	upland bully	common bully
The Neck Creek				✓					✓
Twelve Mile Creek				✓					
Twenty Five Mile Creek				✓					
Twenty Four Mile Creek				✓					✓
Unnamed lagoon									✓
Unnamed lake				✓					
Unnamed pond			✓						
Von River			✓		✓	✓		✓	
Von River North Branch				✓	✓				
Von River tributary					✓				
Waterfall Creek				✓					
Whakatipu Waimāori/Lake Wakatipu	✓		✓						✓
Whakatipu Waimāori/Lake Wakatipu tributary				✓					
Wharf Creek									✓
White Burn					✓		✓		
White Burn tributary					✓		✓		
Wye Creek				✓					

Part 1B – Dunstan rohe

Table 3: Part 1B - Rivers and receiving environments in the Dunstan rohe where desired fish species have been identified

Rivers and receiving environments	kōura/freshwater crayfish	tuna/longfin eel	kōaro	Nevis galaxias	Clutha flathead galaxias	upland bully	common bully
Clutha River/Mata-au							
Albert Town							✓
Amisfield Burn			✓			✓	
Amisfield Burn tributary						✓	
Arrow River			✓				
Back Creek			✓			✓	
Bannock Burn	✓				✓		
Bannock Burn tributary					✓		
Barn Creek				✓			
Big Spur Creek					✓	✓	
Big Spur Creek tributary					✓		
Blackmans Creek			✓				
Boundary Creek			✓		✓		
Boundary Creek tributary						✓	
Branch Burn		✓	✓		✓	✓	
Branch Burn tributary					✓	✓	
Breast Creek					✓	✓	
Breast Creek tributary					✓		
Callaghans Creek			✓				
Camp Creek		✓			✓		
Cardrona River/Ōrau		✓	✓		✓	✓	
Cardrona River/Ōrau tributary			✓		✓	✓	
Carmichaels Creek			✓				
Carrick Range water race				✓			
Chinaman Gully			✓			✓	
Cluden Stream		✓			✓	✓	
Cluden Stream tributary			✓		✓		
Clutha River/Mata-au		✓				✓	✓
Clutha River/Mata-au tributary			✓			✓	✓
Coal Creek					✓	✓	✓
Coal Creek tributary				✓	✓		
Coal Creek water race							✓
Dan O'Connell Creek			✓				✓
Deep Creek			✓		✓		
Devils Creek						✓	✓

Rivers and receiving environments	kōura/freshwater crayfish	tuna/longfin eel	kōaro	Nevis galaxias	Clutha flathead galaxias	upland bully	common bully
Dip Creek		✓			✓		
Dip Creek tributary					✓		
Drummond Creek				✓			
Duffers Gully					✓		
Firewood Creek			✓				
Foxs Gully					✓		
Harveys Gully						✓	
Hawea/Hāwea River							✓
Hawea/Hāwea River tributary		✓	✓				
Hayes Creek							✓
Italian Creek							✓
John Bull Creek		✓	✓				✓
Kawarau River		✓					✓
Kidd Creek					✓	✓	
Kimiākau/Shotover River		✓					
Lagoon Creek					✓		
Waiwhakaata		✓					✓
Waiwhakaata tributary			✓				✓
Lake Johnson							✓
Lake Kirkpatrick							✓
Leaning Rock/Haehaeata Creek			✓				
Lindis River		✓	✓		✓	✓	✓
Lindis River tributary					✓	✓	
Little Meg			✓				
Long Spur Creek		✓				✓	
Low Burn						✓	
Luggate Creek			✓		✓		
Macdonalds Creek			✓		✓	✓	
Maori Gully			✓				
Mill Creek			✓				
Moke Creek			✓			✓	✓
Nevis Burn tributary				✓			
Packspur Gully					✓		
Pass Burn		✓					
Potters Creek				✓			
Potters Creek tributary				✓			
Punamāhaka/Waikāmāhaka/Moke Lake							✓
Punamāhaka/Waikāmāhaka/Moke Lake tributary			✓				

Rivers and receiving environments	kōura/freshwater crayfish	tuna/longfin eel	kōaro	Nevis galaxias	Clutha flathead galaxias	upland bully	common bully
Roadmans Gully			✓		✓		
Schoolhouse Creek					✓		
Schoolhouse Creek tributary				✓			
Scotchmans Creek				✓			
Sheepskin Creek		✓			✓	✓	
Shepherds Creek					✓		
Short Spur Creek					✓		
Skippers Creek			✓				
Smiths Creek					✓		
Spotts Creek		✓	✓		✓	✓	
Spotts Creek tributary			✓		✓	✓	
Sproules Creek				✓			
Station Creek		✓					
Stewarts Creek tributary				✓			
Te Papapuni/Nevis River				✓			
Te Papapuni/Nevis River tributary				✓			
Te Wairere/Lake Dunstan		✓				✓	✓
Te Waiwhero/Waiwera Creek						✓	
Tim Burn Left Branch						✓	
Tim Burn Left Branch tributary					✓	✓	
Tim Burn tributary					✓	✓	
Timber Creek			✓		✓	✓	
Timber Creek tributary			✓		✓	✓	
Timber Creek water race			✓		✓		
Tinwald Burn			✓				
Tyre Gully					✓		
Unnamed pond							✓
Unnamed water race						✓	
Wainui Creek			✓		✓	✓	
Wainui Creek tributary			✓		✓	✓	
Whittens Creek				✓			
Whittens Creek tributary				✓			
Wrights Creek				✓			
Wrights Creek tributary				✓			
Wrights Gully			✓				

Part 1C – Manuherekia rohe

Table 4: Part 1C - Rivers and receiving environments in the Manuherekia rohe where desired fish species have been identified

Rivers and receiving environments	kōura/freshwater crayfish	tuna/longfin eel	Central Otago roundhead galaxias	kōaro	alpine galaxias (Manuherekia River)	Clutha flathead galaxias	upland bully	common bully
Clutha River/Mata-au								
Becks Creek							✓	
Becks Creek tributary							✓	
Bickerstaffe Creek	✓					✓		
Bickerstaffe Creek tributary						✓		
Black Bush Creek		✓	✓				✓	
Black Bush Creek tributary		✓					✓	
Brassknocker Creek							✓	
Brassknocker Creek tributary							✓	
Buster Creek							✓	
Camp Creek			✓		✓			
Cemetery Creek	✓							
Chatto Creek		✓	✓	✓			✓	
Chatto Creek tributary			✓				✓	
Coal Creek							✓	
Devonshire Creek		✓					✓	
Dip Creek							✓	
Dip Creek tributary							✓	
Donald Stuarts Creek							✓	
Dovedale Creek	✓		✓					
Dunstan Creek			✓				✓	
Falls Dam							✓	
Gate Creek							✓	
Gorge Creek	✓						✓	
Hills Creek	✓		✓					
Hills Creek tributary			✓					
Hopes Creek						✓		
Hopes Creek tributary						✓		
Hut Creek							✓	
Ida Burn	✓	✓	✓			✓	✓	
Ida Burn tributary			✓					
Johnstons Creek							✓	
Kirk Creek						✓		

Rivers and receiving environments	kōura/freshwater crayfish	tuna/longfin eel	Central Otago roundhead galaxias	kōaro	alpine galaxias (Manuherekia River)	Clutha flathead galaxias	upland bully	common bully
Kirkwoods Creek					✓			
Laheys Creek			✓				✓	
Lauder Creek		✓					✓	
Lauder Creek tributary			✓				✓	
Long Gully		✓	✓				✓	
Long Valley Creek	✓						✓	✓
Lower Manorburn Dam		✓						
Manor Burn	✓					✓	✓	✓
Manor Burn tributary	✓					✓	✓	
Manuherekia River		✓	✓	✓	✓		✓	
Manuherekia River East Branch							✓	
Manuherekia River tributary			✓	✓	✓		✓	
Manuherekia River West Branch					✓		✓	
Maori Creek			✓			✓		
Maori Creek tributary			✓			✓		
Mata Creek							✓	
Millers Creek							✓	
Moa Creek	✓		✓					
Moa Creek tributary	✓					✓		
Muddy Creek							✓	
Muddy Creek tributary							✓	
Pass Creek		✓						
Pierces Gorge			✓					
Pleasant Valley							✓	
Pleasant Valley Creek							✓	
Pool Burn	✓	✓				✓	✓	✓
Pool Burn tributary	✓		✓			✓	✓	✓
Rocks Creek							✓	
Rocks Creek tributary							✓	
Sailor Jacks Creek							✓	
Scrubby Gully	✓							
Shepherds Creek			✓				✓	
Spain Creek		✓	✓					
Speargrass Creek	✓							
Springvale Creek	✓						✓	
Thompsons Creek		✓	✓				✓	
Thompsons Creek tributary							✓	

Rivers and receiving environments	kōura/freshwater crayfish	tuna/longfin eel	Central Otago roundhead galaxias	kōaro	alpine galaxias (Manuherekia River)	Clutha flathead galaxias	upland bully	common bully
Thomsons Creek		✓	✓	✓			✓	
Thomsons Creek trib			✓					
Thomsons Creek tributary		✓	✓				✓	
Thomsons Creek water race			✓				✓	
Unnamed spring							✓	
Unnamed water race	✓							
Williamsons Creek							✓	
Woolshed Creek							✓	
Woolshed Creek tributary			✓					
Yard Creek							✓	
Young Hill Creek							✓	

Part 1D – Roxburgh rohe

Table 5: Part 1D - Rivers and receiving environments in the Roxburgh rohe where desired fish species have been identified

Rivers and receiving environments	kōura/ freshwater crayfish	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	kōaro	īnaka	Pomahaka galaxias	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	piripiripōhatu/ torrentfish
Clutha River/Mata-au														
Armstrongs Creek tributary								✓						
Aronui dam				✓										
Back Creek	✓													
Beaumont River	✓			✓				✓						
Beaumont River tributary	✓			✓				✓						
Benger Burn			✓	✓	✓				✓			✓	✓	
Benger Burn tributary				✓	✓							✓		
Black Jacks Creek				✓	✓									
Black Stream								✓						
Butchers Creek	✓			✓										
Butchers Creek tributary				✓										
Canadian Creek		✓		✓	✓									
Clutha River/Mata-au				✓							✓			
Clutha River/Mata-au tributary				✓	✓		✓					✓		
Coal Creek	✓			✓	✓									✓
Conroys Creek	✓													
Conroys Dam	✓												✓	
Craig Creek	✓			✓										
Diggers Stream	✓													

Rivers and receiving environments	kōura/ freshwater crayfish	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	kōaro	īnaka	Pomahaka galaxias	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	piripiripōhatu/ torrentfish
Elbow Creek					✓							✓	✓	
Five Mile Creek					✓									
Fraser River				✓										
Fruid Burn				✓										✓
Fruid Burn tributary	✓							✓						
Gibsons Creek	✓			✓										
Gorge Creek					✓									
Judge Creek				✓	✓		✓							
Lake Onslow													✓	
Lake Onslow tributary	✓									✓		✓	✓	
Lake Roxburgh				✓										
Lake Roxburgh tributary													✓	
Little Beaumont Stream								✓						
Little Beaumont Stream tributary								✓						
Luncheon Creek Left Branch	✓													
Luncheon Creek Right Branch								✓						
Minzion Burn	✓	✓		✓				✓						
Minzion Burn tributary				✓				✓						
Moffats Stream tributary								✓						
Obelisk Creek	✓											✓		
Old Hut Creek	✓							✓		✓				
Old Hut Creek tributary										✓				
Omeo Creek	✓													

Rivers and receiving environments	kōura/ freshwater crayfish	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	kōaro	īnaka	Pomahaka galaxias	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	piripiripōhatu/ torrentfish
Oven Hill Creek	✓			✓									✓	
Phantom Creek				✓										
Pinders Pond				✓									✓	
Pinelheugh Creek								✓						
Pinelheugh Creek tributary								✓						
Raes Junction Stream				✓	✓		✓							
Ruby Creek				✓										
Ruby Creek tributary					✓									
Talla Burn	✓			✓				✓						✓
Teviot River		✓		✓										
Teviot River North Branch tributary	✓												✓	
Teviot River tributary	✓							✓		✓			✓	
Tima Burn		✓	✓	✓	✓	✓						✓	✓	✓
Tima Burn tributary				✓										
Unnamed pond			✓	✓									✓	
Waipuna Creek	✓													
Waipuna Creek tributary												✓		

Part 1E – Lower Clutha rohe

Table 6: Part 1E - Rivers and receiving environments in the Lower Clutha rohe where desired fish species have been identified

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Gollum galaxias	īnaka	Pomahaka galaxias	dusky galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Clutha River/Mata-au																					
Anguilla Burn		✓				✓					✓				✓	✓					
Anguilla Burn tributary											✓										
Archies Creek													✓								
Awakia Stream						✓									✓	✓					
Back Stream						✓															
Back Stream East Branch						✓															
Barrata Creek										✓											
Beaumont River						✓															
Belle Burn						✓					✓										
Belle Burn tributary						✓					✓										
Black Gully		✓				✓															
Black Stream					✓						✓										
Blackcleugh Burn				✓		✓										✓					✓
Bluejacket Gully		✓																			
Boundary Creek						✓							✓								
Boundary Stream													✓								

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Gollum galaxias	īnaka	Pomahaka galaxias	dusky galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Bowlers Creek						✓									✓						
Brandy Gully		✓				✓							✓								
Bullock Stream		✓									✓										
Bullrush Stream						✓							✓								
Bungtown Stream						✓						✓									
Bungtown Stream tributary												✓									
Campbells Creek													✓								
Camping Creek tributary													✓								
Carsons Creek		✓				✓		✓													
Carsons Creek tributary		✓				✓															✓
Clutha River/Mata-au				✓	✓	✓				✓				✓		✓	✓				✓
Clutha River/Mata-au Koau Branch	✓				✓	✓				✓				✓		✓		✓	✓		
Clutha River/Mata-au Matau Branch Estuary					✓	✓								✓		✓			✓	✓	
Clutha River/Mata-au tributary					✓	✓					✓			✓		✓	✓				✓
Cranleigh Stream					✓	✓															
Crook Burn					✓	✓															
Crookston Burn						✓					✓				✓	✓					
Crookston Burn tributary		✓				✓					✓										
Doakes Stream		✓				✓															

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Gollum galaxias	īnaka	Pomahaka galaxias	dusky galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Dull Burn		✓			✓	✓					✓										
Dull Burn tributary						✓					✓										
Flodden Creek		✓				✓															
Flodden Creek tributary						✓					✓										
Four Mile Creek					✓	✓															
Frasers Stream					✓	✓	✓														
German Stream						✓															
Glenomaru Stream		✓	✓		✓	✓			✓	✓						✓	✓	✓	✓		
Gorge Creek													✓								
Gorge Creek tributary													✓								
Heriot Burn		✓		✓		✓		✓			✓				✓						
Heriot Burn tributary		✓				✓					✓				✓						
Kaihiku Stream		✓				✓									✓	✓					
Kaihiku Stream tributary					✓	✓									✓						
Kuriwao Stream		✓				✓										✓					
Kuriwao Stream tributary		✓				✓			✓							✓					
Leithen Burn		✓				✓					✓				✓	✓					
Leithen Burn tributary		✓				✓					✓				✓						
Little Omaru Stream		✓							✓												
Lovells Stream		✓		✓	✓	✓	✓			✓				✓		✓					

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Gollum galaxias	īnaka	Pomahaka galaxias	dusky galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Lovells Stream tributary						✓															
Low Burn					✓	✓									✓	✓					
Low Burn tributary															✓						
Medwins Creek		✓										✓									
Merrie Creek						✓					✓										
Munros Gully																✓					
North Twin Creek		✓																			
Paiwata Stream					✓	✓									✓						
Paiwata Stream tributary		✓											✓		✓						
Parasol Creek						✓							✓								
Parasol Creek tributary		✓				✓							✓								
Poumāhaka River		✓				✓									✓						
Poumāhaka River tributary		✓			✓	✓					✓				✓	✓					
Puerua River		✓			✓	✓	✓			✓						✓	✓		✓		
Puerua River Deviation										✓											
Puerua River Estuary										✓						✓					
Puerua River tributary						✓			✓	✓						✓					
Rankle Burn						✓					✓										
Rankle Burn tributary		✓				✓															
Reedy Creek						✓						✓									

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Gollum galaxias	īnaka	Pomahaka galaxias	dusky galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Reedy Creek tributary						✓						✓									
Robson Lagoon					✓	✓															
Roto-nui-a-Whatu/Lake Tuakitoto					✓	✓	✓									✓					
Roto-nui-a-Whatu/Lake Tuakitoto outlet			✓		✓	✓				✓				✓		✓					
Roto-nui-a-Whatu/Lake Tuakitoto tributary					✓	✓	✓			✓				✓		✓					
Saddle Stream						✓	✓			✓						✓	✓				
Saddle Stream tributary							✓														
Spylaw Burn		✓			✓	✓					✓				✓	✓					
Spylaw Burn tributary		✓				✓					✓				✓						
Stony Creek					✓	✓				✓											
Stuart Stream		✓				✓															
Te Waiwhero/Waiwera River		✓		✓	✓	✓							✓		✓	✓					
Te Waiwhero/Waiwera River tributary		✓			✓	✓			✓		✓				✓	✓					
Thompsons Creek											✓										
Thompsons Creek tributary		✓									✓										
Timber Creek						✓							✓		✓						
Toiro Stream					✓	✓	✓														
Toms Creek						✓															

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Gollum galaxias	īnaka	Pomahaka galaxias	dusky galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Trumbles Creek		✓				✓							✓		✓						
Tuapeka Creek				✓		✓						✓									
Tuapeka Creek tributary						✓						✓	✓								
Tuapeka River		✓		✓		✓									✓	✓					
Tuapeka River tributary		✓				✓						✓	✓								
Two Stone Hill Stream						✓	✓							✓		✓					
Unnamed pond						✓	✓						✓								
Unnamed wetland					✓	✓	✓			✓						✓					
Valley Creek		✓				✓					✓		✓		✓						
Waikoikoi Creek		✓			✓	✓							✓		✓	✓					
Waikoikoi Creek tributary						✓							✓		✓						
Waipahī River	✓	✓		✓		✓					✓				✓	✓					
Waipahī River East Branch		✓				✓					✓				✓						
Waipahī River East Branch tributary		✓				✓					✓				✓	✓					
Waipahī River tributary		✓				✓					✓				✓						
Wairuna Stream		✓			✓	✓									✓	✓					
Wairuna Stream tributary		✓				✓					✓				✓						
Waitāhuna River	✓	✓		✓		✓						✓			✓						
Waitāhuna River tributary		✓			✓	✓					✓	✓			✓						

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Gollum galaxias	īnaka	Pomahaka galaxias	dusky galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Waitepeka Drain					✓					✓											
Waitepeka River					✓	✓				✓											
Wash Creek						✓					✓				✓						
Wash Creek tributary		✓									✓				✓						
Washpool Stream					✓	✓										✓					
Washpool Stream tributary											✓										
Watties Creek		✓				✓									✓						
Webb Creek		✓				✓							✓		✓						
Wethers Creek						✓															
Wetherston Creek						✓						✓									
Wetherston Creek tributary						✓						✓									
Whiskey Gully		✓				✓															

Part 2 – Taiari FMU

Table 7: Part 2 - Rivers and receiving environments in the Taiari FMU where desired fish species have been identified

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	Central Otago roundhead galaxias	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet
Taiari River																						
Ailsa Creek										✓												
Alex Stream									✓													
Annetts Creek		✓																				
Barbours Stream											✓											
Barbours Stream tributary											✓											
Big Stream						✓		✓														
Big Stream tributary			✓			✓																
Black Rock Stream		✓	✓			✓				✓	✓											
Boundary Creek		✓				✓	✓	✓					✓						✓			
Boundary Creek tributary		✓				✓																
Broad Stream		✓				✓			✓		✓											
Broad Stream tributary											✓											
Burnt Creek		✓							✓					✓								
Cambridge Creek										✓												
Cambridge Creek tributary										✓												
Camlet Creek tributary		✓																				
Canton Stream		✓									✓											

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	Central Otago roundhead galaxias	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet
Cap Burn						✓				✓												
Cap Burn tributary										✓												
Christmas Creek										✓												
Christmas Creek tributary									✓													
Clarkes Stream tributary											✓											
Contour Channel													✓					✓	✓			
Contour Channel tributary		✓				✓		✓				✓	✓						✓			
Crystal Creek		✓												✓								
Cullen Creek								✓	✓													
Deadbullock Creek tributary		✓					✓															
Deadwoman Creek							✓															
Deep Creek											✓			✓								
Deep Creek tributary		✓								✓	✓			✓								
Deep Stream					✓		✓				✓											
Deep Stream tributary							✓				✓											
Deighton Creek		✓								✓												
Devils Creek											✓											
Devils Creek tributary											✓											
Doughboy Creek						✓																
Eden Creek		✓					✓															

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	Central Otago roundhead galaxias	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet
Elbow Creek										✓												
Emerald Creek		✓								✓												
Emerald Creek tributary		✓								✓												
Ewe Burn						✓	✓															
Ewe Burn East Branch							✓															
Ewe Burn tributary		✓					✓															
Ewe Burn West Branch	✓					✓	✓															
Fiddlers Creek											✓											
Fiddlers Creek water race											✓											
Fiddlers Gully		✓																				
Filly Burn						✓				✓												
Flagstaff Creek								✓	✓										✓			
Flat Creek											✓											
Flat Stream						✓																
German Creek						✓	✓															
German Creek tributary						✓	✓															
Gills Creek		✓																				
Gimmer Burn										✓												
Gimmer Burn tributary		✓								✓												
Harveys Creek		✓				✓					✓											

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	Central Otago roundhead galaxias	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet
Harveys Creek tributary						✓					✓											
Healy Creek							✓			✓												
Heaney Creek									✓													
Hog Burn						✓	✓															
Hog Burn tributary							✓															
Home Gully		✓				✓	✓															
Horse Burn										✓												
Hound Burn										✓								✓				
House Creek						✓																
Kirkland Creek						✓																
Kye Burn						✓	✓			✓								✓				
Kye Burn tributary						✓	✓			✓								✓				
Lake Mahinerangi																			✓			
Lake Mahinerangi tributary		✓							✓		✓								✓			
Lake Waipōuri			✓		✓	✓							✓				✓		✓		✓	✓
Lake Waipōuri tributary						✓					✓											
Lammerlaw Stream									✓													
Larne Creek							✓															
Lee Creek		✓		✓		✓		✓	✓				✓						✓	✓		
Lee Creek North Branch		✓																				

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	Central Otago roundhead galaxias	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet
Lee Creek North Branch tributary		✓																				
Lee Stream	✓					✓					✓											
Lee Stream tributary		✓	✓			✓					✓											
Linn Burn										✓								✓				
Little Kye Burn						✓	✓															
Little Kye Burn tributary							✓															
Loch Loudon									✓										✓			
Loch Luella tributary									✓													
Logan Burn						✓																
Logan Burn tributary										✓												
Lug Creek tributary						✓																
Manuka Stream		✓				✓				✓												
Maori Hen Creek		✓								✓												
March Creek						✓																
Mare Burn		✓			✓	✓				✓												
Mare Burn tributary		✓								✓												
Mary Hill Stream													✓									
McHardies Creek										✓												
McHardies Creek tributary										✓												
McPhees Creek										✓												

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	Central Otago roundhead galaxias	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet
McPhees Creek tributary										✓												
Meggat Burn		✓				✓					✓	✓										
Meggat Burn tributary		✓									✓											
Mill Creek						✓			✓											✓		
Mill Creek tributary		✓																				
Mill Stream								✓											✓			
Mullocky Stream						✓																
Munros Dam Stream														✓								
Munros Gully		✓												✓								
Nant Creek		✓				✓																
Nardoo Stream		✓							✓										✓			
Nenthorn Stream		✓				✓				✓								✓				
Nenthorn Stream tributary		✓								✓												
No 1 Spec Gully							✓															
No 2 Spec Gully							✓															
Nobbler Stream							✓															
Nobbler Stream tributary							✓															
North West Creek		✓							✓													
Old Hut Creek							✓															
Old Mining Pond											✓											

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	Central Otago roundhead galaxias	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet
Owhiro Stream		✓				✓		✓					✓						✓			
Picnic Gully Creek		✓										✓						✓				
Pig Burn						✓																
Pioneer Stream		✓							✓										✓			
Pioneer Stream tributary		✓							✓		✓											
Post Office Creek		✓							✓		✓											
Post Office Creek tributary		✓									✓											
Powder Creek		✓																				
Prices Creek							✓															
Ratty Creek											✓											
Red Swamp														✓								
Red Swamp Creek										✓				✓		✓						
Riddles Creek										✓												
Rock Creek						✓																
Rock Creek tributary						✓																
Ross Stream						✓				✓								✓				
Ross Stream tributary										✓												
Rutherfords Dam																			✓			
Scrub Burn							✓															
Scrub Burn tributary							✓											✓				

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	Central Otago roundhead galaxias	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet
Sheepwash Creek						✓				✓												
Shepherd Stream						✓					✓											
Shepherd Stream tributary											✓			✓								
Shepherds Creek		✓					✓				✓											
Shepherds Creek tributary											✓											
Shepherds Hut Creek										✓												
Shepherds Hut Creek tributary										✓												
Silver Stream		✓		✓	✓	✓		✓					✓				✓		✓			
Silver Stream tributary			✓					✓	✓													
Smugglers Creek		✓				✓					✓											
Smugglers Creek tributary		✓																				
Sow Burn		✓				✓				✓								✓				
Sow Burn tributary						✓				✓												
Spec Gully						✓	✓															
Spratts Creek						✓	✓															
Stony Creek		✓							✓	✓	✓			✓								
Stony Creek tributary											✓			✓								
Styx Creek		✓																				
Suprise Stream													✓									
Sutton Stream				✓		✓					✓											

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	Central Otago roundhead galaxias	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet
Sutton Stream tributary											✓											
Swin Burn						✓	✓											✓				
Swin Burn tributary							✓															
Taiari River	✓			✓		✓	✓			✓			✓				✓	✓	✓		✓	✓
Taiari River tributary		✓				✓	✓	✓	✓	✓		✓	✓	✓					✓	✓		
Three O'clock Stream		✓			✓	✓				✓	✓							✓				
Three O'Clock Stream										✓												
Three O'clock Stream tributary		✓				✓			✓	✓	✓							✓				
Three O'Clock Stream tributary										✓								✓				
Timber Creek							✓															
Timber Creek tributary							✓															
Totara Creek		✓								✓					✓							
Totara Creek tributary		✓					✓			✓												
Traquair Burn		✓				✓					✓								✓			
Trimbells Gully		✓								✓												
Unnamed pond																			✓			
Unnamed stream											✓											
Verter Burn		✓							✓													
Waihora/Lake Waihola					✓	✓		✓					✓				✓		✓		✓	✓

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	Central Otago roundhead galaxias	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	dusky galaxias	Clutha flathead galaxias	Teviot flathead galaxias	paraki/smelt	upland bully	common bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet
Waihora/Lake Waihola tributary		✓		✓	✓	✓		✓	✓		✓	✓	✓				✓		✓	✓		
Waimonga Creek		✓								✓					✓							
Waipōuri River	✓								✓				✓	✓					✓			
Waipōuri River tributary		✓			✓	✓		✓	✓		✓	✓	✓	✓								
Washpool Stream						✓				✓												
Washpool Stream tributary										✓												
Water race							✓															
Wee Cap Burn										✓												
Wee Cap Burn tributary										✓												
West Branch Ewe Burn						✓	✓															
Wether Burn						✓	✓															
Wether Burn tributary		✓				✓	✓			✓												
Whare Creek		✓									✓											
White Sow Creek						✓																
White Sow Creek tributary		✓					✓															

Part 3 – North Otago FMU

Table 8: Part 3 - Rivers and receiving environments in the North Otago FMU where desired fish species have been identified

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	lowland longjaw galaxias	Taieri flathead galaxias	banded kōkopu	īnaka	Canterbury galaxias	kōwaro/Canterbury mudfish	paraki/smelt	paraki/Stokell's smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Kakaho Creek																								
Kakaho Creek		✓															✓	✓						
Kākaunui River																								
Branch Creek						✓							✓											
Branch Creek tributary		✓											✓											
Deep Creek						✓							✓											
Deep Creek tributary													✓											
Fuchsia Creek					✓																			
Hughie Stream													✓				✓							
Island Stream		✓		✓	✓	✓						✓	✓				✓	✓						
Island Stream North Branch tributary													✓											
Island Stream South Branch													✓											
Kākaunui River		✓	✓	✓	✓	✓		✓	✓		✓	✓	✓				✓	✓	✓	✓	✓			✓
Kākaunui River North Branch													✓											
Kākaunui River North Branch tributary													✓											
Kākaunui River South Branch						✓			✓				✓				✓							

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	lowland longjaw galaxias	Taieri flathead galaxias	banded kōkopu	īnaka	Canterbury galaxias	kōwaro/Canterbury mudfish	paraki/smelt	paraki/Stokell's smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Kākaunui River South Branch tributary		✓				✓							✓				✓							
Kākaunui River tributary		✓		✓	✓	✓			✓				✓					✓	✓					
Mackerras Creek													✓											
Maraeweka Stream					✓																			
Mole Hill Creek		✓											✓											
Quinns Creek						✓							✓				✓							
Roaring Meg/Te Wai-o-Koroiko													✓											
Roaring Meg/Te Wai-o-Koroiko tributary													✓											
Serpentine Stream tributary						✓																		
Unnamed pond					✓	✓			✓									✓						
Waiareka Creek			✓	✓	✓	✓						✓					✓	✓	✓		✓			
Kurinui Creek																								
Kurinui Creek				✓		✓							✓				✓							
Kurinui Creek tributary													✓											
Landon Creek																								
Landon Creek tributary						✓											✓							
Ōamaru Creek																								
Ōamaru Creek		✓															✓							

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	lowland longjaw galaxias	Taieri flathead galaxias	banded kōkopu	īnaka	Canterbury galaxias	kōwaro/Canterbury mudfish	paraki/smelt	paraki/Stokell's smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Pleasant River																								
Pleasant River						✓											✓							
Tipperary Creek		✓								✓														
Watkin Creek					✓	✓						✓						✓	✓					
Richmond																								
Unnamed water race																		✓						
Trotters Creek																								
Trotters Creek		✓	✓	✓	✓	✓	✓	✓				✓	✓				✓	✓	✓	✓	✓			
Waianakarua River																								
Hoods Creek						✓																		
Jimmys Creek						✓							✓											
Shepherds Creek													✓											
Waianakarua River			✓	✓	✓	✓						✓	✓		✓		✓	✓	✓	✓	✓		✓	✓
Waianakarua River Middle Branch													✓											
Waianakarua River Middle Branch tributary						✓							✓											
Waianakarua River North Branch				✓		✓		✓	✓			✓	✓				✓	✓		✓		✓		✓
Waianakarua River North Branch tributary								✓					✓											
Waianakarua River South Branch								✓					✓				✓	✓						

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	lowland longjaw galaxias	Taieri flathead galaxias	banded kōkopu	īnaka	Canterbury galaxias	kōwaro/Canterbury mudfish	paraki/smelt	paraki/Stokell's smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Waianakarua River South Branch tributary						✓							✓				✓							
Waihemo/Shag River																								
Bushy Creek										✓														
Camp Creek		✓								✓														
Coal Creek tributary						✓																		
Cranky Jims Creek		✓																						
Deepdell Creek		✓			✓	✓		✓		✓														
Deepdell Creek tributary		✓				✓				✓														
Green Valley Creek						✓				✓														
Happy Valley Creek						✓				✓														
Hellene Creek						✓				✓							✓							
Highlay Creek		✓								✓														
Highlay Creek tributary		✓								✓														
Huntley Creek						✓				✓														
Maori Tommy Gully		✓																						
McCormicks Creek					✓	✓				✓		✓					✓	✓						
Pigroot Creek						✓				✓							✓							
Pigroot Creek tributary										✓														
Shingly Creek										✓							✓							

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	lowland longjaw galaxias	Taieri flathead galaxias	banded kōkopu	īnaka	Canterbury galaxias	kōwaro/Canterbury mudfish	paraki/smelt	paraki/Stokell's smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Siberia Creek										✓														
Siberia Creek tributary										✓														
Tipperary Creek		✓				✓		✓		✓														
Waihemo/Shag River	✓	✓		✓	✓	✓		✓		✓		✓			✓		✓	✓		✓	✓	✓	✓	✓
Waihemo/Shag River Estuary																		✓				✓		
Waihemo/Shag River tributary					✓	✓		✓		✓							✓	✓						
Waikoura Creek																								
Waikoura Creek					✓	✓						✓					✓	✓		✓				✓
Waitaki River																								
Awamoko Stream						✓											✓							
Unnamed pond					✓	✓								✓				✓						
Unnamed wetland					✓	✓								✓										
Waitaki River					✓	✓							✓		✓		✓	✓	✓	✓		✓		✓
Waitaki River Lagoon															✓	✓								
Waitaki River tributary				✓	✓	✓						✓		✓	✓		✓	✓		✓	✓	✓		✓
Welcome Creek			✓			✓											✓	✓	✓	✓				✓
Welcome Creek tributary														✓										

Part 4 – Dunedin & Coast FMU

Table 9: Part 4 - Rivers and receiving environments in the Dunedin & Coast FMU where desired fish species have been identified

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Ōrokonui Creek																						
Ōrokonui Creek		✓	✓	✓	✓	✓	✓	✓			✓	✓				✓	✓	✓	✓			
Akatore Creek																						
Akatore Creek		✓				✓		✓	✓		✓											
Akatore Creek tributary		✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓			✓			
Big Creek																						
Big Creek		✓						✓			✓					✓			✓			
Blueskin Bay																						
Alexanders Creek						✓	✓												✓			
Bull Creek																						
Bull Creek		✓				✓		✓			✓	✓				✓			✓			
Coalsack Creek		✓																				
Careys Creek																						
Careys Creek		✓	✓	✓	✓	✓		✓			✓	✓				✓	✓		✓	✓		
Drivers Creek																						
Drivers Creek						✓					✓	✓							✓			
Fern Stream																						
Fern Stream		✓									✓	✓										

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Finnies Creek																						
Finnies Creek		✓																				
Flax Stream																						
Flax Stream		✓									✓											
Open Stream											✓											
Tutu Stream		✓						✓			✓											
Jennings Creek																						
Jennings Creek		✓									✓	✓										
Jones Creek																						
Jones Creek tributary											✓											
Kaikarae Stream																						
Abbotts Creek											✓	✓				✓						
Kaikarae Lagoon					✓						✓	✓		✓		✓				✓	✓	
Kaikarae Stream		✓	✓	✓	✓	✓						✓			✓	✓			✓	✓		
Kuri Bush																						
Unnamed stream		✓									✓											
Unnamed stream Kuri Bush		✓									✓								✓			
Leith Stream																						
Dunedin Botanic Gardens					✓																	
Leith Stream		✓			✓	✓	✓	✓				✓				✓		✓	✓			
Leith Stream tributary		✓				✓																

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Lindsay Creek		✓			✓	✓													✓			
Nicols Creek		✓																				
Opoho Creek tributary		✓																				
Ross Creek		✓			✓																	
Ross Creek Reservoir		✓														✓						
Sullivans Dam		✓														✓						
Mabel Creek																						
Mabel Creek											✓											
Nobles Stream																						
Glenledi Stream		✓																				
Orokonui Estuary																						
Ōrokonui Creek		✓		✓	✓	✓	✓	✓			✓	✓						✓	✓			
Otago Harbour																						
Baynes Creek											✓	✓				✓			✓			
Craigs Creek		✓									✓											
Otago Harbour tributary											✓	✓								✓		
Smiths Creek						✓	✓				✓	✓				✓			✓			
Styles Creek											✓											
Thomsons Creek											✓											
Unnamed stream Andersons Bay						✓	✓				✓	✓				✓			✓			
Unnamed stream Deborah Bay		✓	✓			✓		✓			✓	✓			✓	✓			✓			

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Unnamed stream Glenfalloch		✓									✓											
Unnamed stream Latham Bay		✓									✓								✓			
Unnamed stream Macandrew Bay		✓									✓								✓			
Unnamed stream Ōtākou											✓											
Unnamed stream Sawyers Bay		✓	✓		✓	✓		✓			✓	✓				✓			✓			
Unnamed stream St Leonards		✓									✓	✓										
Otago Peninsula																						
Battery Creek											✓	✓							✓			
Hoopers Inlet tributary											✓											
Morris Creek		✓										✓							✓			
Robertsons Creek		✓									✓	✓							✓			
Stewarts Creek						✓						✓							✓			
Unnamed Creek Hoopers Inlet		✓				✓																
Unnamed Stream Papanui Beach		✓				✓					✓	✓							✓			
Unnamed stream Pipikaretu Beach		✓									✓											
Weipers Creek											✓	✓				✓			✓			
Otokia Creek																						
Otokia Creek						✓	✓				✓											
Pūrākaunui Creek																						

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Pūrākaunui Creek		✓				✓		✓			✓	✓				✓	✓	✓	✓			
Pūrākaunui Creek tributary		✓																				
Pūrākaunui Inlet																						
Pūrākaunui Inlet tributary											✓											
Reids Stream																						
Reids Stream											✓	✓				✓						
Rocky Valley Creek																						
Rocky Valley Creek											✓											
Shagree Creek																						
Shagree Creek						✓					✓	✓				✓			✓			
Taylors Creek																						
Taylors Creek		✓									✓	✓										
Taylors Creek tributary		✓																				
Tokomairaro River																						
Burn Stream		✓																				
Falla Burn		✓				✓					✓				✓							
Fishers Stream tributary										✓												
Gorge Creek						✓									✓							
Gorge Creek tributary		✓													✓							
Manuka Stream		✓				✓							✓									
Manuka Stream tributary						✓							✓									

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Narrowdale Stream		✓				✓			✓													
Nuggety Gully						✓							✓									
Salmonds Creek		✓				✓			✓						✓	✓						
Shepherd Burn						✓							✓									
Tokomairaro River	✓	✓	✓		✓	✓						✓		✓		✓				✓	✓	
Tokomairaro River East Branch		✓		✓		✓									✓	✓			✓			
Tokomairaro River East Branch tributary		✓				✓				✓	✓											
Tokomairaro River West Branch	✓	✓		✓	✓	✓									✓	✓						
Tokomairaro River West Branch tributary		✓				✓				✓												
Tomahawk																						
Lagoon Creek		✓														✓	✓					
Tomahawk Creek						✓					✓	✓				✓			✓			
Tomahawk Lagoon		✓				✓						✓				✓						
Unnamed stream Tomahawk Lagoon		✓						✓								✓						
Turnbulls Creek																						
Turnbulls Creek		✓									✓								✓			
Waikōuaiti River																						
Back Creek		✓			✓	✓			✓													

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Back Creek tributary		✓							✓													
Deep Creek		✓							✓													
Deep Creek tributary		✓							✓													
Garden Bush Creek						✓			✓						✓	✓						
Garden Bush Creek tributary									✓						✓							
Murphys Creek		✓			✓	✓			✓													
Poley Creek		✓				✓			✓													
Poley Creek tributary									✓													
Toll Bar Creek						✓		✓														
Tommy Flat Creek		✓				✓									✓							
Tommy Flat Creek tributary									✓													
Unnamed pond																✓						
Waikōuaiti River		✓	✓	✓	✓	✓		✓	✓		✓	✓		✓		✓		✓	✓	✓		✓
Waikōuaiti River North Branch		✓		✓	✓	✓		✓	✓						✓	✓						
Waikōuaiti River North Branch tributary		✓				✓									✓							
Waikōuaiti River South Branch		✓				✓		✓							✓							
Waikōuaiti River tributary			✓	✓	✓	✓						✓				✓	✓			✓		
Waitati River																						
Burns Creek		✓																				
Mount Martin Lake		✓																				

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	Taieri flathead galaxias	Eldon's galaxias	banded kōkopu	īnaka	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/ black flounder	aua/yellow-eyed mullet	piripiripōhatu/torrentfish
Semple Burn		✓						✓														
Waitati River		✓		✓	✓	✓	✓	✓			✓	✓		✓		✓	✓	✓	✓			
Waitati River tributary		✓				✓					✓					✓			✓			
Wangaloa Creek																						
Wangaloa Creek					✓		✓					✓				✓						
Wangaloa Creek tributary											✓	✓				✓						
Waterfall Creek		✓									✓											
Washpool Creek																						
Washpool Creek		✓																				
Whareakeake																						
Unnamed stream Whareakeake		✓									✓	✓										

Part 5 – Catlins FMU

Table 10: Part 5 - Rivers and receiving environments in the Catlins FMU where desired fish species have been identified

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	banded kōkopu	Gollum galaxias	īnaka	southern flathead galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/black flounder	piripiripōhatu/torrentfish
Cannibal Bay																					
Unnamed stream Cannibal Bay						✓										✓					
Hinahina Stream																					
Hinahina Stream		✓						✓													
Hukihuki Creek																					
Hukihuki Creek		✓		✓		✓													✓		
Jacks Bay																					
Unnamed stream Jacks Bay									✓										✓		
Kaka Point																					
Unnamed stream Kaka Point									✓										✓		
Karoro Creek																					
Burnt Scrub Stream		✓				✓			✓												
Karoro Creek	✓	✓	✓			✓			✓		✓		✓	✓		✓		✓	✓		✓
Karoro Creek tributary		✓				✓			✓				✓								
Mataura River																					
Mokoreta River		✓								✓		✓			✓						
Mokoreta River tributary		✓								✓		✓			✓						
Nugget Stream																					

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	banded kōkopu	Gollum galaxias	īnaka	southern flathead galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/black flounder	piripiripōhatu/torrentfish
Nugget Stream		✓				✓			✓							✓			✓		
Penguin Bay																					
Unnamed stream Penguin Bay		✓							✓												
Pillans Stream																					
Pillans Stream		✓																			
Pounawea/Catlins River																					
Chloris Stream		✓																			
Craggy Tor Stream													✓								
Craggy Tor Stream tributary													✓								
Daphne Bay		✓				✓							✓		✓						
Frank Stream		✓				✓							✓								
Hermit Stream		✓				✓							✓		✓						
Mackenzie Stream						✓					✓		✓			✓			✓	✓	
Mackenzie Stream tributary						✓			✓												
McLaren Creek		✓				✓	✓	✓	✓	✓									✓		
McLaren Creek tributary										✓											
Mill Creek		✓		✓	✓	✓	✓	✓	✓		✓					✓			✓		
Owaka River		✓	✓	✓		✓					✓					✓			✓		
Owaka River tributary		✓			✓	✓	✓		✓	✓	✓		✓			✓			✓		
Papatupu Stream		✓				✓							✓								
Pounawea/Catlins River		✓		✓	✓	✓	✓			✓			✓				✓			✓	

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	banded kōkopu	Gollum galaxias	īnaka	southern flathead galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/black flounder	piripiripōhatu/torrentfish
Pounawea/Catlins River tributary		✓				✓	✓	✓	✓	✓	✓		✓		✓	✓			✓		
Sweetwater Creek		✓				✓		✓	✓												
Tarwood Stream		✓				✓				✓											
Thisbe Stream		✓				✓							✓								
Tucks Stream		✓				✓				✓											
Tucks Stream tributary						✓	✓			✓											
Waikirikiri Stream		✓				✓							✓								
Wairepo Creek		✓				✓				✓			✓		✓						
Wallis Stream tributary													✓								
Pūrākaunui River																					
Purakauiti Stream		✓				✓			✓				✓								
Pūrākaunui River		✓		✓		✓					✓		✓	✓				✓	✓	✓	
Pūrākaunui River tributary										✓			✓								
Pūrākaunui Stream tributary										✓											
Unnamed wetland					✓																
Waikoata Stream													✓								
Waitere Stream		✓		✓		✓			✓				✓								
Short Bay																					
Unnamed stream Short Bay		✓				✓															
Tahakopa River																					
Aurora Creek				✓		✓															

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	banded kōkopu	Gollum galaxias	īnaka	southern flathead galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/black flounder	piripiripōhatu/torrentfish
Back Creek		✓				✓													✓		
Beresford Creek		✓																			
Coeus Stream tributary										✓											
Gorge Stream		✓				✓							✓								
Jumbo Creek						✓		✓	✓												
Mary Burn		✓				✓															
Mary Burn tributary		✓				✓				✓											
Matai Stream		✓				✓			✓	✓											
Matai Stream tributary									✓												
Tahakopa River		✓	✓	✓		✓					✓		✓	✓		✓			✓	✓	
Tahakopa River tributary		✓				✓							✓								
Waimāeroero/Maclennan River				✓		✓		✓			✓					✓			✓		
Tautuku Bay																					
Isas Creek		✓	✓			✓		✓	✓		✓								✓		
Tautuku River																					
Duckaday Creek						✓															
Fleming River		✓	✓	✓		✓	✓			✓	✓					✓			✓		
Tautuku River		✓		✓	✓	✓		✓		✓									✓	✓	
Tautuku River tributary				✓		✓													✓		
Waipati/Waipāti River																					
Alison Creek		✓				✓															

Rivers and receiving environments	kākahi/freshwater mussel	kōura/freshwater crayfish	kōuraura/shrimp	kanakana/lamprey	tuna/shortfin eel	tuna/longfin eel	taiwharu/giant kōkopu	kōaro	banded kōkopu	Gollum galaxias	īnaka	southern flathead galaxias	Clutha flathead galaxias	paraki/smelt	upland bully	common bully	kōkopu/giant bully	bluegill bully	redfin bully	pātiki mohoao/black flounder	piripiripōhatu/torrentfish
Waitangi Stream																					
Waitangi Stream		✓						✓													

APP5 – Fish species that are undesirable fish species in all rivers and receiving environments

Table 11: Undesirable fish species in all rivers and receiving environments in the Otago region

Family	Common name	Scientific name
Cyprinidae	goldfish	*Carassius auratus*
Cyprinidae	grass carp	*Ctenopharyngodon idella*
Cyprinidae	koi carp	*Cyprinus carpio*
Cyprinidae	orfe	*Leuciscus idus*
Cyprinidae	rudd	*Scardinius erythrophthalmus*
Gobiidae	Asian goby	*Acentrogobius pflaumii*
Gobiidae	bridled goby	*Arenigobius bifrenatus*
Ictaluridae	brown bullhead catfish	*Ameiurus nebulosus*
Poeciliidae	caudo	*Phalloceros caudimaculatus*
Poeciliidae	gambusia	*Gambusia affinis*
Poeciliidae	guppy	*Poecilia reticulata*
Poeciliidae	sailfin molly	*Poecilia latipinna*
Poeciliidae	swordtail	*Xiphophorus helleri*
Salmonidae	Atlantic salmon	*Salmo salar*
Salmonidae	mackinaw	*Salvelinus namaycush*
Salmonidae	sockeye salmon	*Oncorhynchus nerka*
Any *fish species* that is a *pest*, *pest agent, organism of interest,* or *unwanted organism*.		
Any *species* of noxious *fish* listed in Schedule 3 of the Freshwater Fisheries Regulations 1983		

APP6 – Threatened freshwater-dependent species

(1) The *species* listed in Table 12 are identified as *threatened freshwater-dependent species*.

(2) The *species* listed in Table 12 are *indigenous species* of flora or fauna that:

  (a) rely on *water bodies* for at least part of their life cycle; and

  (b) meet the criteria for Nationally Critical, Nationally Endangered, or Nationally Vulnerable in the New Zealand Threat Classification System Manual.

(3) *Species* were determined to rely on *water bodies* if they met one or more of three criteria for *freshwater*-dependence, being:

  (a) most individuals of the *species* are recorded as permanently inhabiting *freshwater habitats*; or

  (b) most individuals of the *species* use *freshwater habitats* for a part of their lifecycle, such as for feeding or reproductive purposes, and display adaptions or lifestyles consistent with this; or

  (c) the *species* is listed as a "*freshwater*" *species* during New Zealand Threat Classification Assessments or has been designated as "*freshwater*" or "freshwater-dependent" elsewhere.

(4) Where mapping exists in MAP[TS] – Threatened species habitat, the habitat is as described in Table 12 and is located within areas identified in MAP[TS]. Where mapping does not exist in MAP[TS], hydrosystems and habitat descriptions are provided below.

(5) The habitat of each *threatened freshwater-dependent species* is described in Table 12.

Table 12: Threatened freshwater-dependent species of the Otago region, and descriptions of their habitats

Scientific name	Common name(s)	Habitat	
		Hydrosystem	**Habitat descriptions**
Plants			
Althenia bilocularis		lacustrine	Lakes, brackish *water*, or slow-flowing *river*s. *Usually* found in shallow *fresh water habitats* not far from the coast.
Amphibromus fluitans	water brome	lacustrine	Coastal to montane in moderately fertile, seasonally dry *wetlands* or along the edges of shallow *lake*s and lagoons.
Brachyscome linearis		lacustrine	Inhabits the short turf that develops along *lake* margins, as well as gravelly ground on exposed *lake* shores. *Habitats* are those which are exposed only briefly during summer; being otherwise flooded for most of the year.
Cardamine mutabilis		lacustrine riverine	Usually occurs on the periodically inundated turfy margins of montane and inland tarns and *lakes*, and in *wetlands* associated with the banks and edges of streams. When associated with tarn and *lake* margins it occupies the marginal turf zone as *water* retreats and the margin dries out. It has also been collected from wet ground in tussock-grassland and herbfields.
Carex capillacea	sedge	lacustrine palustrine riverine	Favours some *wetland* types (e.g., cushion bog, sphagnum bog, seepages, and flushes) and the margins of ponds, pools, tarns and on seasonally flooded *river* terraces within montane forest, scrub, and tussock grassland.
Carex cirrhosa	curly sedge	lacustrine	*Lake*, pond, and tarn margins, preferring low marginal turf in sites subjected to seasonal inundation.
Carex rubicunda	sedge	lacustrine	Mainly montane to subalpine *lake*, tarn, and pond margins. Also found in ephemeral *wetlands*, often in sites subject to seasonal flooding.
Carex strictissima	bastard grass, hook sedge	lacustrine riverine	Lowland scrub, swamps, *lake* margins, and in damp clears within lowland forest.
Chaerophyllum colensoi var. *delicatulum* (CHR	mountain myrrh	lacustrine	Ephemeral *wetlands*, subalpine flushes, and tarn margins.

Scientific name	Common name(s)	Habitat	
		Hydrosystem	Habitat descriptions
73872; Hauhungaroa Range)		palustrine	Subalpine, descending to lower montane *habitat*s in the South Island.
Chenopodium detestans	New Zealand fish-guts plant	lacustrine inland saline	Open or sparsely vegetated ground such as clay and salt plans, dried out *river beds* and *lake* beds.
Coprosma obconica		riverine estuarine	Wide range of *habitats*, from estuarine shrublands, braided *river* bars, lowland podocarp forest to montane marble/limestone/dolomite karst field, and very occasionally ultramafic boulder fields. Prefers to grow on base-rich substrates (e.g., limestone, marble, calcareous mudstone, recent alluvium) but typically in those *habitats* prone to physiological (e.g., ultramafic, dolomite, or estuarine) or climatic (e.g., drought prone, frost hollows, or with a seasonally high *water* table) stress.
Crassula multicaulis		lacustrine riverine inland saline	Coastal, lowland to alpine (0-1800 m above sea level) in open, seasonally damp ground, such as clay or salt plans or around tarn margins. Has also been collected from braided *river beds*.
Crassula peduncularis		lacustrine	Coastal to subalpine. A *species* of ephemeral *wetlands* (*lake* margins, tarns), seasonally damp coastal turfs, and uplifted marine terraces.
Eryngium vesiculosum	sea holly, coastal eryngo	lacustrine estuarine	Occurs in coastal sands and gravels, and grows further inland in some *river beds*.
Euchiton ensifer	creeping cudweed	lacustrine palustrine riverine	Montane to alpine in damp sites, particularly tarn and other ephemeral pond margins, or in seepages and flushes within tussock grassland. Sometimes found on stream banks.
Gratiola concinna		lacustrine palustrine riverine	Muddy hollows in forest clearings, stream sides or in turf at the margins of *lake*s, *rivers,* or ponds. Sometimes aquatic at the edge of shallow *lakes* or *rivers*.

Scientific name	Common name(s)	Habitat	
		Hydrosystem	Habitat descriptions
Hypericum rubicundulum		lacustrine palustrine riverine	Margins of *lakes* and tarns and other wet depressions and seepages in drought-prone and dry-climate inland areas.
Juncus pauciflorus	leafless rush	riverine	Coastal to lowland (often on northern offshore islands) in damp ground and hollows under light scrub, in pasture, on swamp margins, in dune swales under scrub or within coastal forest.
Korthalsella salicornioides	mistletoe, dwarf mistletoe, leafless mistletoe	lacustrine palustrine riverine	Coastal to upper montane and subalpine (0-1300 m above sea level). A parasite found in forest and shrublands, commonly parasitising mānuka and kānuka.
Lagenophora montana	papataniwha	lacustrine palustrine riverine	Montane, subalpine to alpine seeps, cushion bogs, swamps, *lake* and tarn margins, wet tussock grassland and stream banks, or on damp, shaded rock shelves amongst mosses. Mostly at 600-900m altitude, occasionally lower.
Leptospermum scoparium var. *scoparium*	mānuka, tea tree, kahikatoa	lacustrine palustrine riverine estuarine	Abundant from coastal situations to low alpine *habitats*
Libertia peregrinans	New Zealand iris, mikoikoi	lacustrine palustrine	Primarily coastal or lowland of sandy, peaty, or pumiceous soils. May be found growing in dune slacks and swales, on the margins of swamps, in open poorly draining ground under scrub. A distinctive upland form is known from the leaf litter within mainly beech forests.
Lophomyrtus obcordata	rohutu, New Zealand myrtle	riverine	Coastal to montane in forest, though mostly found in coastal and lowland forested *habitats*. Occasionally dominant in alluvial forest remnants of the eastern South Island. In these places it is often parasitised by dwarf mistletoe.

Scientific name	Common name(s)	Habitat	
		Hydrosystem	Habitat descriptions
Mazus novaezeelandiae subsp. *impolitus* f. *impolitus*	dwarf musk/matt leaved mazus	lacustrine palustrine riverine estuarine	Prefers coastal sites, particularly damp hollows and sand flats, amongst sandy turf and coastal pasture *species*; but has also been found inland on *river* gravels in Otago. Swamp and stream margins, soggy ground, *river* flats beneath tawa and kahikatea.
Melicytus flexuosus		riverine	Fertile alluvial terraces and flood plains in sites prone to heavy frosts and summer drought. Often on forest margins and amongst scrub in frosty hollows.
Metrosideros diffusa	white rata		A slender vine that grows up to ± 6 m when supported by rocks or trees, or forms a tangled bushy shrub up to 1 m tall on the forest floor (especially in riparian forest).
Metrosideros umbellata	southern rata		Intolerant of dense vegetation; generally found on poor soils or in harsh, exposed sites between 0-1100 m above sea level.
Myosurus minimus subsp. *novae-zelandiae*	New Zealand mousetail, bearded mousetail	lacustrine	Lowland to upland. Damp and slightly salty depressions in pastures and short tussock grassland, on the margins of tarn and kettle holes, and in damp dune hollows, gravel flats and alluvium.
Neomyrtus pedunculata	rohutu, myrtle	riverine	Coastal to montane forest and shrubland. Often a conspicuous component of the understorey of lowland Podocarp riparian forest but also a frequent component of grey scrub. Unless flowering or fruiting, Neomyrtus is often overlooked or mistaken for the superficially similar Lophomyrtus obcordata with which it often grows.
Ourisia modesta	creeping foxglove	palustrine riverine	Beech forest alongside *river*s, usually in seepages or on poorly drained terraces amongst leaf litter or in muddy hollows. Sometimes associated with stream and *river* banks, or in flushes within subalpine scrub.
Pittosporum obcordatum	heart-leaved kohuhu	riverine	Primarily eastern lowland alluvial forest, favouring sites prone to summer drought being otherwise waterlogged, and frost-prone during winter.
Puccinellia raroflorens	saltgrass	estuarine	Inland salt pans, salt slicks, and coastal salt encrusted sand depressions.

Scientific name	Common name(s)	Habitat	
		Hydrosystem	**Habitat descriptions**
		inland saline	Has also been collected from near barren, stony ground within an estuary.
Ranunculus brevis		lacustrine palustrine riverine	Montane to subalpine (300-1200 m above sea level). Usually in shallow muddy, sparsely vegetated pools, or in swamps, *river*, tarn or *lake* margins. Never common.
Ranunculus recens		palustrine	Mainly coastal but also observed in an alpine location. A *species* of turf and peaty soils developed over *freshwater* seepages.
Ranunculus ternatifolius		palustrine	Damp sites in forest, scrub and tussock grassland. Often associated with base-rich rocks and substrates.
Tetrachondra hamiltonii		lacustrine palustrine	Open, compact turf such as those developed along lake and tarn margins, flushes and seepages. Occasionally found in suitably open sites within forest.
Triglochin palustris	marsh arrow grass	lacustrine palustrine riverine	Montane *wetlands*. Found growing along the sides of slow flowing streams, on tarn and *lake* margins and in sphagnum bogs.
Trithuria brevistyla		lacustrine	Shallows of *lakes* (rarely exposed above the *water* in a dry season), between 35-600 m above sea level. Growing in sand, silt and gravel, sometimes almost completely buried in muddy silt. Often part of the aquatic-turf community, particularly with short-growing shallow *water-species* in glacial *lake*s to a depth of 0.3–2 m.
Wurmbea novae-zelandiae		lacustrine palustrine	Lowland to subalpine swamps, tarns *lake* margins and in damp seepages within tussock grasslands.
Bats			
Chalinolobus tuberculatus	long-tailed bat	palustrine riverine	Roost closely to *water bodies* (e.g., *rivers*, *lakes*, *wetlands*), females especially reliant on these productive foraging areas. Extensive reliance for *rivers* and open *water* areas,

Scientific name	Common name(s)	Habitat	
		Hydrosystem	Habitat descriptions
			second only to forest. Preferences for *rivers* and gullies over pasture, farmland, and built-up areas. *Wetlands* noted as important foraging areas.
Birds			
Anas superciliosa	grey duck, pārera,	lacustrine palustrine riverine estuarine	Forested headwater catchments and away from human settlements (where mallards and hybrids occur).
Ardea modesta	white heron, kōtuku,	lacustrine palustrine riverine	Harbours and estuaries, but they also visit *freshwater wetlands* and high country *lakes*.
Botaurus poiciloptilus	Australasian bittern, matuku hūrepo,	lacustrine palustrine estuarine	Sites regularly visited included raupō-fringed *lakes*, spring-fed creeks with cover and areas of rank-grass along paddock/*drain* edges. Bitterns mostly inhabit mineralised and semi-mineralised *wetlands*, although they also foraged in *drains* and *wetland*/farmland edges.
Chlidonias albostriatus	black-fronted tern, tarapirohe, tarapiroe	lacustrine riverine estuarine	Breed only on braided riverbeds. Found on or near braided channels of inland *rivers* and streams, often at high altitudes, and on nearby farmland, either under pasture or *cultivation*. They are less often seen over scrub and tussock. After breeding, birds disperse to coastal areas, roosting in sheltered harbours, estuaries and lagoons, foraging mostly offshore but also on near-coastal farmland.
Egretta sacra sacra	reef heron, matuku moana,	lacustrine estuarine	Rocky shore, and around rock pools and small rivulets of *water* that may carry fish. Estuary mudflats at low tide are important for feeding, and occasionally in the shallow waves on sandy beaches. Rarely seen inland.

Scientific name	Common name(s)	Habitat	
		Hydrosystem	**Habitat descriptions**
Himantopus novaezelandiae	black stilt, kakī,	lacustrine riverine estuarine	Typical breeding *habitat* for black stilts comprises combinations of braided riverbed *habitat* and nearby *wetlands* such as swamps, ponds and shallow edges of *lakes*. Nesting territories are located in areas with abundant food, e.g., a main *river* channel if invertebrates are abundant. Alternatively, more stable side-streams, swamps or ponds may be favoured during or post-flood. Black stilts will leave their territory to feed in other *habitats* at sites that are a kilometre or more away.
Hydroprogne caspia	Caspian tern, taranui,	lacustrine riverine estuarine	Breed mainly on open coastal shell banks and sandspits, and occasionally on braided riverbeds and at inland *lakes*.
Hymenolaimus malacorhynchos	whio, kōwhiowhio (Ngāi Tahu), blue duck, mountain duck, blue mountain duck	riverine	Patchily distributed in refugia found in the forested headwaters of *river*s in catchments along the axial ranges. Occasionally extends down *river* from these refugia into *waters* of modest gradient (50-80 m fall per km) provided riparian forest persists and the *river* runs clean. Principal physical correlates of *habitat* presently occupied include a stable *river* channel, coarse riverbed substrata, high *water* clarity, narrow stream/*river* widths, shallow *river* margins, pool and riffle sequences and forested *river* margins.
Podiceps cristatus australis	Australasian crested grebe, southern crested grebe, great crested grebe, pūteketeke, puteketeke, kamana, kāmana	lacustrine	*Lakes* ranging from small tarns to large glacial *lakes*, particularly in the high country. More recently observed nesting coastally. Forages in a variety of shallow lakes, but require lakes fringed with rushes, sedges, reeds or willows to nest.
Fish			

Scientific name	Common name(s)	Habitat	
		Hydrosystem	Habitat descriptions
Galaxias "Nevis"	Nevis galaxias	riverine	Flowing *water bodies* such as *rivers*, streams, creeks and connected *wetlands*. Often tannin-stained *rivers* and streams with gravel and cobble substrates. Vegetated *riparian margin*s likely important for spawning and feeding.
Galaxias "Pomahaka"	Pomahaka galaxias	riverine	Flowing *water bodies* including headwater streams, seepages and ditches, connected *wetlands*, and *river* mainstems. Vegetated *riparian margins* likely important for spawning and feeding.
Galaxias "southern"	Southern flathead galaxias	riverine	Flowing *water bodies* from small tannin-stained headwater streams to *river* mainstems, connected *wetlands,* and braids of braided *rivers*. Vegetated *riparian margins* likely important for spawning and feeding.
Galaxias "species D"	Clutha flathead galaxias	riverine	Flowing *water bodies* from small tannin-stained headwater streams to *river* mainstems, connected *wetlands*, and braids of braided *rivers*. Vegetated *riparian margins* likely important for spawning and feeding.
Galaxias "Teviot"	Teviot flathead galaxias	riverine	Flowing *water bodies* from small tannin-stained headwater streams to *river* mainstems, connected *wetlands*, and braids of braided *rivers*. Vegetated *riparian margin*s likely important for spawning and feeding.
Galaxias aff. *paucispondylus* "Manuherikia"	Manuhereikia alpine galaxias	riverine	Flowing *water bodies* at high elevations, including the swift *river* mainstems and braids, and backwaters and small, shallow, stable springs and backwaters.
Galaxias aff. *paucispondylus* "Southland"	Southland alpine galaxias	riverine	Flowing *water bodies* at high elevations, including the swift *river* mainstems and braids, and backwaters and small, shallow, stable springs and backwaters.
Galaxias anomalus	Central Otago roundhead galaxias	riverine	Low gradient flowing *water bodies* including *wetlands*, weedy *drains*, swift streams, *river* mainstems and braided *river* braids. Vegetated *riparian margins* likely important for spawning and feeding.
Galaxias cobitinis	lowland longjaw galaxias	riverine	Flowing *water bodies* including *river* mainstems, braided *river* braids, and spring-fed streams.

Scientific name	Common name(s)	Habitat	
		Hydrosystem	**Habitat descriptions**
			Adults found more commonly in riffles and runs, juveniles require pools and backwaters. Cool upwellings are important, especially for spawning and larval rearing. Adults burrow into the hyporheic zone of subterranean *river* gravels beneath braided *rivers*.
Galaxias depressiceps	Taieri flathead galaxias	riverine	Flowing *water bodies* ranging from headwaters to *river* mainstems. Vegetated *riparian margins* likely important for spawning and feeding.
Galaxias eldoni	Eldon's galaxias	riverine	Flowing *water bodies* including high- to low- gradient headwater streams, small *wetland* pools, and *river* mainstems. Vegetated *riparian margins* likely important for spawning and feeding.
Galaxias gollumoides	Gollum galaxias	riverine	Flowing *water bodies* ranging from small headwater streams, ponds, lowland *wetlands*, and *river* mainstems. Vegetated *riparian margins* likely important for spawning and feeding.
Galaxias pullus	dusky galaxias	riverine	Flowing *water bodies* including high- to low- gradient headwater streams and *river* mainstems. Vegetated *riparian margins* important for spawning and feeding.
Geotria australis	kanakana, lamprey	riverine estuarine	Spawn amongst large boulder substrates. Juvenile *habitat* in backwaters, pools and runs, buried in sand. Adults utilise a variety of *habitats* including streams, *rivers*, braided *rivers* and lagoons during upstream migration, preferring overhanging riparian vegetation.
Neochanna burrowsius	Canterbury mudfish	palustrine riverine	Ponds, *wetlands*, small streams, *water* races, *drains*, springs, creeks. Floods assist with movements between *water bodies*. Able to aestivate in pockets of mud, damp earth, and detritus in the same manner as other *Neochanna species*, even where dry for over a month.
Invertebrates			
Edpercivalia tahatika	caddisfly	lacustrine	Most common in stony streams, particularly in mountainous areas.

Scientific name	Common name(s)	Habitat	
		Hydrosystem	Habitat descriptions
Eulimnadia marplesi	clam shrimp		Temporary ponds and ephemeral *wetlands.*
Kiwisaldula laelaps	shore bug	riverine estuarine	Subalpine, collected at 1300m above sea level. Inland. Tussock grasslands.
Maoricrambus oncobolus	moth		Riverside grasslands and braided riverbeds.
Nesoperla patricki	stonefly	palustrine	*Freshwater* larvae, terrestrial adults. Adults have been swept from copper tussock in addition to being found deep in these large tussocks where they live amongst the stems and leaf litter.
Oeconesus angustus	caddisfly	riverine	*Oeconesus* larvae are most common in bush-covered streams.
Olinga fumosa	caddisfly	riverine	Small bouldery streams at ca. 300 m above sea level, open or in forest.
Pseudoeconesus n. sp. T	caddisfly	palustrine riverine	Most common in bush-covered streams.
Pseudoeconesus paludis	caddisfly	palustrine riverine	Seepages covered with abundant vegetation and little surface water. On Whawha-raupō/Swampy Summit, an Epilobium *species* often covers the only known site within dense shrubland/grassland. The Otago Peninsula site consists of steep seepages filled with volcanic rock and containing *Carex appressa*, often within exotic pasture. Altitude range 15 to 700 m above sea level.
Taraperla johnsi	stonefly	palustrine riverine	Two nymphs have been found under rocks on a stream flood plain that had very little running *water* on Mount Maungatua/Mauka Atua near Dunedin at 860 m above sea level. Adults have been located in the headwaters of stream catchments in copper tussock/hebe/grassland/shrubland at 800-840 m above sea level.
Vesicaperla trilinea	stonefly	riverine	Nymphs live in *Celmisia* plants.

Scientific name	Common name(s)	Habitat	
		Hydrosystem	Habitat descriptions
Zelandobius crawfordi	stonefly	riverine	*Zelandobius* nymphs can be found in a wide range of stony streams and *rivers.*
Zelandobius edwardsi	stonefly	riverine	*Zelandobius* nymphs can be found in a wide range of stony streams and *rivers.*
Zelandobius mariae	stonefly	riverine	*Zelandobius* nymphs can be found in a wide range of stony streams and *rivers.*

APP7 – Sports fish as desired fish species or undesirable fish species

Part 1: Sports fish in Otago identified as undesirable species in all *rivers* and *receiving environments*

Table 13: Sports fish identified in rivers and receiving environments in Otago's FMUs

Family	Common name	Scientific name
Cyprinidae	tench	*Tinca tinca*
Percidae	perch	*Perca fluviatilis*
Salmonidae	brook char	*Salvelinus fontinalis*
Salmonidae	brown trout	*Salmo trutta*
Salmonidae	Chinook salmon	*Oncorhynchus tshawytscha*
Salmonidae	rainbow trout	*Oncorhynchus mykiss*

Sports fish in Otago (Table 13) were identified by filtering a cleaned version of observation records in the New Zealand Freshwater Fish Database for *species* that are defined as *sports fish* in the Freshwater Fisheries Regulations 1983, and then spatially intersecting these observations records with the FMUs of Otago (PORPS 2021).

Part 2: Sports fish in Otago identified as desired in particular rivers and receiving environments [Placeholder]

The following *sports fish* are *desired fish species* in the following *rivers* and *receiving environments*, or parts thereof:

[Place holder for list]

Part 3: Process for further identification of sports fish as desired in particular rivers and receiving environments, or parts thereof

(1) To achieve *freshwater* visions, and *environmental outcomes* associated with *indigenous biodiversity* (including taoka and *threatened species*) and *sports fish* (including trout and salmon), and their respective *habitats*, the Otago Regional Council will engage in partnership with Kāi Tahu and in collaboration with the Department of Conservation and Fish and Game Council for the relevant areas to identify the *rivers* and *receiving environments*, or parts thereof, where *sports fish* (in Table 13 above) are desired *fish species*, or are *undesirable fish species*. To give certainty, it is recommended that this process is initiated as soon as practicable and the outputs are reviewed within an appropriate time frame (e.g., five years).

(2) *Sports fish* identified as *desired fish species* in particular *rivers* and *receiving environments*, or parts thereof, through engagement in Part 3(1), are to be included in the list in Part 2 (above).

APP8 – Mana whenua environmental indicators

APP8 describes indicators of healthy mauri in water bodies and related ecosystems. It works in conjunction with the following parts of the plan:

- the *Environmental management perspectives and values of Kāi Tahu* section in the MW – Mana whenua chapter, and
- the *environmental outcomes* for *Māori freshwater values* in FMU1 – Clutha Matau-au FMU, FMU2 – Taiari FMU, FMU3 – North Otago FMU, FMU4 – Dunedin & Coast FMU, and FMU5 – Catlins FMU, and
- IP-P2 – Rakatirataka and *kaitiakitaka*,

to help plan users understand what is needed to achieve IP-P3 – Kā honoka ki te wai and IO-O2 – Relationship of Kāi Tahu to freshwater, and to provide guidance for assessing the effects of activities on mauri. The expectation is not that every activity will implement all of the indicators, but that they will make a positive contribution towards achieving them. The indicators apply to all types of water bodies.

Part 1 – Access

The *environment* of the *water* body and *riparian margin* enables safe access for Kāi Tahu whānui to maintain their cultural connection, including for *mahika kai* practices, to exercise *kaitiakitaka* and to monitor the health of the wai.

Part 2 – Water Quality

(1) *Water* quality at all points is unaffected by *contaminants* that would not naturally occur at those places, including:

  (a) there is an absence of sediment, woody debris and algae beyond what would naturally occur;

  (b) levels of introduced nutrients are reduced;

  (c) there are no direct *contaminant discharges*.

(2) *Water* in the *lakes* and *rivers* is drinkable.

(3) *Water* quality supports *habitat* needs for all naturally occurring *indigenous species*.

(4) *Water* quality supports the health of *species* used for kai or cultural materials, and the safe consumption of harvested food – *mahika kai* is healthy and safe to eat.

Part 3 – Flow/level

(1) The seasonal cycle of flows, and the change in flow along the length of the *river* system reflects the natural pattern that would have occurred before the catchment was modified.

(2) *Lake* levels reflect the *natural range* and seasonal variability.

(3) Flow connectivity is maintained, including connections between *wetlands*, springs, tributaries and the *main stem* of the *river*, connections to the sea, and connections between surface *water* and *groundwater*.

(4) Flows are sufficient to:

(a) support healthy and thriving populations of taoka *species* and *mahika kai*;

(b) enable *indigenous fish species* to move freely along the river.

(c) keep riparian vegetation watered;

(d) support sediment transport and achievement of *environmental outcomes* ;

(e) ensure *resilience* to adverse conditions, including *climate change*.

(5) Flows/ levels provide for the range of *habitat* conditions needed to support taoka *species* and *mahika kai* and (pools, riffles, braids etc.) and the biota that provide their food.

(6) *Water* yielded, including flows produced, in the catchment are retained in the catchment.

(7) All remaining natural springs are protected.

Part 4 – River morphology

(1) Flow connectivity is maintained and there are no further barriers to flow and upstream or downstream passage for *indigenous* fish.

(2) *Water bodies* are able to follow their natural path, whether this is via surface *water*, *groundwater*, or overland flow paths. They have the room to move to adapt to the *effects* of *climate change*.

(3) *Rivers* are allowed to function naturally with increased presence of sinuosity, braids and pools in waterways where this has been disturbed or destroyed by human influence. Natural ecosystems must be able to have healthy function.

(4) *Wetlands* and estuaries are able to function naturally, and constraints on natural processes from the presence of *structures* are reduced.

(5) *Riparian margins* are restored to protect the integrity of the *water body*.

Part 5 – Ecosystem integrity

(1) Ecosystems are healthy and functioning throughout the catchment ki uta ki tai.

(2) Healthy ecosystems throughout the catchment support flourishing shellfish beds and patiki (flatfish) populations in estuaries and *coastal waters*

(3) Mauri of *waters* are restored, returning life and vitality to *river* mouths and estuaries and ensuring the ecosystems they support are resilient to adverse conditions.

(4) *Wetland* diversity and integrity is restored.

(5) *Habitats* for all life stages of *water* birds/ waders are thriving, including for nesting, foraging, and roosting.

(6) *Indigenous biodiversity* and *habitat* extent is increased

(7) Invertebrate communities are abundant and diverse and provide a flow of energy to higher order *species*.

(8) *Wetland* and estuarine *habitats*, including inaka spawning areas, have space to migrate to adapt to *climate change*.

Part 6 – Indigenous vegetation

(1) Healthy *indigenous* riparian vegetation is maintained or restored.

(2) *Indigenous* riparian vegetation corridors are intact and robust. Vegetation corridors are connected between *river*s, tributaries and *wetlands*.

(3) Tussock and *wetlands* in upper catchments are protected from any further loss in extent, *values* and *ecosystem services*, and ensure optimal catchment yield and flow retention to feed the *rivers*.

(4) *Indigenous vegetation* throughout the catchment is allowed to flourish without the pressure of grazing.

(5) Vegetation in lowland *wetlands* and estuaries that is important for kohanga/spawning *habitat* is protected and restored.

Part 7 – Species populations

(1) Populations of taoka and *mahika kai species* are self-sustaining, with all life stages that would naturally be present represented.

(2) Populations of *mahika kai species* are abundant enough to support cultural take.

(3) Kohanga/spawning sites are protected from human pressures.

(4) *Indigenous* migratory *fish species* passage is provided enabling those *species* to move through the catchment independently both upstream and downstream and between *river* and sea.

(5) Areas free from exotic *fish species* are maintained and extended.

(6) *Habitat* conditions support restoration of populations of kanakana and other taoka *species*.

APP9 – Consent reviews and catchment expiry dates

Part 1 – Consent reviews to implement minimum flows

(1) Table 14 to Table 20 below set out the *rivers* where:

(a) resource consent will be reviewed under Section 128 (1)(b)(I) of the Resource Management Act 1991 to comply with *minimum flows* specified in SCHED3 – Rivers: A Block environmental flows, levels and take limits; and

(b) the dates by which these reviews must be commenced.

(2) In the *rivers* specified in Table 14 to Table 20, all resource consents to take *water* that expire past the *relevant* consent review date will be reviewed for the purpose of applying:

(a) the *minimum flows* specified in SCHED3 – Rivers: A Block environmental flows, levels and take limits; and

(b) any other conditions necessary to ensure compliance with SCHED3 – Rivers: A Block environmental flows, levels and take limits.

Part 2 – Common catchment expiry dates

(1) Table 14 to Table 20 below set out the catchment expiry date for *specified river*s. For relevant *rivers*, the duration of any resource consent granted under this plan to take and use *water* from these *rivers* must not exceed the specified catchment expiry date listed in the tables below.

(2) Where applicable, any resource consent to take and use *water* granted on or after the catchment's expiry date will be subject to the *take limits* and *minimum flows* set in SCHED3 – Rivers: A Block environmental flows, levels and take limits.

Clutha Mata-au FMU

Table 14: Dunstan rohe – expiry dates

River	Consent review date	Catchment expiry date
Arrow River	2030	n/a
Cardrona River/Ōrau	2030	n/a
Low Burn	2029	2038
Luggate Creek	2035	2045
Park Burn	2035	n/a

Table 1515: Roxburgh rohe – expiry dates

River	Consent review date	Catchment expiry date
Benger Burn	n/a	2039
Coal Creek 2	2029	n/a
Fraser River	2041	2041

Teviot River	2032	2041

Table 16: Lower Clutha rohe – expiry dates

River	Consent review date	Catchment expiry date
Poumāhaka River - Waipahī	2040	2039

Table 16: Manuherekia rohe – expiry dates

River	Consent review date	Catchment expiry date
Manuherekia River	2030	n/a

North Otago FMU

Table 17: North Otago FMU – expiry dates

River	Consent review date	Catchment expiry date
Kākaunui River (including all tributaries except Island Stream and Waiareka)	2029	2039
Island stream	2035	2045
Waiareka	2033	2039

Dunedin and Coast FMU

Table 18: Dunedin and Coast FMU – expiry dates

River	Consent review date	Catchment expiry date
Waikōuaiti River	2040	2040

Taiari FMU

Table 19: Taiari FMU – expiry dates

River	Consent review date review	Catchment expiry date
Taiari River		

APP10 – Principles for aquatic offsetting

These principles apply to the use of *aquatic offset*s for the loss of extent or *values* of *natural inland wetland*s and *rivers* ("extent or *values*" below).

(1) **Adherence to *effects management hierarchy*:** An *aquatic offset* is a commitment to redress more than minor residual adverse *effects*, and should be contemplated only after steps to avoid, minimise, and remedy adverse *effects* are demonstrated to have been sequentially exhausted.

(2) **When *aquatic offsetting* is not appropriate:** *Aquatic offsets* are not appropriate in situations where, in terms of conservation outcomes, the extent or *values* cannot be offset to achieve no net loss, and preferably a net gain, in the extent and *values*. Examples of an offset not being appropriate would include where:

  (a) residual adverse *effects* cannot be offset because of the irreplaceability or vulnerability of the extent or *values* affected; or

  (b) *effects* on the extent or *values* are uncertain, unknown, or little understood, but potential *effects* are significantly adverse; or

  (c) there are no technically feasible options by which to secure proposed no net loss and preferably a net gain outcome within an acceptable timeframe.

(3) **No net loss and preferably a net gain:** This is demonstrated by a like-for-like quantitative loss/gain calculation, and is achieved when the extent or *values* gained at the offset site (measured by type, amount and condition) are equivalent to or exceed those being lost at the impact site.

(4) **Additionality:** An *aquatic offset* achieves gains in extent or *values* above and beyond gains that would have occurred in the absence of the offset, such as gains that are additional to any minimisation and remediation undertaken in relation to the adverse *effects* of the activity.

(5) **Leakage:** *Aquatic offset* design and implementation avoids displacing harm to other locations (including harm to existing *biodiversity* at the offset site).

(6) **Long-term outcomes:** An *aquatic offset* is managed to secure outcomes of the activity that last at least as long as the impacts, and preferably in perpetuity. Consideration must be given to long-term issues around funding, location, management and monitoring.

(7) **Landscape context:** An *aquatic offset* action is undertaken where this will result in the best ecological outcome, preferably close to the impact site or within the same ecological district. The action considers the landscape context of both the impact site and the offset site, taking into account interactions between *species*, *habitats* and ecosystems, spatial and hydrological connections, and ecosystem function.

(8) **Time lags:** The delay between loss of extent or *values* at the impact site and the gain or maturity of extent or *values* at the offset site is minimised so that the calculated gains are achieved within the consent period or, as appropriate, a longer period (but not more than 35 years).

(9) **Science and mātauranga Māori:** The design and implementation of an *aquatic offset* is a documented process informed by science where available, and mātauranga Māori at place.

(10) ***Takata whenua* or stakeholder participation:** Opportunity for the effective and early participation of *takata whenua* or stakeholders is demonstrated when planning *aquatic offsets*, including their evaluation, selection, design, implementation, and monitoring.

(11) **Transparency:** The design and implementation of an *aquatic offset*, and communication of its results to the public, is undertaken in a transparent and timely manner.

APP11 – Principles for aquatic compensation

These principles apply to the use of *aquatic compensation* for the loss of extent or *values* of *natural inland wetland*s and *rivers* ("extent or *values*" below).

(1) **Adherence to *effects management hierarchy*:** *Aquatic compensation* is a commitment to redress more than minor residual adverse *effects*, and should be contemplated only after steps to avoid, minimise, remedy, and offset adverse *effects* are demonstrated to have been sequentially exhausted.

(2) **When *aquatic compensation* is not appropriate:** *Aquatic compensation* is not appropriate where, in terms of conservation outcomes, the extent or *values* are not able to be compensated for. Examples of *aquatic compensation* not being appropriate would include where:

  (a) the affected part of the *natural inland wetland* or *river bed*, or its *values*, including *species*, are irreplaceable or vulnerable; or

  (b) *effects* on the extent or *values* are uncertain, unknown, or little understood, but potential *effects* are significantly adverse; or

  (c) there are no technically feasible options by which to secure gains within an acceptable timeframe.

(3) **Scale of *aquatic compensation*:** The extent or *values* to be lost through the activity to which the *aquatic compensation* applies are addressed by positive *effects* that outweigh the adverse *effects*.

(4) **Additionality:** *Aquatic compensation* achieves gains in extent or *values* above and beyond gains that would have occurred in the absence of the compensation, such as gains that are additional to any minimisation and remediation or offsetting undertaken in relation to the adverse *effects* of the activity.

(5) **Leakage:** *Aquatic compensation* design and implementation avoids displacing harm to other locations (including harm to existing *biodiversity* at the compensation site).

(6) **Long-term outcomes:** *Aquatic compensation* is managed to secure outcomes of the activity that last as least as long as the impacts, and preferably in perpetuity. Consideration must be given to long-term issues around funding, location, management, and monitoring.

(7) **Landscape context:** An *aquatic compensation* action is undertaken where this will result in the best ecological outcome, preferably close to the impact site or within the same ecological district. The action considers the landscape context of both the impact site and the compensation site, taking into account interactions between *species*, *habitats* and ecosystems, spatial and hydrological connections, and ecosystem function.

(8) **Time lags:** The delay between loss of extent or *values* at the impact site and the gain or maturity of extent or *values* at the compensation site is minimised so that the calculated gains are achieved within the consent period or, as appropriate, a longer period (but not more than 35 years).

(9) **Trading up:** When trading up forms part of *aquatic compensation*, the proposal demonstrates that the aquatic extent or *values* gained are demonstrably of greater or higher value than those lost. The proposal also shows the *values* lost are not to Threatened or At Risk/Declining species or to *species* considered vulnerable or irreplaceable.

(10) **Financial contribution:** A financial contribution is only considered if it directly funds an intended aquatic gain or benefit that complies with the rest of these principles.

(11) **Science and mātauranga Māori:** The design and implementation of *aquatic compensation* is a documented process informed by science where available, and mātauranga Māori at place.

(12) ***Takata whenua* or stakeholder participation:** Opportunity for the effective and early participation of *takata whenua* or stakeholders is demonstrated when planning *aquatic compensation*, including its evaluation, selection, design, implementation, and monitoring.

(13) **Transparency:** The design and implementation of *aquatic compensation*, and communication of its results to the public, is undertaken in a transparent and timely manner.

APP12 – Background contaminant concentration levels

In the absence of a regional dataset, the use of the 99th percentile of a national background concentration dataset is recommended by the Waste Management Institute New Zealand (WasteMINZ) Technical Guidelines for Disposal to Land, 2023.

Table 20 - The waste acceptance criteria for the basis of cleanfill site material acceptance based on the 99th percentile of the national predicted background concentration dataset (Cavanagh et al., 2023[1]).

Inorganic contaminants	Maximum allowable (mg/kg)
Arsenic	8
Boron	23
Cadmium	0.35
Chromium	68
Copper	39
Lead	21
Nickel	42
Zinc	80

[1] Cavanagh, J., McNeill, S., Roudier, P., Thompson-Morrison, H., Martin, A., Turnbull, R., 2023. Determining background soil concentrations of trace elements across New Zealand. Landcare Research New Zealand Ltd and Hawke's Bay Regional Council. Envirolink Grant: 2321-HBRC267.

Table 21 Cleanfill waste acceptance criteria for organic contaminants sourced from Appendix H of Waste Management Institute New Zealand (WasteMINZ) Technical Guidelines for Disposal to Land, 2023.

Organic contaminants	Maximum allowable (mg/kg)
TPH C7-C9	110
TPH C10-C14	58[a]
Benzene	0.0054[b]
Ethybenzene	1.1[b]
Toulene	1.0[b]
Total Xylene	0.61[b]
Benzo(a)pyrene*	2[c]
Total DDT	0.7[d]

* For benzo(a)pyrene, the equivalent BaP concentration is calculated as the sum of each of the detected concentrations of nine carcinogenic PAHs (benzo(a)anthracene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene and indeno(1,2,3-cd) pyrene), multiplied by their respective potency equivalency factors.

[a] Derived from MfE Guidelines for Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand 1999, revised 2011. Table 4.15 Tier 1 soil acceptance criteria for TPH, residential use, 'all pathways' agricultural use.

[b] Derived from MfE Guidelines for Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand 1999, revised 2011. Table 4.2 Soil acceptance criteria for protection of groundwater quality (clay).

[c] Interim. TBD National soil background to be determined.

[d] USEPA (2006) ecological receptors.

APP13 – Receiving water standards

(1) For *artificial watercourses*, the *discharge* must not have an adverse *effect* that is more than minor, including any of the following *effects*:

(a) the production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or

(b) any conspicuous change in the colour or visual clarity; or

(c) any emission of objectionable odour; or

(d) the rendering of *fresh water* unsuitable for consumption by farm animals; or

(e) any significant adverse *effects* on aquatic life.

(2) For *rivers*, *modified watercourses,* and *lakes,* the receiving *water* standards in Table 23 and Table 24 apply.

Table 22: Receiving water standards that apply irrespective of REC class

Water body	Temperature		pH	Change in sediment cover	Chlorophyll-a	Suitability for consumption
	Increase must not exceed (°C)	Temperature must not exceed (°C)	Change must not exceed (pH unit)			
All *rivers*, *modified watercourses*, and *lakes*	3.0	25.0	+/- 0.5	No increase in the deposition of matter on the *bed* of the *water* body if it has an adverse *effect* on aquatic life.	No undesirable biological growths as a result of any *discharge* of a *contaminant* into the *water*. This standard applies within the mixing zone.	The *discharge* must not cause the *water* to be rendered unsuitable for treatment (equivalent to coagulation, filtration, and disinfection) for human consumption by the presence of *contaminants*.

Table 23: Receiving water standards that apply to rivers, modified watercourses, and lakes based on REC class

Water quality class	Ammoniacal nitrogen	Dissolved reactive phosphorus	Nitrate	Total nitrogen	Total phosphorus	Conductivity	Turbidity	Suspended solids	Visual clarity	Dissolved Oxygen		Toxicants, metals and metalloids (excludes nitrate or ammonia toxicity)	*Escherichia coli*
	Must not exceed (µg/L)	Must not exceed (µg/L)	Must not exceed (µg/L)	Must not exceed (µg/L)	Must not exceed (µg/L)	Must not exceed (µS/cm)	Must not exceed (NTU)	Must not exceed (mg/L)	Percentage change must not exceed[1]	7-day mean minimum[2] must be within (mg/L)	1-day mean minimum[3] must be within (mg/L)	Must not exceed the default guideline value for the level of species protection specified for any toxicant, metal or metalloid in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018.[4]	(E.coli / 100mL)
Cool Dry Hill	6	6	18	103	9	83	0.9	1.6	20	≥7.0 and <8.0	≥5.0 and <7.5	95%	The *discharge* must meet the relevant interim target *attribute* state or target *attribute* state for the 95th percentile for *E.coli* as set out in FMU1 to FMU5
Cool Dry Low- elevation	10	8	265	913	14	116	1.3	2.1	33	≥5.0 and <7.0	≥4.0 and <5.0	80%	
Cool Dry Lake	9	7	40	160	16	101	1.9	2.6	33	≥7.0 and <8.0	≥5.0 and <7.5	80%	
Cool Dry Mountain	7	7	30	144	13	94	2.9	5.1	10	≥8.0	≥7.5	99%	
Cool Wet Hill	6	8	87	238	16	95	2.4	2.6	20	≥7.0 and <8.0	≥5.0 and <7.5	95%	
Cool Wet Low-elevation	9	11	170	272	18	145	2.3	1.8	33	≥5.0 and <7.0	≥4.0 and <5.0	80%	
Cool Wet Lake	7	3	11	104	13	102	1.3	1.6	10	≥8.0	≥7.5	99%	
Cool Wet Mountain	5	4	24	85	17	87	4.6	11.8	10	≥8.0	≥7.5	99%	
Cool Extremely Wet Hill	5	6	54	119	13	87	2.1	4.1	20	≥7.0 and <8.0	≥5.0 and <7.5	95%	
Cool Extremely Wet Low-elevation	8	9	92	179	13	107	2.6	1.7	33	≥5.0 and <7.0	≥4.0 and <5.0	80%	
Cool Extremely Wet Lake	5	4	47	194	10	87	2	4	10	≥8.0	≥7.5	99%	
Cool Extremely Wet Mountain	6	5	48	128	19	98	3.5	4.2	10	≥8.0	≥7.5	99%	

[1] This standard applies within the mixing zone.
[2] The 7-day mean minimum is the mean value of seven consecutive daily minimum values.
[3] The 1-day minimum is the lowest daily minimum across the whole summer period (1 November to 30 April).
[4] Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018). https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/search

APP14 – Drinking water supplies

This appendix identifies the drinking water supplies for which *drinking water protection zones* are established by the LWRP and describes the location of the intake points around which these *drinking water protection zones* are to be delineated.

The term *drinking water protection zone* is defined in the Definitions section of the LWRP (Part 1 – Introduction and general provisions). This definition describes how *drinking water protection zones* are to be delineated.

Table 24 : Drinking water supplies

Supply Name	Supply Population	Source Name	Latitude	Longitude
Dunedin City	112,515	Taieri River Wells	-45.85255247	170.2407314
			-45.85198612	170.241133
			-45.85139404	170.2415873
Dunedin City	112,515	Deep Stream	-45.67048691	169.8990943
Dunedin City	112,515	Cedar Farm Reservoir	-45.67048691	169.8990943
Dunedin City	112,515	Deep Creek	-45.63211665	169.878029
Dunedin City	112,515	Rossville Reservoir	-45.84199964	170.492702
			-45.83126516	170.4957338
			-45.82246092	170.5051275
			-45.8178521	170.5001716
			-45.80997467	170.510808
Dunedin City	112,515	Silverstream (S)	-45.80896627	170.4207586
Queenstown	44,708	Shotover Borefield 10	-45.0052574	168.7633309
Queenstown	44,708	Whakatipu Waimāori/Lake Wakatipu, Kelvin Heights	-45.0311711	168.7081486
			-45.03071901	168.7083348
Queenstown	44,708	Whakatipu Waimāori/Lake Wakatipu, Two Mile	-45.03855914	168.6402406
			-45.03986253	168.640662
Wānaka	26,228	Lake Wānaka, Beacon Pt Intake	-44.66357501	169.144857
		Lake Wānaka, Western Intake	-44.69196589	169.1100705
Cromwell	10,213	Cromwell Bore 2	-45.04012691	169.2189553
		Cromwell Bore 3	-45.03969341	169.218641
Lake Hayes	9,391	Spring No. 1, Slope Hill Road	-44.96671988	168.8083745
		Spring No. 2, Slope Hill Road	-44.96723888	168.808045
Lake Dunstan	9,313	Lake Dunstan Bore 2	-45.17532781	169.308334

Supply Name	Supply Population	Source Name	Latitude	Longitude
		Lake Dunstan Bore 3	-45.17458862	169.3077455
		Lake Dunstan Bore 1	-45.17544048	169.3081994
Arrowtown	7,076	Arrowtown Bore 1	-44.9370862	168.824831
		Arrowtown Bore 2	-44.93705563	168.8289142
		Arrowtown Bore 4	-44.93693	168.82924
		Arrowtown Bore 5	-44.93665843	168.8298682
Hawea	4,115	Hawea Bore 3 (Scotts Beach)	-44.60966623	169.2610184
		Hawea Bore (Scotts Beach)	-44.60974267	169.2614194
		Hawea Bore 4 (Scotts Beach)	-44.60960739	169.260871
		Hawea Bore 2 (Scotts Beach)	-44.60971082	169.2612802
Balclutha	4,002	Clutha River at Balclutha	-46.23602969	169.735086
Arthurs Point	2,872	Bore 1	-44.9855852	168.6695842
		Shotover River Bore 2	-44.98578	168.66853
Milton	2,529	Tokomairiro River, East Branch	-46.09301807	169.9600438
			-46.0924848	169.959284
Jack's Point	1,700	Whakatipu Waimāori/Lake Wakatipu for Jacks Point Bores	-45.08842175	168.7318501
			-45.08886654	168.7331512
			-45.08736957	168.7318777
Waikōuaiti	1,642	Waikōuaiti River	-45.61211539	170.6063964
Waihemo	1,357	Waihemo Bores	-45.47166893	170.7211733
Glenorchy	1,336	Buckler Burn Bore 2	-44.85724437	168.3918207
		Buckler Burn Bore	-44.85716484	168.3920802
Roxburgh	1,153	Roxburgh Bore 1	-45.53125	169.30046
		Roxburgh Bore 2	-45.53102	169.30042
		Roxburgh Bore 3	-45.53055	169.30032
Luggate	1,141	Luggate Bore	-44.7500747	169.2748046
Luggate	1,141	Luggate Bore 3	-44.74996637	169.275898
Ranfurly	1,110	East Eweburn Spring	-44.98052487	170.1277132
Ranfurly	1,110	Eweburn Creek	-45.05041542	170.0805296
Ranfurly	1,110	Ranfurly Irrigation Channel	-45.00675659	170.1066949
North Bruce Rural	1,088	Meggat Burn, Berwick Forest	-45.94477633	169.9637905
Richardson Rural	1,016	Puerua River	-46.32887332	169.6414438
			-46.32818913	169.6460331

Supply Name	Supply Population	Source Name	Latitude	Longitude
			-46.32887332	169.6414438
Richardson Rural	1,016	Clutha River at Whitelea Road	-46.1711	169.6378
Waitāhuna Rural	922	Waitāhuna River	-46.05330297	169.6716769
Clydevale-Poumāhaka Rural	850	Clutha River Bores, Clydevale	-46.1004731	169.532164
			-46.1004731	169.532164
			-46.10027934	169.532008
			-46.10072115	169.5323296
Kaitangata	830	Clutha River, Matau Branch	-46.28848021	169.8450888
Lower Waitaki, Rural	778	Lower Waitaki Bores	-44.99846543	171.0225819
			-44.9980156	171.0225974
Tapanui	760	Whiskey Gully	-45.95555773	169.2899649
Maka Kahikātoa/Outram	750	Outram Well	-45.85262193	170.2409985
		Taieri River Wells	-45.85262193	170.2409985
Pisa Village	743	Pisa Village Bore 1	-44.97326909	169.2414486
Stirling	743	Clutha River at Stirling	-46.25457841	169.7839
			-46.25475266	169.7837
Glenkenich Rural	705	Poumāhaka River, Telegraph Road	-45.86612366	169.1409935
			-45.8659762	169.1403595
		Trib to Poumāhaka	-45.86945861	169.1405948
Moa Flat	534	Timber Creek, Mt. Benger	-45.61508451	169.2480346

APP15 – Accidental discovery protocol

If an unidentified archaeological site is located during works, the following applies:

(1) Work must cease immediately at that place and within 20 m around the site.

(2) The contractor must shut down all machinery, secure the area, and advise the Site Manager.

(3) The Site Manager must secure the site and notify the Heritage New Zealand Regional Archaeologist. Further assessment by an archaeologist may be required.

(4) If the site is of Māori origin, the Site Manager must notify the Heritage New Zealand Regional Archaeologist and the appropriate papatipu rūnaka of the discovery and ensure site access to enable appropriate cultural procedures and tikaka to be undertaken, as long as all statutory requirements under legislation are met (Heritage New Zealand Pouhere Taonga Act, Protected Objects Act).

(5) If human remains (kōiwi) are uncovered the Site Manager must advise the Heritage New Zealand Regional Archaeologist, NZ Police and the appropriate papatipu rūnaka and the above process under 4 must apply. Papatipu rūnaka will lead the management of any kōiwi tangata (human remains of a Māori person) that have been uncovered, in line with the Te Rūnanga o Ngāi Tahu Kōiwi Tangata policy 2019. Remains are not to be moved until such time as papatipu rūnaka and Heritage New Zealand have responded.

(6) Works affecting the archaeological site and any human remains (kōiwi) must not resume until Heritage New Zealand Pouhere Taonga gives written approval for work to continue. Works affecting a site of Māori origin or containing kōiwi tangata must not resume until papatipu rūnaka give written approval for work to continue. Further assessment by an archaeologist may be required.

(7) Where iwi so request, any information recorded as the result of the find such as a description of location and content, is to be provided for their records.

(8) Heritage New Zealand Pouhere Taonga will advise if an archaeological authority under the Heritage New Zealand Pouhere Taonga Act 2014 is required for works to continue.

It is an offence under Section 87 of the Heritage New Zealand Pouhere Taonga Act 2014 to modify or destroy an archaeological site without an authority from Heritage New Zealand irrespective of whether the works are permitted, or consent has been issued under the Resource Management Act.

APP16 – Erosion and sediment control plans

(1) An erosion and sediment control plan is:

(a) prepared by the *landholding* owner or their agent and retained on the *landholding*, identifying the matters set out in (2) below; and

(b) in accordance with best practice erosion and *sediment control measures* that are tailored to the site characteristics and project which are either:

(i) Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region 2016 (Auckland Council Guideline Document GD2016/005); or

(ii) where (a) is not sufficient to manage the *effects* of the activity, any other e*arthworks* and or erosion and sediment control guidelines promoted by local authorities in Otago (including but not limited to ORC's Residential Earthworks in Otago Guidelines and the Queenstown Lakes District Council Guidelines for Environmental Management Plans) or any additional or alternative measures designed for the activity and the particular characteristics of the environment it is occurring within; and

(c) provided to ORC upon request.

(2) The erosion and sediment control plan must contain the following:

(a) a locality plan which includes *slope*, *rivers*, *lakes*, *natural inland wetlands*, *modified watercourses, artificial watercourses*, *coastal water*, vulnerable areas, and *critical source areas*; and

(b) the description of the nature, scale, timing, and duration of activities; and

(c) details of the *receiving environment*; and

(d) detailed drawing of the site indicating site boundaries, roads, existing contours, contributing catchments, any *water bodies* including ephemeral flow paths, *earthworks* extents, the location and type of erosion and sediment control devices, outline of vertical construction or servicing as appropriate, stockpiles, access points, and site laydown; and

(e) justification for erosion and *sediment control measures* and devices to be employed, based upon best practice erosion and sediment control principles. This should include consideration of the contributing catchments and supporting calculations that demonstrate the devices are of appropriate sizes and dimensions to manage the size up to appropriate storm event size; and

(f) maintenance and monitoring procedures; and

(g) management of *discharge* of flocculants and coagulants; and

(h) contingency measures to manage seasonal variability and extreme weather events; and

(i) quality of imported fill; and

(j) the proportion of the site which is exposed; and

(k) staging of works and progressive stabilisation; and

(l) installation sequencing and timing of erosion and sediment control devices to demonstrate that the site undertakes appropriate erosion and sediment control during all tasks and throughout the duration of the project; and

(m) nomination of an appropriate design event size and duration that appropriately manages the risk profile for the project and its *receiving environment*.

APP17 – Assessing the maximum annual take of groundwater

This appendix sets out the method to assess the annual volume of take from an *aquifer*, and to assist in determining the remaining allocation available from an *aquifer*.

Methodology for calculating assessed maximum annual take for groundwater

The assessed maximum annual take of *groundwater* from any *aquifer* for the purposes of EFL-P10(6) will be the sum of:

(1) The annual volume specified on consents to take *groundwater* from that *aquifer*; and

(2) Where a consent does not specify an annual volume, it is calculated using the instantaneous, daily, weekly or monthly *limits* specified as shown below:

(a) Where the purpose of use includes *irrigation*, convert the consent *limit* as follows:

(i) Where a daily or a monthly *limit* is specified:

Consent *Limit*[5]	Purpose of use *irrigation*
Daily	Multiply by 90
Monthly	Multiply by 6

(ii) Where no daily or monthly *limit* is specified:

Consent *Limit*[6]	Purpose of use *irrigation*
Instantaneous (e.g. litres/second or cubic metres/hour)	Convert to a daily volume assuming taking of 12 hours per day, and then multiply by 90.
Weekly	Convert to a monthly volume, by multiplying by 4.3, and then multiplying by 6.

(iii) If a consent specifically restricts taking over different periods, use the quantity and time *limits* specified on the consent.

(b) Where the only purpose of use is frost-fighting, convert any consent *limit* to a 20 day volume.

(c) Except as provided for by (a) and (b), convert the consent *limit* to a 12 month volume.

(3) less any quantity specified in a consent as *non-consumptive*.

(4) The assessed maximum annual take sums only those consents allocated as *groundwater* under EFL-P10(1) and (3).

[5] Where both *limits* are specified, use the *limit* which yields the smaller volume.

[6] Where both *limits* are specified, use the *limit* which yields the smaller volume.

APP18 – Reasonable and efficient water use and conveyance

This appendix outlines the requirements for determining reasonable and efficient use of *water* for listed activities in Otago. For some activities, where specified, information must be provided as part of a *resource consent* application to demonstrate that the use of *water* is both reasonable and efficient.

Part 1 – Animal drinking water

(1) Calculations of peak daily requirements under (2) will be used to determine the maximum rate of take required to service stock *water* demand for milking dairy cows or sheep. Calculations of average daily requirements under (3) will be used to determine monthly and annual volumes.

(2) Peak daily requirements for *water* takes for stock *water* use by milking dairy cows or sheep will be calculated based on the total number of each stock type multiplied by the applicable number in the "Peak demand" column in Table 26.

(3) Average daily requirements for *water* takes for stock *water* use by listed stock types will be calculated based on the total number of each stock type multiplied by the applicable number in the "Average demand" column in Table 26.

(4) If the relevant stock type is not listed in Table 26, reasonable and efficient use of *water* will be calculated in accordance with any best practice or industry guidance in relation to that stock type where they exist.

Table 25: Peak and average daily water use for various stock types

Stock type	Peak demand (litres/head/day)	Average demand (litres/head/day)
Milking dairy cows	100	70
Mature beef cattle, replacement stock and bulls		55
Sheep	9 when lactating	4.5
Deer		12
Working horses		70
Grazing horses		50
Milking goats		10
Dry goats		7
Mature pigs		18
Brood sows		35
Standard pigs		11
Layer and breeder hens		45 per 100 birds
Non-laying hens and chickens		29 per 100 birds
Turkeys		70 per 100 birds

Part 2 – Domestic supply

(1) Reasonable and efficient *water* use for domestic supply will be calculated based on 300 litres per person per day multiplied by the maximum occupancy of the dwellinghouse for design purposes, as set out in Table 27.

Table 26: Efficient water use for domestic supply

Number of bedrooms	Maximum occupancy	Volume (litres/person/day)
1	2	600
2	4	1200
3	5	1500
4	6	2100
5	8	2400
6	9	2700

(2) For the purpose of demonstrating reasonable and efficient *water* use for domestic supply, the following information must be provided with a resource consent application:

(a) a map(s) or aerial or satellite photograph(s) showing:

(i) the boundaries of the property/ies; and

(ii) the location of the dwellinghouse/s; and

(iii) the total area of the garden/s; and

(b) *building* plans for the dwellinghouse; and

(c) an assessment of the required *water* use based on:

(i) the estimated daily, monthly and annual volumes of *water* required based on the calculations under (1) and Table 27; and

(ii) the estimated daily, monthly and annual volumes of *water* required for garden watering based on the calculation under (2); and

(d) if the volume of *water* sought for domestic supply exceeds the volumes calculated under (c)(i) and (c)(ii), justification that the *water* required is reasonable and efficient, including any records of actual *water* use data if available and a description of any *water* saving measures that are employed to minimise *water* use.

Part 3 – Irrigation

Reasonable and efficient rates and volume of water for *irrigation* are to be determined in accordance with the *Guidelines for Reasonable Irrigation Water Requirements in the Otago Region 2017.*

Part 4 – Frost fighting

(1) For the purpose of demonstrating reasonable and efficient *water* use for *frost fighting*, the following information must be provided with a resource consent application:

(a) the location of the activity; and

(b) the type and total area of crop(s) requiring protection from frost events; and

(c) any relevant climatic data or records and future *climate change* projections for the location of the activity; and

(d) the estimated number and severity of frost events per year and the start and end dates of the frost fighting season, based on the information provided under (1)(c); and

(e) the type and design of the existing or proposed *frost fighting infrastructure* or system (e.g., flippers or overhead sprinkler systems); and

(f) the proposed rate of application and the proposed daily and annual volumes of *water* used or to be used for *frost fighting* and an assessment of how this is reasonable and efficient based on the information provided under 1(a) to (e); and

(g) measures to improve efficiency and reduce *water* losses from the take and use of *water* for *frost fighting*; and

(h) an assessment of any alternatives to the use of *water* for *frost fighting.*

Part 5 – Dairy shed supply

(1) Annual requirements for *water* takes for dairy shed use will be calculated based on the total number of cows being milked multiplied by 65 litres per head per day multiplied by the total number of days per year that milking occurs.

Part 6 – Other drinking water supplies

Other *drinking water supplies* may be required for a range of uses including, but not limited to, motel and hotel accommodation, schools, camping grounds, hospitals, restaurants and bars.

(1) Reasonable and efficient use of *water* for other *drinking water supplies* will generally be considered by the Otago Regional Council on a case-by-case basis. However, estimated *water* required for other *drinking water supplies* should be considered in line with the volumes provided in Table 28 below.

Table 27:Efficient water use for other drinking water supplies

Type of drinking water supply		**Volume (litres/person/day)**
Motels / hotels	Guests, resident staff	220
	Reception rooms	30
	Bar trade (per customer)	20
	Restaurant (per diner)	30
Restaurant / bar / cafe	Per dinner patron	30
	Per lunch patron	25
	Per bar patron	20
Community halls	Banqueting	30
	Meetings	15
Marae	Day only visitors	40

Type of drinking water supply		Volume (litres/person/day)
	Day plus overnight visitors	150
Schools	Pupils plus staff	50
Public toilets	Including hand washing	20
Camping grounds	Fully serviced	130
	Recreation areas	65
Care facilities	Rest homes	250
	Hospitals	450
Day staff	High water use e.g., factories	60
	Standard facilities	40
	Facilities with full water reduction fixtures	30

(2) For the purpose of demonstrating reasonable and efficient *water* use for other *drinking water supplies*, an assessment of the estimated volume of *water* required for the activity must be provided with an application for *resource consent* based on:

(a) the type of *drinking water supply*; and

(b) the total number of people supplied per day; and

(c) consideration of the volumes for the type of *drinking water supply* if specified in Table 28; and

(d) if the application relates to the replacement of a current *resource consent,* any records of actual *water* use and whether the volume allocated under the current *resource consent* remains appropriate for the activity to be undertaken.

APP19 – Fish screening

This appendix sets out the criteria that must be considered when designing, operating, and maintaining a *water* intake to provide for the safe passage for fish around, or through, any intake *structure* within or back to the source *water body.*

Part 1 – Rate of take is less than 1 litre per second

Where the rate of take is 1 L/s or less there are no fish screening requirements.

Part 2 – Rate of take is between 1 litre per second and 5 litres per second or temporary take under EFL-R7-PER1

Where the rate of take is between 1 L/s and 5L/s, or for a temporary take of *water* under EFL-R7-PER1 the *water* take pipe must be:

(1) buried a minimum of 150 millimetres beneath the *bed* and perpendicular to *river* flow; and

(2) have a 3 millimetres gauze mesh.

Part 3 – Rates of take greater than 5 litres per second

(1) An applicant must determine whether any *fish species* or communities are present (including the stage of the fish's life-cycle when it passes past the *water* take (i.e. adult, juvenile, larval)) within an 100 metres radius upstream and downstream of the *point of take*, or bypass if relevant, taking into account the best available information and where no information is available undertaking a field survey in accordance with best practice; and

(2) Where there are fish *species* or communities present in the 100 metres radius as assessed in (1) above, the design must include screening that takes into account:

  (a) the factors and criteria relevant to the proposed intake in Table 29; and

  (b) the maximum aperture size in intake *structures* to exclude fish assessed as present by (1) above in Table 30; and

  (c) where multiple fish are identified as present under (1) the smallest maximum aperture size in Table 30 must be part of the design.

Part 4 – Intakes that includes an open channel, water race and/or bypass

(1) In addition to the requirements in part 3, where an intake includes an open channel, water race and/or bypass the following criteria must be considered:

  (a) whether the *water* race, open channel or bypass:

    (i) has permanent flows and, if so, whether there are resident fish or invertebrate communities occupying the *water* race; and

    (ii) transports *water* to a sensitive environment such as the *habitat* of *threatened species*; and

    (iii) provide access for an undesirable *species* listed in APP5; and

  (b) whether the *river* or *lake* is an important spawning *habitat* for a trout or salmon; and

(c) whether a gauze at the pump provides sufficient protection.

(2) Where fish screening is deemed to be necessary for intakes that include an open channel, *water* race and/or bypass, the fish screen must be installed within the *water* race and outside of the *water body*, and a bypass must allow entrained fish to return to the source *water body* from which the *water* was taken. Any bypass must be designed to be *non-consumptive,* unless this is not practicable.

Table 28: Fish screen design

Factor	Criteria	Description
Intake location		The *water* intake is located to minimise exposure of fish to the screen and minimises the length of stream channel affected while providing the best possible conditions for the other criteria.
Approach velocity (through screen velocity)	$<0.12 ms^{-1}$	The *water* velocity through the fish screen is slow enough to allow fish to escape entrainment or impingement
Sweep velocity	≥5 x approach velocity	The *water* velocity past the fish screen is sufficient to sweep fish past the intake promptly and into the bypass.
Fish bypass at water intake		A suitable bypass (where needed) is provided so that fish are taken away from the intake and back into the active waterway.
Fish bypass design for connectivity		There is connectivity between any constructed bypass and somewhere safe, usually, the mainstem of the *water body*.
Gap openings in intake structure	• 1.5 mm slot width in lower catchment or other important larval areas • 2 mm slot width upstream of tidal areas • ≤ 3 mm slot width for all other areas	Screening material and other joins/edges have openings small enough to exclude fish, and a smooth surface to prevent any damage to fish.
Operations and *maintenance*		The *water* intake needs be kept operating to a consistent standard with appropriate operation and *maintenance*.

Factor	Criteria	Description
Upstream fish passage		EITHER the *water* intake and fish screen does not impede upstream passage of migratory fish *species* during all flows and does not increase the risk of predation OR the bypass outlet impedes fish passage into the bypass and keeps fish in the natural *water body* but fish moving downstream through the bypass are not harmed while returning to the waterway

Table 29 : Recommended maximum aperture size in intake structures to exclude fish from freshwater intakes

Species	Common Name	Life Stage	Mesh Size (mm)	Wedge wire (mm)
Anguilla dieffenbachii	Longfin eel	Glass eel	1.5	<1.5
		Elver	3	< 2
Anguilla australis	Shortfin eel	Adult	3	-
Galaxias maculatus	Inanga	Whitebait	3	1.5
		Adult	3	-
Galaxias fasciatus	Banded kōkopu	Whitebait	3	1.5
		Adult	3	-
Galaxias argenteus	Giant kōkopu	Whitebait	3	1.5
		Adult	3	-
Galaxias brevipinnis	Kōaro	Whitebait	3	1.5
		Adult	3	-
Gobiomorphus cotidianus	Common bully	Juvenile	3	3
		Adult	3	-
Gobiomorphus hubbsi	Bluegill bully	Juvenile	3	3
		Adult	3	-
Cheimarrichthys fosteri	Torrentfish	Juvenile	3	-
		Adult	3	-
Geotria australis	Lamprey	Ammocoete	1.5	-
				-
Multiple lineages	Non-diadromous galaxiids	Juvenile	2	3
		Adult	3	-
Salmo trutta	Brown trout	Fry	3	-
Oncorhynchus mykiss	Rainbow trout	Fry	3	-

APP20 – Methodology for determining actual use of a water permit

This appendix outlines the methodologies for calculating the assessed actual use of *water* for any *water* takes authorised by a resource consent.

Each of these steps apply to any resource consent application to take and use water, except for Part 1 (5)(a)-(g), and Part 2 (5)(a)-(h), which do not apply to applications for the take and use of *water* for *community water supply*.

Part 1 – Methodology for calculating the maximum instantaneous rate of take (L/s)

The maximum instantaneous rate of take must be determined by calculating the maximum rate of *water* taken in the 10 complete water years (1 July to 30 June) preceding the lodgement of the consent application, using the following methodology.

(1) *Water* meters record rate of take over different time intervals.

  (a) Where a *water* meter records a volume of *water* taken over a fixed time interval which is less than or equal to an hour, the rate of take will be determined by first calculating the hourly volume and then converting this to a L/s rate.

  (b) Where a *water* meter records the volume of *water* taken over an interval of time greater than an hour, the hourly rate of take will be calculated and used as the base data set.

(2) Any measurement that is at or below 0 L/s will be removed.

(3) Any measurement that exceeds the Authorised (Consented) Rate of Take and represents actual taking is adjusted down to the Authorised Rate of Take.

(4) Any measurement which represents a clear system failure or data error will be removed.

(5) If any measurement (including those from Part 1(3) but excluding Part 1(4)) deviates from the general pattern of taking, it must be adjusted down to the maximum of the typical data record across the full data record. The methodology for undertaking this step is set out below:

  (a) Order the rate of take data by size (descending order).

  (b) Determine D, where D is the number of complete *water* years covered by the record being considered.

  (c) Calculate N (where N is the number of measurements) = 18 + (3 × D).

  (d) Find the highest value.

  (e) Calculate the number of other data values which are within the margin of error of that value.

  (f) Repeat steps (d) and (e) until the first value which has N data values within the margin of error (+ and -) of that value is found.

  (g) This number is the maximum typical rate of take.

  The margin of error to be applied to any calculation in Part 1(5)(e) and (5)(f) will be either ±5% for piped takes or ±10% for water taken by any other method, including by any open channel or a partially full pipe.

(6) The maximum instantaneous rate of take will be determined as the maximum value after Part 1(1)-(5) has been completed.

Part 2 – Methodology for calculating the maximum daily volume (m^3)

The maximum daily volume must be determined by calculating the maximum daily volume taken in the 10 complete *water* years (1 July to 30 June) preceding the lodgement of the consent application, using the following methodology.

(1) Where a resource consent being replaced does not include a 'maximum daily volume', the Authorised Daily Volume will be calculated based on the following formula:

Authorised Daily Volume m^3 = ((Consented Rate of Take L/s) x 86,400)/1,000)

Where a consent or permit does not specify a rate of take in L/s the Consented Rate of take will be determined by dividing the volume specified on the permit over the shortest duration by the timeframe over which that volume can be taken.

(2) Any measurement that is at or below 0 m^3 will be removed.

(3) Any measurement which represents a clear system failure or data error will be removed.

(4) On any day where the Actual Daily Volume exceeds the Authorised Daily Volume, the Actual Daily Volume is adjusted down to the Authorised Daily Volume.

(5) If any measurement (including those from Part 2(4)) deviates from the general pattern of taking, it must be adjusted down to the maximum of the typical data record across the full data record. The methodology is set out below:

(a) Order the daily volume data by size (descending order).

(b) Determine D, where D is the number of complete *water* years covered by the record being considered.

(c) Calculate N (where N is the number of measurements) = 1+(2xD).

(d) Find the highest value.

(e) Calculate the number of other data values which are within the margin of error of that value.

(f) Repeat steps (d) and (e) until the first data value which has N data values within the margin of error (+ and -) of that point is found.

(g) This number is the maximum typical daily volume.

(h) Adjust any daily volumes above the maximum typical daily volume, down to the maximum typical daily volume.

The margin of error to be applied to any calculation in Part 2(5)(e) and (5)(f) will be either ±5% for piped takes or ±10% for water taken by any other method, including by any open channel or a partially full pipe.

(6) The maximum daily volume will be determined as the maximum value after Part 2(1)-(5) has been completed.

Part 3 – Methodology for calculating the maximum monthly volume (m^3)

The maximum monthly volume must be determined by calculating the maximum monthly volume taken in the 10 complete *water* years (1 July to 30 June) preceding the lodgement of the consent application, using the following methodology.

(1) Where a resource consent being replaced does not include a 'maximum monthly volume' the Authorised Monthly Volume will be calculated based on the following formula:

Authorised Monthly Volume m^3 = Authorised Daily Volume (as determined under Step (1) in the methodology in Part.2) x 31

(2) Actual Monthly Volumes will be calculated based on the sum of the daily volumes taken in each calendar month. For the purposes of this calculation daily volumes will be determined using the methodology in Part 2 (2)-(5).

(3) In any month where the Actual Monthly Volume taken exceeds the Authorised Monthly Volume, the Actual Monthly Volume is adjusted down to the Authorised Monthly Volume.

(4) The maximum monthly volume will be determined as the maximum value after Part 3 (1)-(3) has been completed.

Part 4 – Methodology for calculating the maximum annual volume (m^3)

The maximum annual volume must be determined by calculating the maximum annual volume taken in the 10 complete *water* years (1 July to 30 June) preceding the lodgement of the consent application, using the following methodology.

(1) Where a resource consent being replaced does not include an 'maximum annual volume' the Authorised Annual Volume will be calculated based on one of the following formulae. The formula used will be whichever one produces the lower calculated Authorised Annual Volume.

Authorised Annual Volume (m^3) = Authorised Daily Volume (as determined in accordance with Part 1(1)) x 365

Authorised Annual Volume (m^3) = (Authorised Monthly Volume as determined in accordance with Part 3(2)) x (Months where water can be taken)

Where the resource consent being replaced specifies the months during which water can be taken, a count of those months will be used. Where the consent or permit being replaced does not specify the months during which water can be used the number used will be 12.

(2) Actual Annual Volumes will be calculated based on the sum of the daily volumes taken in each *water* year. For the purposes of this calculation daily volumes will be determined using the methodology in Part 2 (2)-(5).

(3) In any year where the Actual Annual Volume taken exceeds the Authorised Annual Volume, the Actual Annual Volume is adjusted down to the Authorised Annual Volume.

(4) The maximum annual volume will be determined as the maximum value after Part 4 (1)-(3) has been completed.

Part 5 – Consideration of significant changes in the data

Where the maximum instantaneous rate of take, maximum daily volume, maximum monthly volume or maximum annual volume determined for any complete *water* year deviates from the normal pattern of use, the assessments undertaken in accordance with Parts 1-4 must be supported with some explanation of the deviation, including where any deviations have been adjusted.

APP21 – Determining the surface water depletion effect of a groundwater take

This appendix sets out the methodology for calculating the surface *water* depletion *effects* of *groundwater* takes and how those *effects* will be managed.

Part 1 – Determination of stream depletion effects

The surface *water* depletion *effects* resulting from a *groundwater* take will be calculated in accordance with the following:

(1) The assessment of the magnitude of surface water depletion will be undertaken using relevant analytical or numerical assessment techniques suitable for the hydrogeological setting in which the *groundwater* take will occur.

(2) The surface *water* depletion assessment will be supported by a conceptual hydrogeological model that describes the nature of local *groundwater*/surface *water* interaction.

(3) The surface *water* depletion assessment will use representative and relevant hydrogeological properties that are derived from relevant scientific literature and/or *aquifer testing* undertaken in accordance with APP26.

(4) *Surface water bodies* characterised as ephemeral will be excluded from consideration of surface *water* depletion *effects*.

(5) Assessment of surface water depletion *effects* on *water bodie*s classified as "intermittent" will consider the potential *effects* on the frequency, duration and extent of flow loss in the intermittent reach. Assessment of volumetric surface *water* depletion will be undertaken at the closest point of permanent flow.

(6) The *effects* of *groundwater* takes on *wetlands* will be assessed with regard to the potential impacts on *wetland* hydrology, and whether this will resulting (directly or indirectly) in the loss of extent or *values* of a *natural inland wetland*.

(7) Assessment of surface *water* depletion will be undertaken on all surface *water bodies* within a 2 kilometre radius of the *groundwater* take. Surface *water* depletion *effects* will be managed based on the calculated depletion in each *water body* in a manner consistent with the local hydrogeological setting.

(8) *Non-consumptive groundwater takes* will be excluded from consideration of surface *water* depletion *effects*.

(9) *Groundwater* takes located within the geographic extent of alluvial ribbon *aquifers* in Part 2 – Alluvial ribbon aquifers of SCHED6 – Groundwater: Take limits will be classified as having a direct surface *water* depletion *effect* on the relevant surface *water bodies*.

(10) The assessment of surface *water* depletion *effects* distinguishes between *effects* arising from takes active on a seasonal basis (e.g., for *irrigation*) that operate for less than 180 days per year (i.e. seasonal takes) and those that operate on a continuous basis (i.e., where the *groundwater* take may occur up to 365 days of the year) as follows:

    (a) Surface *water* depletion modelling for seasonal takes will be undertaken using the following scenarios:

(i) Maximum rate: continuous pumping at the maximum instantaneous rate of take for the period required to fully utilise the monthly volume; and

(ii) Average rate: continuous pumping at the seasonal average rate for a period of 150-days; and

(b) Surface *water* depletion modelling for continuous takes will be undertaken using the following scenarios:

(i) Maximum rate: continuous pumping at the maximum instantaneous rate of take for the period required to fully utilise the monthly volume; and

(ii) Average rate: continuous pumping at the continuous average rate for a period of 150-days; and

(c) The maximum instantaneous rate of take is equal to the lesser of the maximum rate of take specified by resource consent conditions or the maximum daily volume divided by 86.4; and

(d) The average rate of take will be calculated as follows:

(i) Seasonal Takes: the proposed seasonal volume (in m^3) divided by 150 days; and

(ii) Continuous takes: the proposed monthly volume (in m^3) divided by 30 days;

(11) The modelled surface *water* depletion *effect* will be classified based on the categories shown in Table 31. *Water* allocation will be assigned based on the depletion category and the allocation proportions provided in Table 32 and as follows:

(a) For seasonal takes:

(i) Surface *water* allocation is the percentage of the average seasonal rate (in L/s) that is allocated as surface *water* in Table 33 based on the modelled depletion

(ii) *Groundwater* allocation is the proportion of the seasonal volume (in m^3/year) that is allocated as *groundwater* in Table 33 based on the modelled depletion.

(b) For continuous takes:

(i) Surface *water* allocation is the proportion of the average monthly pumping rate (L/s) allocated as surface *water* in Table 33 based on the modelled depletion

(ii) *Groundwater* allocation is the proportion of the seasonal volume (in m^3/year) allocated as *groundwater* in Table 33 based on the modelled depletion plus the volume of *groundwater* pumping outside the 150-day assessment period

(c) *Groundwater* allocation for b(ii) is calculated as follows: ((seasonal volume [i] X *Groundwater* proportion of the seasonal volume [ii]) + (*groundwater* volume outside the season [iii])); where

(i) The seasonal volume is the average monthly volume (i.e. the monthly volume divided by 30 days, in m^3/day) times 150 days; and

(ii) The *groundwater* portion of the seasonal volume is the proportion of the seasonal volume allocated as *groundwater* in Table 33 based on the modelled depletion; and

(iii) *Groundwater* volume outside the season is the total proposed volume (m^3) minus the seasonal volume (m^3);

(12) Surface *water* depletion thresholds below which surface *water* depletion is classified as Low are based on the size of the surface *water body*. *Groundwater* takes with a calculated depletion rate below the rates specified in Table 33 are to be classified as Low. Takes with rates at or below 1 L/s are exempt from the assessment.

Table 30: Surface water depletion thresholds below which surface water depletion is classified as Low

Water body	7Day-MALF (L/s)	Rate (L/s)
River	>50	1
	50 - 250	2
	>250	5

Table 31: Surface water depletion classification

Hydraulic Connection	**Classification**	**Management Approach**		
		Surface water allocation	***Groundwater* allocation**	**Subject to *minimum flow* restrictions?**
Direct	The take is located within the geographic boundary of an alluvial ribbon *aquifer* in Part 2 – Alluvial ribbon aquifers of SCHED6 – Groundwater – Take limits; or The modelled surface *water* depletion *effect* after pumping at the maximum rate scenario is greater than or equal to 90 percent of the maximum rate of take	Max. Rate of take (in L/s)	0%	Yes
High	The modelled surface *water* depletion is: (a) Less than 90 percent of the maximum rate of take after pumping at the max. rate scenario; and (b) Between 60 and 90 percent of the average pumping rate; and (c) Exceeding the thresholds provided in Table 31.	Calculated depletion based on take duration (L/s)	Based on Table 31	Yes
Moderate	The modelled surface *water* depletion is: (a) Less than 90 percent of the rate of take after pumping at the max. rate scenario; and (b) Greater than 30 and less than 60 percent of the average pumping rate; and (a) Exceeding the thresholds provided in Table 31 and (b) Is greater than 5 L/s	Calculated depletion based on take duration (L/s)	Based on Table 31	No
Low	Where the *groundwater* take is not classified as having a direct, high, or moderate hydraulic connection.	0%	100%	No

Table 32: Groundwater/surface water alloction framework based on the proportion of surface water depletion

Hydraulic Connection (SW depletion as % of the assessed pumping rate)	Category	% allocated as surface water	% allocated as groundwater
100 – 90	Direct	100	0
80 – 89	High	90	10
70 – 79	High	75	25
60 – 69	High	60	40
50 – 59	Moderate	45	55
40 – 49	Moderate	30	70
30 – 39	Moderate	15	85
<30	Low	0	100

APP22 – Scheme management plan

A Scheme Management Plan in accordance with EFL-P20 must include the following matters:

(1) a description of all catchments within the *irrigation scheme* command area, including:

  (a) topography and climate; and

  (b) geotechnical and soil conditions; and

  (c) the location of any *water bodies*; and

  (d) any sites of cultural significance; and

(2) a comprehensive description of where and how the *irrigation scheme* operates including:

  (a) the locations and sources of all *water* takes and *discharge* points; and

  (b) the extent of the scheme command area and area where *water* is used; and

  (c) the systems to convey, store and deliver *water* across the command area; and

  (d) how *water* is allocated to scheme users and how this is managed by the scheme, including how the allocation of *water* will take into account reasonable and efficient use of *water*; and

  (e) measuring and monitoring requirements for *water* users within the scheme; and

  (f) any requirements imposed on scheme users in relation to the take and use of scheme *water*, in combination with other sources of *water*.

(3) identification of any relevant objectives the *irrigation scheme* is to be managed in accordance with.

APP23 – Determining the interference effects of a groundwater take

This appendix sets out the methodology for calculating the interference *effects* of *groundwater* takes and the criteria to consider whether any interference *effects* from a *groundwater* take are acceptable.

The interference *effects* of a *groundwater* take will be calculated in accordance with the following:

(1) The assessment of the magnitude of interference *effects* will be undertaken using the drawdown occurring in response to *groundwater* pumping at the proposed rates and volumes. The drawdown must be calculated using standard hydrogeological analysis methods appropriate for the hydrogeological setting. The assessment must use representative and conservative hydrogeological parameters obtained from relevant *aquifer* tests (new or existing); and

(2) The assessment must consider the following two pumping scenarios, with separate drawdown calculations undertaken for each:

   (a) short term maximum pumping: continuous pumping of the monthly volume at the maximum *instantaneous rate of take* until the full volume is used; and

   (b) long term average (seasonal) pumping; and

   (c) the highest calculated drawdown must then be used for the interference assessment; and

(3) The interference *effects* of any new *groundwater* take[7] (in conjunction with any other *lawfully established groundwater* takes) is considered **"acceptable"** if the drawdown does not exceed any of the following *limits* in properly constructed, operated, and adequately penetrating *bores*:

   (a) 20 percent of the *available drawdown* in any existing *bore* screened in an unconfined *aquifer*; and

   (b) 50 percent of the potentiometric head in any existing *bore* screened in a confined *aquifer*; and

(4) The "*available drawdown"* in a *bore* screened in an unconfined *aquifer* is the distance between the average reported/measured *water* levels minus the seasonal fluctuation in *water* levels and the depth to the top of the screen (the interval over which *groundwater* enters the *bore* or well see Figure 1). All units are in metres; and

[7] Any change to a *groundwater take* authorised by a resource consent, including any increased volume, increased instantaneous rate of take, and/or change of the *point of take* will be considered as a new *groundwater* take in accordance with EFL-P21.

Available water level =((measured water level - seasonal fluctuation in water level)- depth to the top of screen))

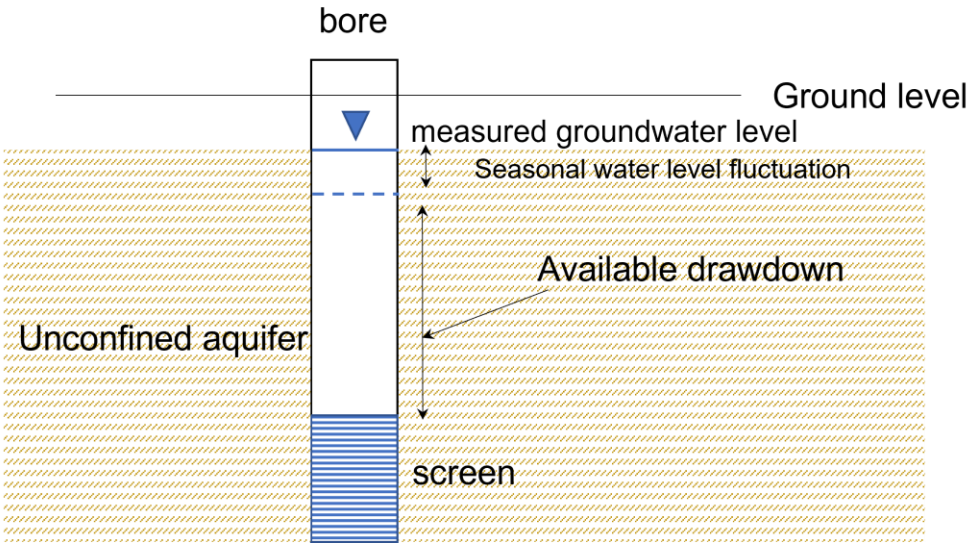

Figure 1: Available drawdown for a screened in an unconfined aquifer.

(5) The "*available potentiometric head"* in a *bore* screened in a confined *aquifer* is the distance from the top of the confined *aquifer* to the average reported/measured *water* level minus the seasonal *water* level fluctuation in a *bore* which 'adequately penetrates'[8] the source *aquifer* (see Figure 2); and

$$Available\ potentiometric\ head\ = ((measured\ water\ level\ -\ seasonal\ fluctuation) - depth\ to\ the\ top\ of\ confining\ layer\ ))$$

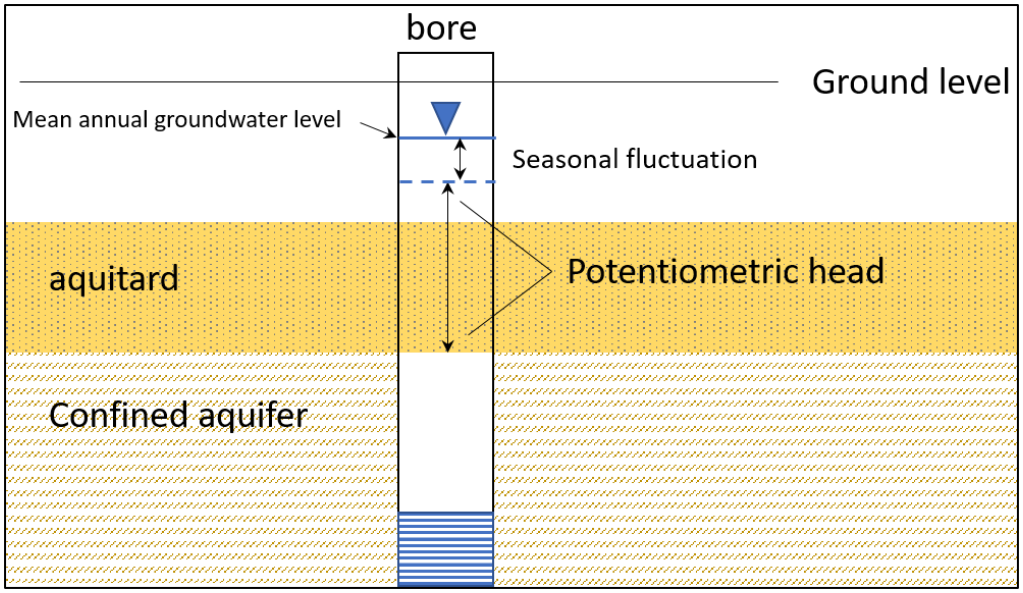

Figure 2: Potentiometric head of a screened in a confined aquifer.

(6) Both assessments must also include a pump length of 2 m, that must be subtracted from the available drawdown; and

[8] A *bore* will be classified as adequately penetrating an unconfined *aquifer* where the top of the screen is located at a depth exceeding 3 times the average seasonal *groundwater* level variation below the mean *groundwater* level (i.e. A >3 x B). For the purpose of determining the interference *effects* of a *groundwater* take, any existing and *lawfully established bore* prior to 31 October 2024 will be consider adequately penetrating.

(7) Where the depth of the screened interval in a *bore* or well is not known, available drawdown must be assessed based on available information from nearby *bores*, with a minimum screen length of at least 2 metres upwards from the full *bore* or well depth;

(8) Any change to a *groundwater* take authorised by a resource consent, including any increased volume, increased instantaneous rate of take, and/or change of the *point of take* will be considered as a new *groundwater* take in accordance with EFL-P21; and

(9) The assessment must consider all *bores* within a minimum radius of two kilometre; and

(10) An exception to clause (4) above may be appropriate for aquifer testing, necessary *infrastructure* works and in certain other circumstances where drawdown occurs for a restricted duration.

APP24 – Water supply strategy

This appendix outlines the requirements for a *water supply strategy*. A *water supply strategy* must be submitted with an application for *resource consent* to take and use *water*, and any associated *damming*, *diversion*, or *discharge* of *water*, for a *community water supply*.

The *water supply strategy* must establish a strategy for the *water* requirements for *community water supplies* and their communities over the proposed term of the *resource consent*. The following information must be provided in sufficient detail to enable ORC to be reasonably informed on the nature and extent of the activity and any *effects* of that activity on the *environment*:

(1) a description of the *community water supply* that includes:

  (a) the name of the *water* source (if known) and the location(s) of the *water* take and use and any *damming*, *diversion* or *discharge* points, and any relevant *bore* numbers; and

  (b) a description of the *water conveyance infrastructure* from the *water* source to use and its geographical extent; and

  (c) the operation of the *community water supply* including any *water* take, conveyance and storage methods, levels of service, *water* use measurement methods, treatment methods, backflow prevention measures, and maintenance and asset management procedures; and

  (d) the estimated population supplied, or to be supplied; and

  (e) an estimate of the maximum and minimum proportions of the *water* proposed to be taken to be used for *drinking water supply* and the reasonable health needs of people*;* and

  (f) any other uses of *water* (for example, animal drinking *water*, industrial and commercial processing, *irrigation*, firefighting); and

  (g) an estimate of the maximum and minimum proportions of the *water* proposed to be taken for each of the uses identified under (1)(f); and

  (h) for existing *community water supplies*, a description of any *cross mixing* of *water* and for any *cross mixing* an assessment of *effects* in accordance with EFL-P13; and

(2) an assessment of the current and estimated future demands for *water* by the *community water supply*, including an assessment of reasonably foreseeable population growth during the proposed term of the *resource consent* to meet:

  (a) the reasonable health needs of people; and

  (b) the reasonable needs of other *water* uses for the purposes identified under (1)(f); and

  (c) any staged increase in allocation that may be sought during the proposed term of the *resource consent* to meet these demands; and

  (d) a justification for each of the assessments required by (2)(a) to (2)(c) including reference to any relevant planning instruments under the RMA that provide for future growth or relevant documents under the LGA such as long-term plans, growth strategies, spatial plans, or future development strategies required under the NPSUD; and

(3) an assessment of *water* conservation and efficiency that includes:

(a) any proposed *water* conservation methods and measures to ensure the end use of *water* is reasonable and efficient in accordance with EFL-P12 and EFL-P14; and

(b) any proposed methods to minimise *water* losses from the *water conveyance infrastructure*; and

(c) a plan to implement the methods and measures identified in (3)(a) and (3)(b) and performance targets to measure their effectiveness; and

(d) a timeframe for review of the implementation plan prepared under (3)(c); and

(e) where an existing supply does not meet the criteria in EFL-P12 and EFL-P14, an upgrade plan specifying:

(i) the necessary upgrades of network *infrastructure* required to ensure that *water* use is reasonable and efficient under APP18; and

(ii) a strategy and timeframes to deliver the necessary upgrades over the proposed term of the resource consent; and

(f) an estimate of the efficiency gains that can be made for the take, *water conveyance infrastructure* and all the uses of the *water* during the term of the *resource consent;* and

(g) a description and assessment for how the estimated future demand for the reasonable health needs of people identified under 2(a) can be provided for during the proposed term of the resource consent by the efficiency gains made under (3)(f); and

(4) an assessment of any alternative *water* sources available or alternative methods of sourcing *water*; and

(5) an assessment of measures to provide for *resilience* of the supply to the *effects* of *climate change*; and

(6) a *water* shortage and drought management plan that includes:

(a) methods to reduce *water* consumption during *water* shortage conditions; and

(b) how restrictions will be managed in accordance with the hierarchy of obligations in *Te Mana o te Wai* to ensure *water* supply is provided for the health needs of people (such as *drinking water*) as a priority before other uses; and

(c) a description of any methods to ensure *water* conservancy during times of drought, *water* shortage, or periods of low flows or levels in *water bodies*, including but not limited to public and commercial user education programmes and compliance or enforcement procedures that are available to the community *water* supplier; and

(7) the results of consultation with Kāi Tahu on the extent to which the activity is consistent with the matters set out in APP8 – Mana whenua environmental indicators; and

(8) details of a *water* supply strategy review process, including any consultation as part of the review.

APP25 – Aquifer testing

This appendix outlines the minimum requirements for carrying out *aquifer testing*. *Aquifer* testing is required to support all new *water* permit applications to take and use *groundwater* and may be required to support replacement *water* permit applications (depending on circumstances).

Aquifer test requirements

The *aquifer testing* must be carried out in accordance with **Part 1 – Aquifer test plan** and the minimum requirements in **Part 2A – Step test** or **Part 2B – Constant rate**, whichever is relevant. The specific methodology for the *aquifer* test, including any departure from the prescribed methodologies, must be documented in an *aquifer* test plan and agreed by ORC prior to the commencement of testing.

Part 1 – Aquifer test plan

An *aquifer* test plan must be provided to ORC at least ten working days prior to the *aquifer* test commencing. The *aquifer* test plan must include the following information:

(1) a map(s) or aerial or satellite photograph(s) showing the locations of:

  (a) the pumping *bore(s);* and

  (b) any monitoring / observation *bores*; and

  (c) the proposed location for the *discharge* of pumped *water*; and

  (d) *lake*s, *river*s, *natural wetland*s, *bores* (on and off the applicant's property), soak holes, the *coastal marine area*, *drinking water supplies*, and the locations of known subsurface *drains* within the boundaries of the *landholding*.

(2) contact details of the owner and the person carrying out the *aquifer testing*; and

(3) details of the proposed test, including:

  (a) aims of the test (e.g., determining *aquifer* parameters, *bore* interference, surface *water* depletion, saline intrusion, *bore* yield) – it is likely that there will be more than one aim

  The proposed test type (step or constant rate); and

  (b) details of the proposed pumping *bore(s)* and any monitoring *bores*, including GPS coordinates (taken on site, not just those from the ORC database), depth, diameter, *bore* log, and screen information (if available); and

  (c) proposed pumping rate for the *aquifer testing* (for constant *discharge* and each of the steps in a step test); and

  (d) details of the proposed *discharge* of pumped *water*, including the location/method of *discharge* and how compliance with any conditions of EFL-R5-PER1 will be met; and

  (e) proposed date(s) of *aquifer testing*; and

  (f) justification for any departure from the prescribed *aquifer* test methodology; and

(4) requirements for the proposed *water* permit application: maximum rate (Litres/second) and daily, weekly, monthly, and seasonal volumes (m^3), and the proposed *water* use;

(5) any potential challenges for the *aquifer* test (e.g., nearby pumping *bores*, surface *water bodies*, etc.) and their management.

Part 2 – Aquifer Test Methodology

Part 2A – Step test

(1) The static *water* level in the pumped *bore* must be stable prior to the start of the test and the level must be recorded 1-hour before the start of the test and immediately prior to the start of the test; and

(2) A 4-step drawdown test (with each step having a minimum duration of 1 hour). The duration of the steps must be the same. The pumping steps should be increased in equal increments with the final step taken at a pumping rate equal to or greater than the proposed maximum abstraction rate; and

(3) *Water* levels in the *bore* must be monitored automatically (using a pressure transducer) and manually. Automatic *water* levels must be measured every 1 minute for both the pumping and recovery periods. Recovery of *groundwater* levels after the test must be monitored for at least 2 hours after the end of pumping and, if required, continue until the drawdown in the pumped *bore* recovers to within 5 % of the initial static *water* level; and

(4) Flow from the production *bore* must be measured and recorded at regular intervals and any changes recorded. Flow must be measured to within a precision of 5%.

Part 2B – Constant rate

(1) *Water* levels must be monitored in the pumped and observation *bores* used in the test for a period of at least 48 hours prior to the start of the test to determine the *water* level trends and fluctuations in these *bores*. To the extent practicable, *water* levels must be stable in the pumped and monitoring *bores* before the start of the test. The initial *water* levels before the test must be recorded, along with the exact start time of the test; and

(2) Automatic level loggers must be used in the pumping *bore* and at least the observation *bore* closest to the pumped *bore.* Logging frequency must be set to every 1 minute; and

(3) Barometric pressure must be monitored automatically (using a barologger) throughout the test and the monitoring frequency must be every 1 minute; and

(4) Recovery of *groundwater* levels after the test must be monitored for at least 2 hours after the end of pumping and the monitoring must continue until either:

  (a) the drawdown in the pumped *bore* and all monitoring *bores* recover to within 5% of the initial static *water*; or

  (b) 48 hours after the test has ended; and

(5) Flow from the production *bore* must be measured and recorded (every 1 minute, if monitored automatically) including any changes. Manual flow measurements must also be taken regularly during the test. Flow must be measured to within a precision of 5%.

Part 2C – Actions after the test is completed

An *aquifer* test report must be provided to ORC no more than 20 working days after the *aquifer* test has been completed and will form part of an assessment of environmental *effects* to support an

application to take and use *groundwater*. The *aquifer* test report must include the following information:

(1) A description of the local hydrogeological environment including geology, *groundwater* levels, static *water* levels and drawdown in the pumping and all observation *bores*, existing *aquifer* test results and potential *groundwater*/surface *water* interaction; and

(2) Any deviations from the *aquifer* test plan, and the reasons for those changes; and

(3) All raw and processed test data, including date/time, pumping rates, *water* levels (before, during and after the test), drawdown in the pumped & observation *bores*, antecedent recording for any wells or other monitored variable and any problems encountered during the test. All data must be supplied in digital format (e.g. CSV files); and

(4) any corrections applied to the raw data; and

(5) analysis of the test results, including analysis methods used and detailed calculations, and the calculated *aquifer* parameters; and

(6) A hydrogeological conceptual *aquifer* model and recommended *aquifer* parameters, and in what applications they are appropriate to be used.

APP26 – Freshwater farm plans

Part 1: Freshwater farm plans requirements

A *Freshwater Farm Plan* is a plan that is prepared, certified, implemented and audited in accordance with criteria and timeframe to be approved by resolution of the Otago Regional Council. The resolution will:

(1) contain criteria that refers to or incorporates any national farm plan regulations, if such regulations exist, plus any additional information or components as required below or are required to implement rules of this plan, which may include industry developed frameworks; and

(2) contain a timeframe that aligns with any national farm plan regulations, if such regulations and timeframes exist; and

(3) if regulations do not exist, or if they provide discretion to the Otago Regional Council, then:

  (a) the criteria and timeframes will include the material below, along with a certification and auditing process; and

  (b) will be published not less than 12 months before the relevant rules are made operative by the Otago Regional Council.

Part 2: Information to be provided to ORC

The following information must be recorded annually and provided to the Council on request. For the avoidance of doubt, this is separate to the *action plan* that is required to be submitted under the Regulations.

(1) Stocking rate, shown by stock class and month

(2) Area of arable farming and crop type

(3) Type and amount of *fertiliser* used

(4) Type and amount of imported supplementary feed utilised

(5) Effective farming area

(6) Outputs from the nutrient budget or nutrient risk assessment

(7) If wintering of stock is occurring (including *intensive winter grazing*, *sacrifice paddocks*, *stockholding areas*, feed pads and *pasture-based wintering* of cattle), the Winter Grazing Management Plan as set out below

(8) If any part of the *land* is *dairy farm land*, then:

  (a) the area used for *dairy farm land* and the maximum number of cows proposed to be milked for the next 12 months; and

  (b) if it has not been previously provided, the area used for *dairy farm land* as at 2 September 2020 and the maximum number of cows milked in the period of 1 July 2021 to 30 June 2024.

(9) If any part of the *land* is *dairy support land*, then:

  (a) the area to be used for *dairy support land* for the next 12 months; and

(b) if it has not been previously provided, the maximum area used for *dairy support land* in the period of 1 July 2014 to 30 June 2019.

Part 3: Activities to be addressed in a Freshwater Farm Plan

(1) Nutrient management (including storage and application)

Nutrient budget/Nutrient loss risk assessment

The FWFP must contain either:

(a) A nutrient budget which demonstrates nutrient losses to the environment, calculated using OverseerFM or another model approved by the Chief Executive of the Council (as providing sufficiently accurate and repeatable estimates of nutrient losses to the environment to enable comparison between scenarios and farms), or

(b) A nutrient loss risk assessment calculated using a nutrient loss risk assessment tool approved by the Chief Executive of the Council (as providing sufficiently accurate and repeatable estimates of the risk of nutrient loss to the environment to enable comparison between scenarios and farming types).

Outcomes:

(a) Nitrogen losses do not increase or are reduced where necessary.

(b) Phosphorus and sediment losses from farming activities are minimised.

(c) The amount, timing and application of *fertiliser* inputs are managed to match the predicted plant requirements and minimise nutrient losses.

(d) *Fertiliser* is stored and loaded to minimise the risk of spillage, leaching and loss into *water bodies*.

(2) Land and soil (including cultivation, earthworks, erosion control, pasture and grazing management)

Outcomes:

(a) Overland flow of *water* is slowed to minimise the movement of sediment, phosphorus and other *contaminants* to *water bodies*.

(b) Erosion is minimised.

(c) *Critical source areas* are recognised as disproportionately contributing *contaminants* to the environment and are managed to minimise these losses.

(d) *Natural wetlands* that are not *natural inland wetlands* are managed as *critical source areas.*

(3) Water bodies and wetlands (including stock exclusion, riparian management, drain management, critical source areas)

Outcomes:

(a) Activities in waterways, *natural wetland*s and their margins are managed so that in-stream and riparian *habitat values* are not diminished, and where practicable are improved, and the area of *wetlands* is not reduced.

(4) Concentrated discharge sources (including tracks and gateways, troughs and stock camps, stock water body crossings, yards, feedpads and barns, offal pits, farm landfills and silage pits)

Outcomes:

(a) Subsurface drainage is managed to minimise *discharges* of *contaminants* to *water bodies*.

(b) Offal pits and farm *landfills* are located and managed to avoid direct *discharges* to *groundwater* or surface *water* and minimise risks to *water* quality.

(c) Farm *infrastructure* that causes animals to congregate are recognised as *critical source areas* for *contaminant* generation and managed accordingly.

(d) Leachate and *waste* is collected from feed pads, silage storage and animal barns or indoor housing for animals and directed to farm effluent systems.

(5) Irrigation and water use (including take, conveyance, and application infrastructure, use management and application management)

Outcomes:

(a) Use *water* efficiently, to meet crop demands, including through upgrading existing systems to meet industry best practice standards, and ensuring that *water* and *contaminant* losses to *water bodies* are minimised.

(6) Agricultural effluent management

Outcomes:

(a) Manage the *discharge* of collected agricultural effluent in accordance with industry best practice to minimise adverse *effects* of *contaminants* on *water* quality.

(7) Intensive winter grazing, sacrifice paddocks, stockholding areas, feed pads and pasture-based wintering of cattle)

Outcomes:

(a) Wintering of stock is managed to reduce the likelihood of soil damage and *contaminant* loss to *water bodies*.

(8) Winter grazing management plans

(a) a winter grazing management plan is to be prepared each year if any of the following activities occur on the farm:

(i) *intensive winter grazing*; or

(ii) *sacrifice paddocks*, or

(iii) *pasture-based wintering* of cattle.

(b) the winter grazing management plan must record:

(i) a paddock scale plan for the paddocks to be used for the upcoming grazing season that shows where applicable: *water bodies*, *critical source areas*, buffer zones, areas of *slope*, gateways, shelter, fencing, grass strips, permanent and portable *water* troughs, and baleage placement; and

(ii) annual forage crop type, expected pasture or crop yield, and supplementary feed amount and type fed during grazing of the annual forage crop; and

(iii) stock type, numbers and estimated duration of grazing on each paddock that is in annual forage crop or where *pasture-based wintering* of cattle is occurring, and

(c) the winter grazing management plan must include:

(i) a grazing management plan, and

(ii) risks to *freshwater* and how those risks are to be mitigated, and

(iii) where the grazing activity occurs on a *slope* greater than 10 degrees mitigation and management measures for *slope* proposed; and

(iv) management and contingencies for an adverse weather event, and

(v) any other management practices used to minimise the impacts of winter grazing.

(9) Alternative pathway criteria for Freshwater Farm Plan Certification of risk equivalence

(a) Requirements

The Certifier must:

(i) Be a Certifier appointed in accordance with the Resource Management (Freshwater Farm Plans) Regulations 2023 or replacement regulations, or, if no such regulations exist or they do not specify a process, then a Certifier can be a *suitably qualified person* who holds a current certification from the Otago Regional Council as being appropriately qualified and experienced in accordance with the requirements below:

(1) has a qualification in natural resource management or farm system management; and

(2) has at least three years' experience in the management of pastoral, arable or horticultural farm systems; and

(3) has undertaken training as set out by the Otago Regional Council (if any); and

(ii) Record the assessment against each of the items (iii) to (vi) in writing and provide an electronic copy of both that written record and the certification to:

(1) the Otago Regional Council; and

(2) the Farm Operator; and

(iii) Take into account the catchment, context, challenges, and values, and in particular any *contaminants* or pathways of concern, and any sensitive *receiving environments* identified in the Catchment Context, Challenges and Values, or if the Catchment Context, Challenges and Values document does not exist, then the Environmental Outcomes for the relevant FMU; and

(iv) Describe the proposal of the Farm Operator and identify what permitted activity conditions will not be complied with, the nature of that non-compliance, and the alternative mitigations, on farm actions and contingency measures proposed by the Farm Operator which may include text, maps, and photographs; and

(v) Assess the environmental risks, quantitatively or qualitatively, of the activity undertaken in a manner that complies with the permitted activity conditions and compare that against the environmental risks of undertaking the activity as proposed by the Farm Operator. Such an assessment shall, at a minimum, consider *water* quality, ecological values, cultural values, and *habitats* of *threatened species*; and

(vi) Not provide a certification unless the Certifier is satisfied that the environmental risks of the proposal of the Farm Operator are no greater than the environmental risks if the activity was carried out in a manner that complies with the relevant permitted activity conditions.

(vii) The Farm Operator must:

(1) Obtain a certification and a copy of the written assessment of the steps above prior to undertaking the activity, or if it is a continuing activity, before the existing use rights period in section 20A of the RMA expires; and

(2) Retain a copy of the certification and the written assessment of the steps above provided by the Certifier and provide them to the Otago Regional Council within two (2) working days of a request.

(10) Revocation

The Otago Regional Council may revoke a certification if one or more of the following applies:

(a) A copy of the certification and the written assessment of the steps in (a) above are not provided within two (2) working days of a request for a copy from the Farm Operator; or

(b) The Otago Regional Council considers that the written assessment of the steps in (1) above contain material errors, omissions or deficiencies; or

(c) The Certifier has been discontinued as a certifier under the Resource Management (Freshwater Farm Plans) Regulations 2023 or the certifier requirements of the Otago Regional Council, if no such regulations exist or they do not specify a process.

Before proceeding under subclause (ii) or (iii), the Otago Regional Council must:

(a) give the Farm Operator the reasons why the Otago Regional Council considers the certification of the specified activity should be revoked, along with relevant information; and

(b) give the Farm Operator a deadline to respond, which shall not be less that than five (5) working days.

The decision of the Otago Regional Council has immediate effect from the time the Farm Operator is informed, unless the Otago Regional Council specifies an effective date for the revocation.

APP27 – Animal effluent

Part 1 – Progressive implementation of animal effluent storage requirements

Many *animal effluent storage facilities* in Otago will need to be upgraded to meet the requirements of this Plan. The implementation of the Plan's requirements has been staged according to the environmental risk posed by existing *animal effluent storage facilities*. To assess this risk, Part 1A provides a calculation that will determine the current storage volume available on a *landholding* (in days).

For clarity, this calculation does not determine the volume of the storage facility under FF-R14 – Land use for existing animal effluent storage facilities and FF-R15 – Land use for new animal effluent storage facilities, it only determines the date that applications must be received.

Part 1A Storage calculation

Two calculations are required to determine the current minimum number of days of animal *waste* storage available on a *landholding*. These are set out below.

Step One: Daily waste volume
To calculate the daily *waste* volume per farm, use the following formula:

Daily *waste* volume (m^3)	=	Maximum number of cows milked per day	x	0.05^	x	Maximum number of times per day that cows are milked during milking season

^ being 0.05 cubic metres (50 litres per cow per day)

For example:
During milking season, Farm A milks 500 cows twice per day. Using the formula above:

Daily *waste* volume (m^3)	=	500	x	0.05	x	2
Daily *waste* volume (m^3)	=	50				

Step Two:
To calculate the minimum number of days of storage available, use the following formula:

Days of storage available	=	Actual storage volume (m^3)^ ÷ Daily *waste* volume (m^3)

^ determined assuming that the storage facility is empty.

For example:
As calculated above, Farm A has a daily *waste* volume of 50 m^3. The farm has a storage pond with a storage volume of 1000 m^3. Using the formula above:

Days of storage available	=	1000 ÷ 50
Days of storage available	=	20

Part 2 – Management plan requirements

(1) A management plan for the purpose of preventing the unauthorised *discharge* of liquid or *solid animal effluent* to *water* is:

(a) Prepared by the *landholding* owner or their agent and retained on the *landholding*, identifying the matters set out in clause 2 below;

(b) Reviewed at least once every 12 months by the *landholding* owner or their agent, and the outcome of the review documented; and

(c) Provided to the Otago Regional Council upon request.

(2) The management plan must contain the following:

(a) Physical address of where the *animal effluent system* is located, and the *land* where liquid or *solid animal effluent* is to be applied;

(b) A description of the *landholding* ownership, and the contact details of the owner and the person in charge;

(c) Legal description(s) of the *landholding*;

(d) A list of all the relevant resource consents held for the *landholding* and their expiry dates;

(e) A map(s) or aerial or satellite photograph(s) showing the locations of:

(i) The boundaries of the *landholding*;

(ii) The location of any dairy shed, *animal effluent storage facilities*, and any other components of an *animal effluent system*;

(iii) *Lakes*, *rivers*, *natural wetlands*, soak holes, the *coastal marine area*, *water* supply for human consumption and dwellings within the *landholding*;

(iv) The area of *land* where liquid or *solid animal effluent* is to be applied, and in relation to this area:

- Soil types and their risk profile[9];
- Any *critical source areas* and the locations of known subsurface *drains*;

(f) Operational procedures for using and maintaining the *animal effluent system* and for managing the *discharge* of animal effluent;

(g) Inspection, monitoring and reporting requirements and timeframes;

(h) The records of pond drop tests of the *animal effluent storage facility* undertaken at least every five years (excluding above-ground tanks, bladders, *solid animal effluent storage facilities* and an *animal effluent storage facility* with a leak detection system);

(i) Contingency measures to prevent the *discharge* of liquid or *solid animal effluent* to a *water body*, an *artificial watercourse*, or the *coastal marine area*, either directly or indirectly;

[9] A digital soil map for New Zealand can be found online at https://smap.landcareresearch.co.nz/

(j) Identification of measures to be taken to respond to a leak and the timeframe for response; including, for *animal effluent storage facilities* with a leak detection system where a leak is detected, a requirement for an assessment by a *suitably qualified person* to be undertaken as soon as practicable and no later than two months of the detection to determine whether the leak is within the normal operating parameters of the pond; and

(k) Responses to any other system failures or emergencies, including timeframes for response.

Part 3 Suitably Qualified Persons

A *suitably qualified person* for the purposes of this appendix is a person who has been certified by the Otago Regional Council as being appropriately qualified and experienced in accordance with the requirements below.

Requirements – *Animal effluent systems*

For the purposes of Rules FF-R13-PER1(2), FF-R14-PER1(2) and Part 2(2)(j) of APP27, a *suitably qualified person* has either:

(a) A relevant tertiary qualification in agricultural engineering, natural resources engineering or civil engineering and at least five years' professional experience in designing and constructing effluent management systems; or

(b) A relevant equivalent qualification (for example, international qualifications) and at least five years' professional experience in designing and constructing effluent management systems; or

(c) At least ten years' professional experience in designing and constructing effluent management systems.

Requirements – Calculations using the Dairy Effluent Storage Calculator

For the purposes of Rules FF-R14-PER1(1) and FF-R15-CON1(1), a *suitably qualified person* has:

(a) For undertaking a calculation using the *Dairy Effluent Storage Calculator*, at least five years' relevant professional experience in designing effluent management systems, and

(b) For determining a conversion factor for animals that are not dairy cows, a relevant scientific tertiary qualification or relevant research experience.

Part 4 – Pond drop test requirements and criteria

This appendix outlines the requirements for undertaking pond drop tests on *animal effluent storage facilities* that are part of an *animal effluent system* and the pass criteria for drop test results.

Requirements

(a) A minimum of 24 hours of accurate data within a single test period.

(b) Total test error of less than ±1 mm.

(c) Continuous readings are to be taken over the entire test period at not more than 10 second intervals.

(d) Any change in pond fluid level over the test period needs to be accounted for.

(e) Ponds must be at or over 75% design depth (excluding freeboard) before a test can be undertaken.

(f) The level of *sludge* or crust on the pond during the test should be minimal so that it does not impact on test results.

(g) The pond surface is not frozen during any part of the testing.

(h) An anemometer is installed for the duration of the test and only data obtained when the wind speed does not exceed 50 kilometres per hour (14 m per second) at the test site is used in the test results.

Maximum allowable pond level change

When tested in accordance with the requirements above, the *animal effluent storage facility* is considered to meet the pond drop test criteria if the maximum pond level change does not exceed the following:

Table 33: Maximum allowable pond level change

Maximum design depth of pond (m) excluding freeboard	Maximum allowable pond level change (mm per 24 hours)
<0.5	1.2
0.5 to 1.0	1.4
1.0 to 1.5	1.6
1.5 to 2.0	1.8
>2.0	2.0

APP28 – Flood protection and drainage works management plan

A *flood protection and drainage works* management plan shall include, at a minimum, the following matters:

(1) identification of the purpose of the *flood protection and drainage works*, and the objectives of the management plan that are sought to be achieved by the *flood protection and drainage works*, including those related to environmental, social and cultural well-beings; and

(2) a description of the proposed works, including the purpose of the works, and the methods used to undertake the works, and any alternative options considered to achieve the purpose identified in (1); and

(3) a description of how the works will contribute to the *flood protection and drainage works* undertaken in the wider catchment within which the works will occur; and

(4) a description of where works will occur, including:

  (a) if works will occur within or near:

    (i) the *habitat* of a *threatened freshwater-dependent species* described in APP6 – Threatened freshwater-dependent species that is located within the area identified in MAP-[TS] – Threatened specifies habitat; or

    (ii) any *mātaitai, taiāpure* or *nohoaka*; or

    (iii) a *drinking water protection zone*; or

    (iv) an *outstanding water body* shown on MAP[OWB] or listed in SCHED1 – Outstanding water bodies; and

  (b) methodologies to identify site specific values, where not mapped in the plan, including:

    (i) existing points of legal public access; and

    (ii) *habitats* for *indigenous freshwater species*; and

    (iii) spawning *habitats* of *desired fish species*; and

    (iv) any *nationally significant infrastructure, regionally significant infrastructure* or other *lawfully established structure; and*

(5) a description of the key risks to the values and areas identified in (3) from the works; and

(6) how potential adverse *effects* of the works will be managed, including:

  (a) methods to minimise sediment disturbance, and the *discharge* of sediment to wat*e*r, including the information required by APP16 – Erosion and sediment control plans; and

  (b) methods to protect the natural character, form and function of *water bodies*; and

  (c) methods to protect the outstanding and significant values of *outstanding water bodies*; and

  (d) methods to avoid or minimise adverse *effects* of the works on:

    (i) existing legal public access; and

    (ii) the passage of *desired fish species*; and

    (iii) the quality of *habitats* for *indigenous freshwater species*; and

(iv) spawning *habitats* of *desired fish species*; and

(v) the use of *nationally significant infrastructure, regionally significant infrastructure* and other *lawfully established structures*; and

(e) how works will be managed to avoid the introduction and spread of *pests*, *pest agents*, *unwanted organisms* or *organisms of interest* in *lakes, rivers* and *riparian margins*; and

(f) the application of APP15 – Accidental discovery protocol where an archaeological site may be disturbed; and

(g) methods to return the surrounding *bed* as near as practicable to the channel shape, area, depth, and gradient that existed prior to the works, on completion of the activity, including circumstances where and reasons why this may not be practicable; and

(h) methods to leave the site tidy, including removal of any debris associated with the activity, on completion of the activity; and

(7) a description of any monitoring during works, and on completion of works, to ensure the objectives identified in (1) are being met.

APP29 – Management plan (major hazard facilities*)*

(1) A management plan for the purpose of preventing the unauthorised *discharge* of *contaminants* onto or into *land* in circumstances where a *contaminant* may enter *water*, or to *water*, is:

(a) prepared by the operator of the *major hazard facility* or their agent and retained on the *landholding*, identifying the matters set out in (2) below;

(b) reviewed at least once every 12 months by the operator of the *major hazard facility* or their agent, and the outcome of the review documented; and

(c) provided to the ORC upon request, and

(2) The management plan must contain the following:

(a) physical address of where the *major hazard facility* is located; and

(b) a description of the *landholding* ownership, and the contact details of the owner of the facility and the person in charge of the facility; and

(c) a legal description(s) of the *landholding*; and

(d) a list of all the relevant *resource consent*s held for the *landholding* and their expiry dates; and

(e) the type and quantity of the *hazardous substances* stored or used at the *major hazard facility*; and

(f) a map(s) or aerial or satellite photograph(s) showing the locations of:

(i) the boundaries of the *landholding*; and

(ii) the location of any *buildings* and *structures* on site; and

(iii) any *lake*s, *river*s, *natural inland wetlands*, *bores*, the *coastal marine area*, *water* supply for human consumption and dwellings within the *landholding*; and

(iv) any *critical source areas* and the locations of known subsurface *drains*; and

(g) contingency measures to prevent the *discharge* of *contaminants* to a *water body,* an *artificial watercourse*, or the *coastal marine area*, either directly or indirectly; and

(h) responses to any other system failures or emergencies, including timeframes for response.

APP30 – Stormwater management plans

Stormwater management plans in accordance with SW-P5 shall include the following matters:

(1) a description of all *stormwater* catchments within the *stormwater network*, including:

  (a) topography and climate; and

  (b) geotechnical and soil conditions; and

  (c) identification of any *contaminated land* or *potentially contaminated land* and an assessment of the risks to the quality of *stormwater discharged* from the *stormwater network*; and

  (d) the location of any *water bodies*; and

  (e) areas at risk from inundation during rainfall events; and

  (f) any sites of cultural significance; and

(2) a description of the *stormwater network*, including:

  (a) mapping the locations of any outfalls/*discharge* points; and

  (b) mapping the total contributing *stormwater* catchments for each outfall and *discharge* point; and

  (c) the design and capacity of the *stormwater network*; and

  (d) any good practice guidelines the *stormwater network* is managed in accordance with; and

  (e) any secondary flow paths for *stormwater* that exceeds the capacity of the *stormwater network*; and

  (f) any inspections, maintenance and monitoring of the *stormwater network*; and

  (g) identification of possible cross-connections with the *wastewater* network; and

(3) a description of the quality and quantity of *stormwater discharged* from the *stormwater network*, including;

  (a) an identification and characterisation of *contaminants* that are washed off surfaces during rainfall events; and

  (b) the *contaminant* removal efficiency of the *stormwater network*; and

  (c) any key risks associated with activities and *land* uses within each catchment to receiving *water* quality from *stormwater discharges*; and

(4) A prioritised programme of progressive improvements within the *stormwater network* to contribute to achievement of *environmental outcomes*, target *attribute* states and interim target *attribute* states set for each *FMU* and/or rohe. This programme shall include but not be limited to the:

  (a) identification of actions and mitigation measures to progressively improve *stormwater* treatment and disposal in accordance with SW-P4(4) and (5); and

  (b) prioritisation of all catchments intended to be authorised for the implementation of actions and mitigation measures identified in (4)(a) based on the monitoring programme

undertaken in accordance with SW-P3 and assessment of *effects* provided with an application for resource consent; and

(c) identification of any relevant objectives the *stormwater network* is to be managed in accordance with to contribute to achieving *environmental outcomes*, target *attribute* states and interim target *attribute* states set for each *FMU* and/or rohe; and

(d) specified timeframes for implementation of the identified actions and mitigation measures based on the prioritisation of catchments and any relevant objectives identified to contribute to achieving *environmental outcomes*, target *attribute* states and interim target *attribute* states set for each *FMU* and/or rohe; and

(e) a description of how *discharges* from the *stormwater network* will be progressively improved in accordance with SW-P4(4) and (5) within specified timeframes; and; and

(5) identification of options for minimising *contaminant* inputs into the *stormwater network*; and

(6) a description of any other methods to improve the quality of the *discharge* from the *stormwater network*, which may include capital works, bylaws, investigations, education and preventative activities.

Schedules

SCHED1 – Outstanding water bodies

Unique identifier	Site identifier	Values and characteristics	Location
Clutha Mata-au FMU			
OWB1	Clutha River/Mata-au (Wānaka to Clyde)	**Recreation REC42** • Protected under the Lake Wānaka Preservation Act 1973. • Nationally significant for jet boating. • Nationally significant for angling. • Regionally significant for rafting.	Between E1294790/N:5047277 and E1298502/N5045478 As shown on MAP [OWB] – Outstanding water bodies
		Landscape LAN36 (Upper) / LAN37 (Roxburgh Gorge) Wānaka to Sandy Point • Natural incised gorge extending from the outlet of Lake Wānaka to Sandy Point. • Margins of the river have been modified. Vegetation present includes exotic trees such as willows, regenerating native vegetation (manuka and kanuka), grassland, and farmland. • Highly memorable and legible river feature within the Hāwea and Wānaka area. • Mata-au is the Māori name for the Clutha River and was a traditional travel route between Lake Wānaka and the coast of Otago.	Wānaka to Sandy Point between E1294894/N5047341 and E1310300/N5037192 As shown on MAP [OWB] – Outstanding water bodies

		• The upper reaches of the river include popular walking and cycle trails. Roxburgh Gorge • Broad active *bed* due to raised river levels by the Clyde Dam. No other structures or consents present. • Margins of the river have been modified. Vegetation present includes mixed exotic vegetation and grassland. • Highly memorable and legible river feature within Cromwell and Clyde area. • Mata-au is the Māori name for the Clutha River and was a traditional travel route between Lake Wānaka and the coast of Otago. • This section of the river is part of the Dunstan Cycle Trail between Cromwell and Clyde.	Roxburgh Gorge as shown on MAP [OWB] – Outstanding water bodies
	Clutha River/Mata-au (Balclutha to mouth)	**Recreation REC47** • Only water body in the region assessed as nationally significant for whitebaiting (lower reaches) and therefore outstanding regionally.	Between E1349026/N4874571 and the mouths of the Koau and Mata-au branches As shown on MAP [OWB] – Outstanding water bodies
Upper Lakes rohe			
OWB2	Albert Burn	**Natural character NAT4.1** Active Bed • Pristine or largely unmodified waterbodies in Tititea/Mount Aspiring and adjacent conservation areas (including Hāwea Conservation Park), including glacial/ cirque lakes, alpine streams and rivers, and wetlands.	As shown on MAP [OWB] – Outstanding water bodies

		• Very high water quality throughout the area as largely located within conservation land. • Steep and incised catchments are devoid of structures and modifications. • Breeding site for wrybill, banded dotterel, black fronted tern, and black billed gull. • Unmodified flow regimes throughout the area. Margins • Dense native vegetation along riverbanks including beech forest within lowland areas, and snow tussock and cushionfield in the upper reaches of the catchment. • Unmodified native vegetation as no grazing has occurred. • Very small-scale modifications, such as walking tracks, footbridges and huts. Context • Pristine, highly natural landscape context from the mountainous headwaters to the valley floors and to Lake Hāwea. • Tititea/Aspiring National Park and adjacent conservation areas include several huts, and tracks, although there is a very high sense of remoteness. • Sensitive landscape due to its high natural character values, remoteness, and openness, visited by locals and tourists alike.	
OWB3	Beans Burn	**Natural character NAT1.2** Active Bed • Pristine or largely unmodified waterbodies in Tititea/Mount Aspiring National Park and adjacent conservation areas, including glacial/ cirque lakes, alpine streams and rivers, and wetlands.	As shown on MAP [OWB] – Outstanding water bodies

		• Braided rivers (mid reaches of Puahiri/Puahere/Rees River and Dart River/Te Awa Whakatipu) with weed-free and unrestricted river beds with natural braided form. • Steep and incised catchments are devoid of structures and modifications. • Braided riverbed provides important bird habitat, nesting and breeding habitats for threatened birds such as ngutu pare/wrybill and tarapirohe/black-fronted tern, banded dotterel, black billed gull, South Island pied oystercatcher. • Very high water quality throughout the area, unaffected by stock grazing. • Recognised by the Water Conservation (Kawarau) Order 1997 for outstanding natural and physical characteristics contributing to *amenity values*. <u>Margins</u> • Within Tititea/Mount Aspiring National Park predominantly native vegetation along river banks with very small scale modifications, such as walking tracks, footbridges and huts • Natural braided pattern dominates Lake Wakatipu/Whakatipu Waimāori. • Land use cover predominantly alpine scrub/tussock in headwaters and native beech forest below tree line. • No land use modification. <u>Context</u> • Within Tititea/Mount Aspiring National Park and adjacent conservation areas pristine, highly natural landscape context from the mountainous headwaters to the valley floors.	

		• Area falls mostly within Aspiring National Park which includes several huts, and tracks. • Overall natural patterns dominate. • Sensitive landscape due to its high natural character values and openness, visited by locals and tourists alike.	
OWB4	Bee Burn	**Natural character NAT5.2** <u>Active Bed</u> • Pristine or largely unmodified waterbodies in Hāwea Conservation Park which encompasses the upper Hunter catchment with small exclusions on the valley floor and some of the lower slopes, including alpine tarns, streams and rivers, and wetlands. • Braided riverbed of mid Hunter River is weed-free and free of man-made structures. • Steep and incised catchments are devoid of structures and modifications. • Very high water quality throughout the area as located within conservation land. • Unmodified flow regimes. <u>Margins</u> • Margins are clad in native vegetation along riverbanks, including silver beech forest in the valleys, and snow tussockland in the upper reaches of the catchments. • Very small-scale modifications, such as very few tracks and huts. <u>Context</u> • Within Hāwea Conservation Park pristine, highly natural landscape context from the mountainous headwaters to the valley floors.	As shown on MAP [OWB] – Outstanding water bodies

		• Areas of native silver beech forest on mountain slopes in mid and lower catchment and tall tussock grassland, and snow tussock on slopes and in valleys in upper catchment. • Sensitive landscape due to its high natural character values and openness. Upper catchment rarely visited while catchment around Lake Hāwea forms a frequently viewed natural backdrop to the lake.	
OWB5	Big Devil Creek	**Natural character NAT1.11** See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB6	Billy Creek	**Natural character NAT5.13** See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB7	Blue River	**Landscape LAN18** • Intact semi braided river in the upper catchment, turning to rocky, narrow, and incised river in the lower catchment. • Margins are clad in extensive beech forest, sub alpine communities, broadleaf forest, and grassland in lower reaches. • Active *bed* is highly expressive of its formative processes including braided river channels. • The Blue River formed the eastern extent of Māori Saddle, which was known to be a frequent traditional travel route between the Makarora/Makarore River and the Okuru River mouth near Haast. • Includes the Blue Valley tramping track.	Between E1291510/N5109156 and E1301839/N5103244 MAP [OWB] – Outstanding water bodies
		Natural character NAT4.8 See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB8	Bridal Veil Falls (Rob Roy Stream)	**Physical PHY5** • Outstanding within the Otago region.	As shown on MAP [OWB] – Outstanding water bodies

		• Spectacular 261m high waterfall plunges over vertical drop from small hanging valley. • Waterfall plunges over vertical wall on side of Rob Roy Valley.	
OWB9	Bridal Veil Stream Pothole (Routeburn)	**Physical PHY3** • Outstanding within the Otago region. • Excellent and readily accessible example of a large pothole scoured out cobbles in a stream.	As shown on MAP [OWB] – Outstanding water bodies
OWB10	Camerons Creek	**Natural character NAT4.7** See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB11	Caples River	**Landscape LAN1a** • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures. • Margins include a mixture of tussock and browntop within the open valleys, and beech forest within the upper reaches. • Fauna present include whio (blue duck) and pūtakitaki (paradise duck). • Vast and open river valley defined by beech forest within the river margins. • Coherent braided river channels which are highly expressive of their formative processes. • Highly remote and scenic. • Lake McKellar/Ōtākaha is one of several kāika mahika kai areas on this travel route and was named after an ancestor. • Caples River valley is associated with the high-country station owned by Ngāi Tahu and protected within the Caples Conservation Area.	Between E1218358/N5023288 and E1234077/N5013614

		• A loop track follows the Caples River, traversing the valleys surrounding the Ailsa Mountains.	
		Recreation REC7 • Preserved by the Water Conservation (Kawarau) Order 1997 (from Greenstone confluence to its source) and previously assessed as outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes). • Nationally significant for angling. • Considered nationally significant for packrafting.	Between E1218358/N5023288 and E1231343/N5013925
		Natural character NAT1.13 See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB12	Cascade Creek (tributary to Hunter River)	**Natural character NAT5.7** See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB13	Cascade Creek (tributary to Lochy River)	**Natural character NAT6.2** Active bed • Largely unmodified waterbodies in alpine areas of the Eyre and Thomson Mountains, including alpine tarns, streams and rivers, and wetlands. • Active bed remains free of man-made structures. • Very high water quality throughout the area. • The Von River contains several threatened and at risk galaxiids including *Gollum galaxias*, *Galaxias* 'southern', and *Galaxias paucispondylus* 'Southland', upland bully, and koaro. • Unmodified flow regimes. Margins	As shown on MAP [OWB] – Outstanding water bodies

		• Within mountainous headwaters vegetation includes tall tussock grassland and snow tussock, while bracken fernland, manuka and kanuka can be found within the gullies. • Very small-scale modifications, such as very few tracks and huts. Context • Within the alpine areas highly natural landscape context from the mountainous headwaters to the valley floors. • Areas of extensive tall tussock grassland and snow tussock on mountain slopes and native forest within the valleys. • Large notable wetlands within the Von catchment. Sensitive landscape due to its high natural character values, remoteness, and openness, although largely inaccessible to the public.	
OWB14	Cotters Creek	**Natural character NAT5.6** See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB15	Crucible Lake	**Physical PHY9** • Outstanding within New Zealand/Aotearoa. • An example of a moraine-dammed lake south/south-east of Mt Alba, two kilometres west of Siberia Stream.	As shown on MAP [OWB] – Outstanding water bodies
		Landscape LAN16.2b • No structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka). • Located in the headwaters of Siberia Stream.	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT4.2g See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies

OWB16	Dart River/Te Awa Whakatipu	**Ecology ECL8** • Regarded as a braided river system. These provide highly important ecosystems as braided rivers are generally rare in Aotearoa and around the world. • Provide important breeding and feeding habitat to a range of native birds. • The Dart River/Te Awa Whakatipu from Kinloch upstream to the Rock Burn confluence is recommended as outstanding waterbodies for Australasian bittern. • Dart River/Te Awa Whakatipu has resident breeding populations of blue duck/whio. • bird surveys report the presence of a range of threatened bird species: wrybill, banded dotterel, black-fronted tern, black billed gull, black back gull, and more recently occasional observations of black stilt/kaki. • Additional native water bird species are also recorded in these areas: paradise shelduck, South Island pied oystercatcher, spurwing plover, gray duck, pied stilt, pūkeko, white heron, Australasian shoveler, Australasian bittern.	As shown on MAP [OWB] – Outstanding water bodies
		Landscape LAN5 • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. • Some modifications in the lower reaches including a bore and gravel extraction consent, and the Glenorchy Route Burn Road bridge. • Margins clad in a mixture of intact beech forest, regenerating native vegetation, and in the lower reaches, farmland.	Between E1250655/N5065211 and E1233258/N5023719 MAP [OWB] – Outstanding water bodies

		• Coherent braided river channels are highly expressive of their formative processes. • Te Awa Whakatipu is the Māori name for the Dart River. The river was part of a key travel route between Lake Wakatipu/Whakatipu Waimāori and Whakatipu Waitai (Martins Bay). • The upper reaches of the river include the western section of the Dart-Rees Track. Includes other recreational opportunities such as kayaking and jet boating. • Protected by the Water Conservation (Kawarau) Order 1997 which identifies its significance in accordance with tikanga Māori, in particular sites at the mouth of the river.	
		Natural character NAT1.1 See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
		Recreation REC11 • Preserved by the Water Conservation (Kawarau) Order 1997 in association with the Greenstone River and recognised as outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes).	Between E1250294/N5067403 and E1233258/N5023719 MAP [OWB] – Outstanding water bodies
		Physical PHY4 • Outstanding within the Otago region. • Excellent example of a braided river delta entering the head of a lake.	As shown on MAP [OWB] – Outstanding water bodies
OWB17	Diamond Creek	**Recreation REC19** • Protected by the Water Conservation (Kawarau) Order 1997 (fishery) and previously assessed as outstanding for recreation. • Regionally significant for angling.	Between E1234369/N5034588 and E1235176/N5029909

			MAP [OWB] – Outstanding water bodies
OWB18	Diamond Lake/Ōturu (Glenorchy)	**Landscape LAN4** • Narrow, intact, and rocky incised stream. • No modifications to the active *bed* or margins including water flow and changes to the creek channel. • Margins clad in intact beech forest. • Memorable and steep catchment adjacent to Diamond Lake. • The Earnslaw Burn Track extends halfway up the valley, offering views of Mount Earnslaw/Pikirakatahi.	As shown on MAP [OWB] – Outstanding water bodies
		Recreation REC2 • Protected by the Water Conservation (Kawarau) Order 1997 (fishery) and previously assessed as outstanding for recreation. • Locally significant for angling.	As shown on MAP [OWB] – Outstanding water bodies
OWB19	Diamond Lake (Wānaka)	**Physical PHY10** • Outstanding within the Otago region. • Complex landforms on the pluck side of a 775 metre high roche moutonee, including Diamond Lake/Ōturu. • Two square kilometre area of complex rocky knolls and depressions and rock faces.	As shown on MAP [OWB] – Outstanding water bodies
OWB20	Dingle Burn/Whakakea	**Landscape LAN23** • Rocky, braided river, unimpeded by structures, and consents. • Margins are clad in dense beech forest in the lower reaches and tall tussockland, grassland and subalpine vegetation in the upper reaches. • Distinctive alluvial fan in at the confluence of Lake Hāwea.	Between E1325048/N5091663 and E1312461/N5075538

		• Whakakea is the Māori name for the Dingleburn River.	
		Natural character NAT5.9 See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB21	Earnslaw Burn	**Landscape LAN3** • Narrow, intact, and rocky incised stream. • No modifications to the active *bed* or margins including water flow and changes to the creek channel. • Margins clad in intact beech forest. • Memorable and steep catchment adjacent to Diamond Lake. • The Earnslaw Burn Track extends halfway up the valley, offering views of Mount Earnslaw/Pikirakatahi.	Between E1235797/N5046340 and E1234362/N5034894 MAP [OWB] – Outstanding water bodies
		Natural character NAT1.7 See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB22	Fast Burn	**Natural character NAT5.12** See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB23	Glacier Burn (tributary to Matukituki/Mātakitaki River East Branch)	**Landscape LAN14a** • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. Some modifications in the lower reaches. • Margins clad in a mixture of intact beech forest, in the upper reaches to highly modified farmland in the lower reaches. • Legible braided river channels are highly expressive of their formative processes.	Between E1264378/N5069902 and E1266931/N5069212 MAP [OWB] – Outstanding water bodies

		• The Mātakitaki/Matukituki River was a traditional travel route for mana whenua between the shores of Lake Wānaka and Jackson Bay on the West Coast. • Several remote advanced tramping tracks within the upper reaches of the river including the Matukituki Track and Rob Roy Track.	
OWB24	Greenstone River	**Landscape LAN1b** • Intact braided rivers formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures. • Margins include a mixture of tussock and browntop within the open valleys, and beech forest within the upper reaches and the narrow gorge towards the lower extent of the River. • Fauna present include whio (blue duck) and pūtakitaki (paradise duck). • Vast and open river valleys defined by beech forest within the river margins. • Coherent braided river channels which are highly expressive of their formative processes. • Highly remote and scenic. • The Greenstone River valley was a traditional travel route between Lake Wakatipu/Whakatipu Waimāori to the Hollyford Valley for mana whenua. • The Greenstone River valley is associated with the high-country station owned by Ngāi Tahu and protected within the Greenstone Conservation Area. • A loop track follows the Greenstone River traversing the valleys surrounding the Ailsa Mountains.	Between E1215804/N5023466 and E1234077/N5013614 MAP [OWB] – Outstanding water bodies

		• Fishing for rainbow trout is available within the Greenstone River, with the *fish* abundant in numbers during the spring months.	
		Natural character NAT1.14a See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
		Recreation REC6 • Preserved by the Water Conservation (Kawarau) Order 1997 and previously assessed as outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes) • Nationally significant for angling – regionally outstanding. • Considered nationally significant for packrafting.	Between E1263693/N5005190 and E1301447/N5004377 MAP [OWB] – Outstanding water bodies
OWB25	Greenstone tributary	**Natural character NAT1.15** See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB26	Hen Burn	**Natural character NAT1.17** See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB27	Hunter Creek	**Natural character NAT1.19** See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB28	Hunter River East Branch	**Landscape LAN22a** • Intact braided river system with no structures, or consents. • Margins include dense beech forest in the upper reaches transitioning to areas of grazed grassland, regenerating indigenous forest (manuka and kanuka) and fernland. • River is highly expressive of its fluvial formative processes with a highly distinctive braided river pattern. • Upokotauia and Hāwea are the Māori names for the Hunter River.	Between E1331553/N5122162 and E1329182/N5118980 MAP [OWB] – Outstanding water bodies

		• Includes the Hunter River Valley tramping and mountain bike track. Also includes opportunities for four-wheel driving and horse riding.	
		Natural character NAT5.1a See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB29	Hunter River West Branch	**Natural character NAT5.1b** See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB30	Hunter River / Upokotauia/Hāwea (below confluence)	**Ecology ECL7** • Regarded as a braided river system. These provide highly important ecosystems as braided rivers are generally rare in Aotearoa and around the world. • Provide important breeding and feeding habitat to a range of native birds. • bird surveys report the presence of a range of threatened bird species: wrybill, banded dotterel, black-fronted tern, black billed gull, black back gull, and more recently occasional observations of black stilt/kaki. • Additional native water bird species are also recorded in these areas: paradise shelduck, South Island pied oystercatcher, spurwing plover, gray duck, pied stilt, pūkeko, white heron, Australasian shoveler, Australasian bittern.	As shown on MAP [OWB] – Outstanding water bodies
		Landscape LAN22b • Intact braided river system with no structures, or consents. • Margins include dense beech forest in the upper reaches transitioning to areas of grazed grassland, regenerating indigenous forest (manuka and kanuka) and fernland.	Between E1329182/N5118980 and E1316967/N5090889 MAP [OWB] – Outstanding water bodies

		• River is highly expressive of its fluvial formative processes with a highly distinctive braided river pattern. • Upokotauia and Hāwea are the Māori names for the Hunter River. • Includes the Hunter River Valley tramping and mountain bike track. Also includes opportunities for four-wheel driving and horse riding.	
		Natural character NAT5.1c See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
		Recreation REC23 • Nationally significant for angling – regionally outstanding. • Nationally significant for jetboating.	Between E1329182/N5118980 and E1316967/N5090889 MAP [OWB] – Outstanding water bodies
OWB31	Hunter River tributaries (true left)	**Natural character NAT5.3** See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB32	Kay Creek	**Landscape LAN1b** • Intact braided rivers formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures. • Margins include a mixture of tussock and browntop within the open valleys, and beech forest within the upper reaches and the narrow gorge towards the lower extent of the River. • Fauna present include whio (blue duck) and pūtakitaki (paradise duck). • Vast and open river valleys defined by beech forest within the river margins.	Between E1223553/N5026416 and E1222805/N5022810 MAP [OWB] – Outstanding water bodies

		• Coherent braided river channels which are highly expressive of their formative processes. • Highly remote and scenic. • The Greenstone River valley was a traditional travel route between Lake Wakatipu/Whakatipu Waimāori to the Hollyford Valley for mana whenua. • The Greenstone River valley is associated with the high-country station owned by Ngāi Tahu and protected within the Greenstone Conservation Area. • A loop track follows the Greenstone River traversing the valleys surrounding the Ailsa Mountains. • Fishing for rainbow trout is available within the Greenstone River, with the fish abundant in numbers during the spring months.	
OWB33	Kitchener Creek	**Landscape LAN14f** • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. Some modifications in the lower reaches. • Margins clad in a mixture of intact beech forest, in the upper reaches to highly modified farmland in the lower reaches. • Legible braided river channels are highly expressive of their formative processes. • The Mātakitaki/Matukituki River was a traditional travel route for mana whenua between the shores of Lake Wānaka and Jackson Bay on the West Coast. • Several remote advanced tramping tracks within the upper reaches of the river including the Matukituki Track and Rob Roy Track.	Between E1265577/N5074046 and E1267800/N5073507 MAP [OWB] – Outstanding water bodies

OWB34	Lake Castalia	**Landscape LAN16.1a** • No structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka) t. • Located in the headwaters of the Wilkin River.	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT4.2a See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB35	Lake Creek (tributary to the Hunter River)	**Ecology** • Recognised by the Water Conservation (Kawarau) Order 1997 for outstanding intrinsic values: essential characteristics that determine the ecoysstem's integrity, form, functioning, and resilience.	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT5.8 See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB36	Lake Harris/Te Hokaputu and staircase of circques	**Physical PHY1** • Outstanding within the Otago region. • Excellent and easily accessible example of a cirque lake (Lake Harris/Te Hokaputu) as part of a staircase of cirques along Routeburn Track.	As shown on MAP [OWB] – Outstanding water bodies
		Landscape LAN6a • Located in the headwaters of the Routeburn/Te Komama. • No modifications to the *bed*. • Margins are clad in dense beech forest. • Visible from the Routeburn track, one of New Zealand's popular Great Walks.	As shown on MAP [OWB] – Outstanding water bodies

OWB37	Lake Hāwea	**Landscape LAN21** • Glacially carved lake modified by the Hāwea Dam. • Margins are clad in a range of vegetation with varying degrees of modification. This includes dense beech forest, fernland, regenerating native vegetation (manuka and kanuka), grassland, pastoral farming and the township of Hāwea. • Water quality is considered 'very good' (based on LAWA scale of Very Good to Very Poor). Ecological condition is also considered excellent. • Highly legible glacial lake expressive of its formative processes, albeit with modified water levels. • Highly coherent and memorable landscape feature. • Lake Hāwea is associated with the ancestor Rākaihautū who dug the lake with his kō (digging stick). Several kāinga mahinga kai (food-gathering places) and kāinga nohoanga (settlements) were located around the lake where kea, kererū, kākā, kiwi, kākāpō, tūī, weka, pūtakitaki (paradise duck), pārera (duck sp.), tuna (eel), kāuru (cabbage tree root), aruhe (bracken fernroot), and pora ('Māori turnips') were gathered. • Popular for swimming, kayaking, boating and fishing.	As shown on MAP [OWB] – Outstanding water bodies
		Recreation REC39 • Nationally significant for angling.	As shown on MAP [OWB] – Outstanding water bodies
OWB38	Lake Hope	**Landscape LAN13c** • Located in the headwaters of the Wye Creek catchment.	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT7.2b Active bed	As shown on MAP [OWB] – Outstanding water bodies

		• Area contains unmodified waterbodies in Kawarau/Remarkables Conservation Area which encompasses the tops of the Kawarau/Remarkables Mountains and part of the Tāpuae O'Uenuku/Hector Ranges (draining the western slopes within Lake Wakatipu/Whakatipu Waimāori catchment) including alpine tarns, streams and wetlands. • Steep upper catchments and streams remain weed-free and free of man-made structures. • Very high water quality throughout the area. • Unmodified flow regimes. <u>Margins</u> • Located within the Kawarau/Remarkables Conservation Area. • Incised steep streams predominantly clad in snow tussock. • Few small-scale modifications, such as tracks. <u>Context</u> • Within Kawarau/the Remarkables Conservation Area pristine, highly natural landscape context including the mountainous headwaters and alpine valley floors. • Areas of tussockland on upper and mid mountain slopes with mountain beech forest limited to few deeply incised, steep gullies. • Sensitive landscape due to its high natural character values, wildness, and openness. Conservation area in upper catchment visited by recreationists. Catchment forms a frequently viewed natural backdrop to Lake Wakatipu/Whakatipu Waimāori.	
OWB39	Lake McKellar/Ōtākaha	**Landscape LAN1c**	As shown on MAP [OWB] – Outstanding water bodies

		• Margins include a mixture of tussock and browntop within the open valleys, and beech forest. • Fauna present include whio (blue duck) and pūtakitaki (paradise duck). • Highly remote and scenic. • Lake McKellar/Ōtākaha is one of several kāika mahika kai areas on this travel route and was named after an ancestor. • Protected within Fiordland National Park.	
		Recreation REC8 • Preserved by the Water Conservation (Kawarau) Order 1997 in association with the Greenstone River and recognised as outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes).	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT1.14b See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB40	Lake Reid	**Recreation REC20** • Protected by the Water Conservation (Kawarau) Order 1997 (fishery) and previously assessed as outstanding for recreation in association with Diamond Lake and Diamond Creek. • Angling significance assessments range from national to local. It appears the Lake Reid fishery has been assessed as part of the Diamond Lake and Diamond Creek fisheries, whereas the national angler survey indicates little angling activity in Lake Reid itself.	As shown on MAP [OWB] – Outstanding water bodies
OWB41	Lake Rere	**Landscape LAN1d** See OWB11.	As shown on MAP [OWB] – Outstanding water bodies

		• Fauna present include whio (blue duck) and pūtakitaki (paradise duck). • Highly remote and scenic.	
OWB42	Lake Sylvan	**Landscape LAN7** • Unmodified and intact glacially carved lake. • Margins are clad in dense beech forest. • Lake is highly legible and expressive of its formative processes. • The lake forms a section of the Lake Sylvan track and Rock Burn Track.	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT1.5 See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB43	Lake Unknown	**Landscape LAN9** • Unmodified and intact glacially carved lake. • Margins are clad in coherent areas of subalpine and tussock communities. • Lake is highly legible and expressive of its formative processes. • Lake Unknown can be reached by experienced trampers on several alpine routes.	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT1.3 See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB44	Lake Wakatipu/Whakatipu Waimāori	**Ecology ECL1** • Outstanding deep water bryophyte community with high diversity, present at depths deeper than that recorded for bryophytes in most other lakes in Aotearoa and elsewhere in the world.	As shown on MAP [OWB] – Outstanding water bodies

		• Intact plants communities extending from the water's edge to depths of 40-50 metres deep. • Not subject to large human induced water level fluctuations that can impact on shallow water plant communities (e.g., turf communities). • Diverse water bird community including Australasian crested grebe. • Protected by the Water Conservation (Kawarau) Order 1997 for its scientific value, in particular the bryophyte community and water clarity.	
		Landscape LAN12 • Intact glacially carved lake formed approximately 15,000 years ago. • Active *bed* of the lake remains largely unmodified, with the exception of surface water takes near Queenstown. • Several native aquatic flora present including deep water mosses (bryophytes), while the margins contain a spectrum of urban development near Queenstown, to intact areas of beech forest. • Water quality is considered 'very good' (based on LAWA scale of Very Good to Very Poor). Ecological condition is also considered excellent with limited impact from invasive species. • Flow of the waterbody towards the Kawarau River remains unimpeded due to the lack of structures (such as dams) within the active *bed*. • Highly legible glacial lake expressive of its formative processes. • Highly coherent and memorable landscape feature within the wider Wakatipu basin. • Heightened sense of naturalness with a lack of structures and modifications to the active *bed*.	As shown on MAP [OWB] – Outstanding water bodies

		• Lake Wakatipu or Whakatipu Waimāori is associated with the ancestor Rākaihautū who dug the lake with his kō (digging stick). • Popular for swimming, kayaking and fishing, and for tourism operations such as the TSS Earnslaw Cruise. • Protected by the Water Conservation (Kawarau) Order 1997 which identifies its significance in accordance with tikanga Māori, in particular sites at the head of the lake, and the legend of the lake itself.	
		Recreation REC3 • Protected by the Water Conservation (Kawarau) Order 1997 (recreational purposes, fishery) and previously assessed as outstanding for recreation (fishery, recreational purposes, in particular boating). • Nationally significant for angling – regionally outstanding.	As shown on MAP [OWB] – Outstanding water bodies
OWB45	Lake Wānaka	**Ecology ECL2** • Outstanding deep water bryophyte community with high diversity, present at depths well deeper than that recorded for bryophytes in most other lakes in Aotearoa and elsewhere in the world. • High diversity the native charophyte species. with eight reported species. • Intact plant community extending from the water's edge to depths of 40-50 metres deep. • Not subject to large human induced water level fluctuations that can impact on shallow water plant communities (e.g., turf communities). • Diverse water bird community including Australasian crested grebe.	As shown on MAP [OWB] – Outstanding water bodies

		Landscape LAN20 • Protected by the Lake Wanaka Preservation Act 1973. • Intact glacially carved lake which remains largely unmodified. • Margins are clad in a range of vegetation with varying degrees of modification. Northern extent includes areas of intact beech forest, fernland, and regenerating native vegetation (manuka and kanuka). Southern extent includes the township of Wānaka and areas of grassland and pastoral farming. • Water quality is considered 'very good' (based on LAWA scale of Very Good to Very Poor). Ecological condition is also considered excellent. • Highly legible glacial lake expressive of its formative processes. • Highly coherent and memorable landscape feature within the wider Wānaka basin. • Lake Wānaka is associated with the ancestor Rākaihautū who dug the lake with his kō (digging stick). Several kāinga mahinga kai (food-gathering places) and kāinga nohoanga (settlements) were located around the lake where tuna (eels), aruhe (bracken fernroot), weka, pora ('Māori turnip'), mahetau, kāuru (cabbage tree root), harakeke (flax), and kākāpō were gathered. • Popular for swimming, kayaking, boating and fishing.	As shown on MAP [OWB] – Outstanding water bodies
		Recreation REC27 • Protected by Lake Wānaka Preservation Act 1973. • Previously assessed as outstanding for a wide range of recreational uses. • Nationally significant for angling – regionally outstanding.	As shown on MAP [OWB] – Outstanding water bodies

OWB46	Lake Wilson	**Landscape LAN6b** • Located in the headwaters of the Routeburn/Te Komama. • No modifications to the *bed*. • Margins are clad in dense beech forest.	As shown on MAP [OWB] – Outstanding water bodies

OWB47	Lennox Creek and tributaries	**Landscape**
		• Preserved by the Water Conservation (Kawarau) Order 1997 for natural and physical qualities and characteristics that contribute to:
		  ○ people's appreciation of pleasantness of waters:
		  ○ aesthetic coherence.
			As shown on MAP [OWB] – Outstanding water bodies

OWB48	Leven Stream	**Natural character NAT4.5** See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB49	Lochy River/Te Awamāeroero	**Landscape LAN11** • Incised stream transitioning to a braided river near Halfway Bay. • Active *bed* is narrow in the upper reaches, with a semibraided section near the confluence with Wither Peak. • No modifications to the active *bed* or margins. • Margins within the upper reaches include a mixture of browntop and tussockland, matagouri scrub and shrubland, and beech forest, while the lower reaches are farmed and include a mixture of browntop and tussockland, and exotic shelter belts. • Geomorphic legibility of the waterbody remains intact and expressive of its formative processes, including the braided river patterns albeit surrounded by farmland in the lower reaches. • Memorable and highly legible feature to the north of the Eyre Mountain Range.	Between E1247806/N4981829 and E1262129/N4986981 MAP [OWB] – Outstanding water bodies

		• Highly coherent in the upper reaches due to lack of structures and modifications. • Associated with Māeroero (wild men of the woods). These men occupied the forested area of the Lochy River/Te Awamāeroero and were known for their great strength and craftiness. • Forms the boundary between Cecil Peak Station and Halfway Bay Station.	
		Natural character NAT6.1 See description for OWB13 – Cascade Creek (tributary to Lochy River).	As shown on MAP [OWB] – Outstanding water bodies
		Recreation REC4 • Protected by the Water Conservation (Kawarau) Order 1997 and previously assessed as outstanding for recreation (fishery, recreational purposes, in particular fishing) • Regionally significant for angling. • Considered nationally significant for packrafting.	Between E1238290/N4975690 and E1262129/N4986981
OWB50	Long Burn	**Natural character NAT6.3** See description for OWB13 – Cascade Creek (tributary to Lochy River).	As shown on MAP [OWB] – Outstanding water bodies
OWB51	Long Flat Creek	**Natural character NAT5.2** See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB52	Lucidus Lake	**Landscape LAN16.1b** • No structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka). • Located in the headwaters of the Wilkin River.	As shown on MAP [OWB] – Outstanding water bodies

		Natural character NAT4.2b See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB53	Makarora/Makarore River	**Ecology ECL6** • Regarded as a braided river system. These provide highly important ecosystems as braided rivers are generally rare in Aotearoa and around the world. • Provide important breeding and feeding habitat to a range of native birds. • bird surveys report the presence of a range of threatened bird species: wrybill, banded dotterel, black-fronted tern, black billed gull, black back gull. • Additional native water bird species are also recorded in these areas: paradise shelduck, South Island pied oystercatcher, spurwing plover, gray duck, pied stilt, pūkeko, white heron, Australasian shoveler, Australasian bittern.	As shown on MAP [OWB] – Outstanding water bodies
		Landscape LAN19 • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. Some modifications in the lower reaches including a *bore* and *discharge* to water consents, and roading infrastructure associated with State Highway 6. • Margins clad in a mixture of intact beech forest, regenerating native vegetation, and in the lower reaches, farmland. • Coherent braided river channels are highly expressive of their formative processes.	Between E1315767/N5108081 and E1295059/N5087449 MAP [OWB] – Outstanding water bodies

		• Makarore River is the correct spelling for the Makarora River and was the main travel route between Lake Wānaka and Haast. The river is recorded as a kāinga mahinga kai where pora ("Māori turnip"), kāuru (cabbage tree root), aruhe (bracken fernroot), weka, kiwi, kākāpō, kea, kererū, kākā, and tuna (eel) were gathered. • State Highway 6 follows the margins of the river to the Haast Pass. • Upper extent of the valley includes the Makarora/Makarore Valley tramping track.	
		Physical PHY6 • Outstanding within the Otago region. • Good example of a braided river delta entering a lake.	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT4.9 See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB54	Matukituki/Mātakitaki River East Branch	**Ecology ECL5a (only a small part)** • Regarded as a braided river system. These provide highly important ecosystems as braided rivers are generally rare in Aotearoa and around the world. • Provides important breeding and feeding habitat to a range of native birds. • Bird surveys report the presence of a range of threatened bird species: wrybill, banded dotterel, black-fronted tern, black billed gull, black back gull, and more recently occasional observations of black stilt/kaki. • Additional native water bird species are also recorded in these areas: paradise shelduck, South Island pied oystercatcher, spurwing plover,	As shown on MAP [OWB] – Outstanding water bodies

		gray duck, pied stilt, pūkeko, white heron, Australasian shoveler, Australasian bittern.	
		Landscape LAN14a • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. Some modifications in the lower reaches. • Margins clad in a mixture of intact beech forest, in the upper reaches to highly modified farmland in the lower reaches. • Legible braided river channels are highly expressive of their formative processes. • The Mātakitaki/Matukituki River was a traditional travel route for mana whenua between the shores of Lake Wānaka and Jackson Bay on the West Coast. • Several remote advanced tramping tracks within the upper reaches of the river including the Matukituki Track and Rob Roy Track.	Between E1269447/N5084528 and E1267800/N5073507
		Natural character NAT2.3 Active bed • Pristine or largely unmodified waterbodies in Tititea/Mount Aspiring NP and adjacent conservation areas, including glacial/ cirque lakes, alpine streams and rivers, and wetlands, including the Matukituki/Mātakitaki Valley Wetland. • Braided riverbed of the Matukituki/Mātakitaki River East Branch and Matukituki/Mātakitaki River West Branch is weed-free. The unrestricted riverbed displays strongly its natural braided form.	As shown on MAP [OWB] – Outstanding water bodies

		• Braided riverbed provides important bird habitat, nesting and breeding habitats for threatened birds such as ngutu pare/wrybill, banded dotterel, black billed gull, and tarapirohe/black-fronted tern. • Very high-water quality throughout the area. • Unmodified flow regimes. <u>Margins</u> • Native vegetation along riverbanks consisting of beech forest within the valleys and tall tussock grassland, and cushionfield in the upper reaches. • Very small-scale modifications, such as walking tracks, footbridges and huts. • No grazing along margins. <u>Context</u> • Pristine, highly natural landscape context from the mountainous headwaters to the valley floors, including within Mount Aspiring National Park and adjacent conservation areas. • Overall, highly natural landforms and natural patterns dominate. • Sensitive landscape due to its high natural character values, remoteness, and openness, visited by locals and tourists alike.	
		Recreation REC28 • Nationally significant for jetboating, including adventure boating – regionally outstanding. • Considered nationally significant for packrafting.	Between E1269598/N5084108 and E1266511/N5068281 MAP [OWB] – Outstanding water bodies
OWB55	Matukituki/Mātakitaki River West Branch	**Ecology ECL5b (only a small part)**	As shown on MAP [OWB] – Outstanding water bodies

		• Regarded as a braided river system. These provide highly important ecosystems as braided rivers are generally rare in Aotearoa and around the world. • Provides important breeding and feeding habitat to a range of native birds. • Bird surveys report the presence of a range of threatened bird species: wrybill, banded dotterel, black-fronted tern, black billed gull, black back gull, and more recently occasional observations of black stilt/kaki. • Additional native water bird species are also recorded in these areas: paradise shelduck, South Island pied oystercatcher, spurwing plover, gray duck, pied stilt, pūkeko, white heron, Australasian shoveler, Australasian bittern.	
		Landscape LAN14b • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. Some modifications in the lower reaches. • Margins clad in a mixture of intact beech forest, in the upper reaches to highly modified farmland in the lower reaches. • Legible braided river channels are highly expressive of their formative processes. • The Mātakitaki/Matukituki River was a traditional travel route for mana whenua between the shores of Lake Wānaka and Jackson Bay on the West Coast. • Several remote advanced tramping tracks within the upper reaches of the river including the Matukituki Track and Rob Roy Track.	Between E1256028/N5072541 and E1267172/N5066359 MAP [OWB] – Outstanding water bodies

		Natural character NAT2.1 See description of OWB54 – Matukituki/Mātakitaki River East Branch.	As shown on MAP [OWB] – Outstanding water bodies
		Recreation REC29 • Nationally significant for jetboating – regionally outstanding. • Considered nationally significant for packrafting.	Between E1255937/N5073562 and E1255430/N5065513 MAP [OWB] – Outstanding water bodies
OWB56	Matukituki/Mātakitaki River (below confluence)	**Ecology ECL5c (excluding parts above)** • Regarded as a braided river system. These provide highly important ecosystems as braided rivers are generally rare in Aotearoa and around the world. • Provides important breeding and feeding habitat to a range of native birds. • Bird surveys report the presence of a range of threatened bird species: wrybill, banded dotterel, black-fronted tern, black billed gull, black back gull, and more recently occasional observations of black stilt/kaki. • Additional native water bird species are also recorded in these areas: paradise shelduck, South Island pied oystercatcher, spurwing plover, gray duck, pied stilt, pūkeko, white heron, Australasian shoveler, Australasian bittern.	As shown on MAP [OWB] – Outstanding water bodies
		Landscape LAN14c • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. Some modifications in the lower reaches.	Between E1267172/N5066359 and E1283498/N5051707 MAP [OWB] – Outstanding water bodies

		• Margins clad in a mixture of intact beech forest, in the upper reaches to highly modified farmland in the lower reaches. • Legible braided river channels are highly expressive of their formative processes. • The Mātakitaki/Matukituki River was a traditional travel route for mana whenua between the shores of Lake Wānaka and Jackson Bay on the West Coast. • Several remote advanced tramping tracks within the upper reaches of the river including the Matukituki Track and Rob Roy Track.	
OWB57	Motatapu River South Branch	**Landscape LAN15b** • Narrow, incised, and rocky river devoid of structures and modifications. Some vehicle crossings present near Motutapu Station. • Margins are clad in tall tussockland in the upper reaches and farmland in the lower reaches. • Memorable river within the Lake Wānaka catchment. • River is renowned for the Motatapu annual mountain bike race and several walking trails.	Between E1273289/N5031228 and E1276168/N5037266 MAP [OWB] – Outstanding water bodies
OWB58	Motatapu River	**Landscape LAN15c** • Narrow, incised, and rocky river devoid of structures and modifications. Some vehicle crossings present near Motutapu Station. • Margins are clad in tall tussockland in the upper reaches and farmland in the lower reaches. • Memorable river within the Lake Wānaka catchment. • River is renowned for the Motatapu annual mountain bike race and several walking trails.	Between E1276168/N5037266 and E1279371/N5053093 MAP [OWB] – Outstanding water bodies

		Physical PHY7 • Outstanding within New Zealand/Aotearoa. • An extremely narrow, 2.5 metre wide gorge.	Between E1279888/N5042223 and E1279647/N5042973
OWB59	Ore Stream	**Natural character NAT4.6** See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB60	Pass Burn	**Natural character NAT1.18** See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB61	Rees River / Puahiri/Puahere	**Landscape LAN2** • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures. Some gravel extraction in the lower reaches. • Margins clad in a mixture of intact beech forest, regenerating native vegetation, and farmland. • Coherent braided river channels are highly expressive of their formative processes. • Puahere and Puahiri are the Māori names for the Rees River. • Includes the eastern section of the Rees-Dart Track a popular tramping track. • Protected by the Water Conservation (Kawarau) Order 1997 which identifies its significance in accordance with tikanga Māori, in particular sites at the mouth of the river.	Between E1243781/N5056978 and E1233258/N5023719 MAP [OWB] – Outstanding water bodies
		Natural character NAT1.8 See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies

		Recreation REC18 • Protected by the Water Conservation (Kawarau) Order 1997 but not specifically for recreational characteristics (recognised for outstanding scenic characteristics). • Largely within UNESCO World Heritage Site and Mount Aspiring National Park and assessed as therefore having high associated recreation values. • Angling significance assessments range from national to local. • Considered nationally significant for packrafting.	Between E1243781/N5056978 and E1239910/N5049827 MAP [OWB] – Outstanding water bodies
OWB62	Rob Roy Stream	**Landscape LAN14a** • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. Some modifications in the lower reaches. • Margins clad in a mixture of intact beech forest, in the upper reaches to highly modified farmland in the lower reaches. • Legible braided river channels are highly expressive of their formative processes. • The Mātakitaki/Matukituki River was a traditional travel route for mana whenua between the shores of Lake Wānaka and Jackson Bay on the West Coast. • Several remote advanced tramping tracks within the upper reaches of the river including the Matukituki Track and Rob Roy Track.	Between E1260115/N5066176 and E1260116/N5063143 MAP [OWB] – Outstanding water bodies
		Natural character NAT2.2 • See description of OWB54 – Matukituki/Mātakitaki River East Branch.	As shown on MAP [OWB] – Outstanding water bodies

OWB63	Rock Burn	**Landscape LAN8** • Narrow, intact, and rocky incised stream. • No modifications to the active *bed* or margins including water flow and changes to the creek channel. • Includes Lake Nerine in the headwaters of the catchment. • Margins clad in intact beech forest. • Highly legible and expressive of its formative processes. • The Rock Burn track follows the margins of the Rock Burn and connects to Lake Sylvan-Rock Burn Track.	Between E1221227/N5047564 and E1228740/N5043032 MAP [OWB] – Outstanding water bodies
		Natural character NAT1.4 See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB64	Route Burn/Te Komama Left Branch	**Landscape LAN6c** • Narrow, rocky, and intact semi-braided river. • No modifications to the active *bed*. • Margins are clad in dense beech forest. • Highly memorable due to forming a significant section of the Routeburn Track. • Te Komama is the Māori name for the Dart River. The river was part of a key travel route between Lake Whakatipu and Whakatipu Waitai (Martins Bay). • The Routeburn track is one of New Zealand's popular Great Walks and follows the margins of the Route Burn to the east of the Main Divide.	Between E1217928/N5038034 and E1221564/N5036599 MAP [OWB] – Outstanding water bodies
		Natural character NAT1.6a See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies

		Physical PHY2 • Outstanding within New Zealand/Aotearoa. • One of the two best examples of a glacial stairway in New Zealand/Aotearoa. It exhibits a range of glacial features including cirques and terminal moraine.	Between E1219341/N5036027 and E1220692/N5036388 MAP [OWB] – Outstanding water bodies
		Recreation REC21a • Preserved by the Water Conservation (Kawarau) Order 1997 and recognised as outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes). • Nationally significant for white water kayaking – regionally outstanding. • Considered nationally significant for packrafting. • Regionally significant for angling.	Between E1218188/N5035827 and E1221564/N5036599 MAP [OWB] – Outstanding water bodies
OWB65	Route Burn/Te Komama North Branch	**Landscape LAN6d** • Narrow, rocky, and intact semi-braided river. • No modifications to the active *bed*. • Margins are clad in dense beech forest. • Te Komama is the Māori name for the Dart River. The river was part of a key travel route between Lake Whakatipu and Whakatipu Waitai (Martins Bay).	Between E1220450/N5040083 and E1221564/N5036599 MAP [OWB] – Outstanding water bodies
		Natural character NAT1.6b See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies

		Recreation REC21b • Preserved by the Water Conservation (Kawarau) Order 1997 and recognised as outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes). • Nationally significant for white water kayaking – regionally outstanding. • Considered nationally significant for packrafting. • Regionally significant for angling.	Between E1219366/N5043387 and E1221564/N5036599 MAP [OWB] – Outstanding water bodies
OWB66	Route Burn/Te Komama (below branches)	**Landscape LAN6e** • Narrow, rocky, and intact semi-braided river. • No modifications to the active *bed*. • Margins are clad in dense beech forest. • Highly memorable due to forming a significant section of the Routeburn Track. • Te Komama is the Māori name for the Dart River. The river was part of a key travel route between Lake Whakatipu and Whakatipu Waitai (Martins Bay). • The Routeburn track is one of New Zealand's popular Great Walks and follows the margins of the Route Burn to the east of the Main Divide.	Between E1221564/N5036599 and E1229836/N5035903 MAP [OWB] – Outstanding water bodies
		Natural character NAT1.6c See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
		Recreation REC21c • Preserved by the Water Conservation (Kawarau) Order 1997 and recognised as outstanding for recreation (natural and physical	Between E1221564/N5036599 and E1229826/N5035913

		qualities and characteristics that contribute to recreational attributes). • Nationally significant for white water kayaking – regionally outstanding. • Considered nationally significant for packrafting. • Regionally significant for angling	MAP [OWB] – Outstanding water bodies
OWB67	Sawyer Burn	**Natural character NAT5.11** See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB68	Scott Creek	**Natural character NAT1.12** See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB69	Scrubby Flat Creek	**Natural character NAT5.5** See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB70	Short Burn	**Natural character NAT6.4** See description for OWB13 – Cascade Creek (tributary to Lochy River).	As shown on MAP [OWB] – Outstanding water bodies
OWB71	Siberia Stream	**Landscape LAN16.2a** • Intact braided river with no structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka), and areas of grazed pasture in lower reaches of the catchment. • Active *bed* is highly expressive of its formative processes including braided river channels. • Siberia Stream has popular remote tramping tracks including the Gillespie Pass Circuit.	Between E1283107/N5094081 and E1282174/N5102999 and including: Tributary from Crucible Lake between E1280801/N5101009 and E1283345/N5100567 Gillespie Stream between E1285056/N5101378 and E1283796/N5099996

			MAP [OWB] – Outstanding water bodies
		Natural character NAT4.2f See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB72	Slip Stream	**Natural character NAT1.20** See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB73	Sly Burn	**Natural character NAT1.11** See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB74	Snowy Creek	**Landscape LAN5** • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. • Some modifications in the lower reaches including a bore and gravel extraction consent, and the Glenorchy Route Burn Road bridge. • Margins clad in a mixture of intact beech forest, regenerating native vegetation, and in the lower reaches, farmland. • Coherent braided river channels are highly expressive of their formative processes. • Te Awa Whakatipu is the Māori name for the Dart River. The river was part of a key travel route between Lake Wakatipu/Whakatipu Waimāori and Whakatipu Waitai (Martins Bay). • The upper reaches of the river include the western section of the Dart-Rees Track. Includes other recreational opportunities such as kayaking and jet boating.	Between E1247836/N5057400 and E1246693/N5060644 MAP [OWB] – Outstanding water bodies

		• Protected by the Water Conservation (Kawarau) Order 1997 which identifies its significance in accordance with tikanga Māori, in particular sites at the mouth of the river.	
OWB75	Staircase Creek	**Natural character NAT7.3** See description of OWB38 – Lake Hope.	As shown on MAP [OWB] – Outstanding water bodies
OWB76	Steele Creek	**Natural character NAT1.16** See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB77	Terrace Creek	**Natural character NAT5.10** See description for OWB4 – Bee Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB78	Tiel Creek	**Natural character NAT4.8** See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB79	Timaru River	**Landscape LAN24** • Narrow, and rocky braided river devoid of structures and consents. • Margins are clad in areas of dense beech forest, regenerating native vegetation (manuka and kanuka), tall tussockland, grassland and sub alpine vegetation. • River is highly expressive of its fluvial formative processes with a highly distinctive braided river pattern. • The Timaru River is recorded as a landing place for mōkihi (rafts), and a kāinga mahinga kai (food-gathering place) where tuna (eels) and weka were gathered. • Includes the Lower Timaru River Track which connects to the Te Araroa Trail.	Between E1321126/N5067527 and E1307301/N5061545 MAP [OWB] – Outstanding water bodies
OWB80	Twelve Mile Creek	**Natural character NAT1.21** See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies

OWB81	Twenty Five Mile Creek	**Natural character NAT1.10** See description for OWB3 – Beans Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB82	Twin Falls (Wānaka)	**Physical PHY8** • Outstanding within the Otago region. • Best example of waterfalls flowing over the vertical sides of Matukituki/Mātakitaki glacial valley. Readily visible. • Two falls, 200 metres apart, flow over 200 metres near vertical cliffs.	As shown on MAP [OWB] – Outstanding water bodies
OWB83	Von River North Branch	**Ecology ECL9a (incl. tributaries)** • The Von River, a tributary of Lake Wakatipu/Whakatipu Waimāori, has a combination of native freshwater *fish* found nowhere else in Aotearoa. • Alpine galaxias 'Southland', Gollum galaxias, Southern flathead (all non-diadromous galaxiids) and upland bully have colonised the Von River. • One of only two rivers that are tributaries of the glacial lakes in Otago with non-diadromous galaxiids. • The presence of landlocked koaro in the Wakatipu basin has allowed this usually diadromous fish to establish populations in Lake Wakatipu tributaries including the Von River where it forms a unique suite of *fish* species with the other *fish* species there.	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT6.5 See description for OWB13 – Cascade Creek (tributary to Lochy River).	As shown on MAP [OWB] – Outstanding water bodies
		Recreation REC5a • Protected by the Water Conservation (Kawarau) Order 1997 and previously assessed as outstanding for recreation (natural and	Between E1229710/N4993015 and E1232511/N4986408

		physical qualities and characteristics that contribute to recreational attributes). • Regionally significant for angling	MAP [OWB] – Outstanding water bodies
OWB84	Von River South Branch	**Ecology ECL9b (incl. tributaries)** • The Von River, a tributary of Lake Wakatipu/Whakatipu Waimāori, has a combination of native freshwater *fish* found nowhere else in Aotearoa. • Alpine galaxias 'Southland', Gollum galaxias, Southern flathead (all non-diadromous galaxiids) and upland bully have colonised the Von River. • One of only two rivers that are tributaries of the glacial lakes in Otago with non-diadromous galaxiids. • The presence of landlocked koaro in the Wakatipu basin has allowed this usually diadromous fish to establish populations in Lake Wakatipu tributaries including the Von River where it forms a unique suite of *fish* species with the other *fish* species there.	As shown on MAP [OWB] – Outstanding water bodies
		Recreation REC5b • Protected by the Water Conservation (Kawarau) Order 1997 and previously assessed as outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes). • Regionally significant for angling	Between E1233757/N4973733 and E1232511/N4986409 MAP [OWB] – Outstanding water bodies
OWB85	Von River (below branches)	**Ecology ECL9c (incl. tributaries)** • The Von River, a tributary of Lake Wakatipu/Whakatipu Waimāori, has a combination of native freshwater fish found nowhere else in Aotearoa.	As shown on MAP [OWB] – Outstanding water bodies

		• Alpine galaxias 'Southland', Gollum galaxias, Southern flathead (all non-diadromous galaxiids) and upland bully have colonised the Von River. • One of only two rivers that are tributaries of the glacial lakes in Otago with non-diadromous galaxiids. • The presence of landlocked koaro in the Wakatipu basin has allowed this usually diadromous fish to establish populations in Lake Wakatipu tributaries including the Von River where it forms a unique suite of fish species with the other fish species there.	
		Recreation REC5c • Protected by the Water Conservation (Kawarau) Order 1997 and previously assessed as outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes). • Regionally significant for angling	Between E1232511/N4986408 and E1240280/N4997171 MAP [OWB] – Outstanding water bodies
OWB86	Von Valley Wetland	**Ecology ECL10** • Scored an outstanding weighted conservation rank of 1.0 within the FENZ/WONI analysis (highest rank). • Non-migratory - threatened southern flathead galaxias is likely in the streams connecting wetlands, and both the black and *Gollum galaxias* are likely within the wetlands here. • Large area with an outstanding diversity of habitat types. • High diversity of flora within the kettleholes and their margins. This is described by Johnson (1993). • Presence of internationally rare and threatened plant species Cardamine sp., Oreomyrrhis colensoi var. delicatula, Crassula	As shown on MAP [OWB] – Outstanding water bodies

		multicaulis, Isolepis basilaris, Tufted hair – grass (Deschampsia caespitosa), Ranunculus ternatifolius and Brachyscome linearis.	
OWB87	Whitbourn River	**Landscape LAN5** • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. • Some modifications in the lower reaches including a bore and gravel extraction consent, and the Glenorchy Route Burn Road bridge. • Margins clad in a mixture of intact beech forest, regenerating native vegetation, and in the lower reaches, farmland. • Coherent braided river channels are highly expressive of their formative processes. • Te Awa Whakatipu is the Māori name for the Dart River. The river was part of a key travel route between Lake Wakatipu/Whakatipu Waimāori and Whakatipu Waitai (Martins Bay). • The upper reaches of the river include the western section of the Dart-Rees Track. Includes other recreational opportunities such as kayaking and jet boating. • Protected by the Water Conservation (Kawarau) Order 1997 which identifies its significance in accordance with tikanga Māori, in particular sites at the mouth of the river.	Between E1243837/N5065148 and E1244650/N5060973 MAP [OWB] – Outstanding water bodies
OWB88	Wilkin River/Ōtānenui North Branch	**Landscape LAN16.1c** • Intact braided river with no structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka), and areas of grazed pasture in lower reaches of the catchment.	Between E1274143/N5095114 and E1272358/N5089664 Includes the tributary from Lucidus Lake between

		• Active *bed* is highly expressive of its formative processes including braided river channels. • Ōtānenui is the Māori name for the Wilkin River and is recorded as a kāinga mahinga kai and kāinga tūturu where kāuru (cabbage tree root), aruhe (bracken fernroot), kākāpō, weka, and tuna (eels) were gathered. • Wilkin River has popular remote tramping tracks including the Gillespie Pass Circuit.	E1272508/N5092407 and E1272508/N5091706 MAP [OWB] – Outstanding water bodies
		Natural character NAT4.2c See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB89	Wilkin River/Ōtānenui South Branch	**Landscape LAN16.1d** • Intact braided river with no structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka), and areas of grazed pasture in lower reaches of the catchment. • Active *bed* is highly expressive of its formative processes including braided river channels. • Ōtānenui is the Māori name for the Wilkin River and is recorded as a kāinga mahinga kai and kāinga tūturu where kāuru (cabbage tree root), aruhe (bracken fernroot), kākāpō, weka, and tuna (eels) were gathered. • Wilkin River has popular remote tramping tracks including the Gillespie Pass Circuit.	Between E1268726/N5085264 and E1272358/N5089664 MAP [OWB] – Outstanding water bodies
		Natural character NAT4.2d See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies

OWB90	Wilkin River/Ōtānenui	**Landscape LAN16.1e** • Intact braided river with no structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka), and areas of grazed pasture in lower reaches of the catchment. • Active *bed* is highly expressive of its formative processes including braided river channels. • Ōtānenui is the Māori name for the Wilkin River and is recorded as a kāinga mahinga kai and kāinga tūturu where kāuru (cabbage tree root), aruhe (bracken fernroot), kākāpō, weka, and tuna (eels) were gathered. • Wilkin River has popular remote tramping tracks including the Gillespie Pass Circuit.	Between E1272358/N5089664 and E1295598/N5090152 MAP [OWB] – Outstanding water bodies
		Natural character NAT4.2e See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB91	Wye Creek	**Landscape LAN13a** • Intact and rocky incised stream. • Active *bed* is narrow with a steep gradient. • Margins of the stream are lined with dense native conifer species and broadleaf forest. • Memorable and steep catchment adjacent to Wye Creek Settlement. • The Wye Creek Track is a popular day walk and follows the Wye Creek hydro dam. The upper reaches turn into the Wye Creek Route which leads to Lake Alta	Between E1271304/N4999438 and E1266075/N4993021 MAP [OWB] – Outstanding water bodies
		Natural character NAT7.1	As shown on MAP [OWB] – Outstanding water bodies

		See description of OWB38 – Lake Hope.	
OWB92	Wye Creek South Branch	**Natural character NAT7.2** See description of OWB38 – Lake Hope.	As shown on MAP [OWB] – Outstanding water bodies
		Landscape LAN13b • Intact and rocky incised stream. • Active *bed* is narrow with a steep gradient. • Margins of the stream are lined with dense native conifer species and broadleaf forest. • Memorable and steep catchment adjacent to Wye Creek Settlement. • The Wye Creek Track is a popular day walk and follows the Wye Creek hydro dam. The upper reaches turn into the Wye Creek Route which leads to Lake Alta	Between E1271804/N4993327 and E1267226/N4992872 MAP [OWB] – Outstanding water bodies
OWB93	Young River/Te Awamakarara North Branch	**Landscape LAN17a** • Intact braided river with no structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka), and areas of grazed pasture in lower reaches of the catchment. • Active *bed* is highly expressive of its formative processes including braided river channels. • Te Awamakarara is the Māori name for the Young River and is recorded as a kāinga mahinga kai where weka, kākāpō, kāuru (cabbage tree root), aruhe (bracken fernroot), and tuna (eels) were gathered. • Includes the Gillespie Pass Circuit, a remote tramping track.	Between E1287877/N5106573 and E1291842/N5100959 MAP [OWB] – Outstanding water bodies

		Natural character NAT4.4a See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB94	Young River/Te Awamakarara South Branch	**Landscape LAN17b** • Intact braided river with no structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka), and areas of grazed pasture in lower reaches of the catchment. • Active *bed* is highly expressive of its formative processes including braided river channels. • Te Awamakarara is the Māori name for the Young River and is recorded as a kāinga mahinga kai where weka, kākāpō, kāuru (cabbage tree root), aruhe (bracken fernroot), and tuna (eels) were gathered. Includes the Gillespie Pass Circuit, a remote tramping track.	Between E1286617/N5103540 and E1291842/N5100959 MAP [OWB] – Outstanding water bodies
		Natural character NAT4.4b See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
OWB95	Young River/Te Awamakarara (below confluence)	**Landscape LAN17c** • Intact braided river with no structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka), and areas of grazed pasture in lower reaches of the catchment. • Active *bed* is highly expressive of its formative processes including braided river channels. • Te Awamakarara is the Māori name for the Young River and is recorded as a kāinga mahinga kai where weka, kākāpō, kāuru	Between E1291842/N5100959 and E1299408/N5098957 MAP [OWB] – Outstanding water bodies

		(cabbage tree root), aruhe (bracken fernroot), and tuna (eels) were gathered. Includes the Gillespie Pass Circuit, a remote tramping track.	
		Natural character NAT4.4c See description for OWB2 – Albert Burn.	As shown on MAP [OWB] – Outstanding water bodies
Dunstan rohe			
OWB96	Arrow River/Haehaenui	**Landscape LAN28** • Rocky narrow riverbed characterised by the schist underlying geology. • Margins of the river become more modified in the lower reaches with willows and grassland being the predominant vegetation. Upper reaches are clad in tall tussockland. • Distinctive and memorable local feature for the township of Arrowtown. • Haehaenui is the Māori name for the Arrow River. • The Arrow River/Haehaenui is associated largely with the Otago Gold Rush during the mid-1800s with remnants of mining within the active *bed* still present.	Between E1270830/N5027322 and E1275531/N5007926 MAP [OWB] – Outstanding water bodies
OWB97	Breast Creek	**Landscape LAN35** • Narrow, rocky riverbed with limited structures and consents. • Margins within the upper reaches are clad in tall tussockland and grassland, while lower reaches are more modified with productive farmland. • Highly memorable and legible feature within the Lindis Pass. • Ōmakō is one of the Ngāi Tahu names for the Lindis Pass. Sections of the river form part of the traditional travel route between Te Manahuna (the Mackenzie Basin) and Central Otago.	Between E1314918/N5056026 and E1325095/N5056452 MAP [OWB] – Outstanding water bodies

		• The Lindis River had a fleeting gold rush during 1861 and is now bordered by State Highway 8 between the Mackenzie Basin and Central Otago.	
OWB98	Cardona River/Ōrau	**Landscape LAN32** • Relatively inconspicuous narrow river, transitioning to a braided river in the lower reaches of the Cardrona Valley. • Several structures and modifications within the middle of the catchment associated with *bores*, *earthworks*, and groundwater takes. • Margins within the upper reaches still contain extensive areas of tall tussockland. Lower reaches are more modified with farmland and exotic willow species. • Highly legible and central feature within the Cardrona Valley. • Ōrau is the Māori name for the Cardrona River and was a traditional travel route between Lakes Wakatipu/Whakatipu Wāimaori, Wānaka, and Hāwea. The river was regarded as a kāinga mahinga kai (food-gathering place) where tuna (eels), pora ('Māori turnip') and weka were gathered.	Between E1281232/N5012646 and E1293142/N5037578 MAP [OWB] – Outstanding water bodies
OWB99	Coal Creek	**Natural character NAT9.2** Active bed • Pristine or largely unmodified waterbodies in the Remarkables Conservation Area which encompasses isolated areas of the Remarkables Mountains and part of the Hector Ranges/Tāpuae O'Uenuku (eastern slopes within Nevis River/Te Papapuni catchment) including alpine tarns, streams and wetlands. • Headwaters of the Nevis River/Te Papapuni encompass extensive alpine wetlands in the Garvie Mountains that drain into Roaring Lion	As shown on MAP [OWB] – Outstanding water bodies

		Creek, containing meanders and oxbows in an upland valley with a mixture of bogs and fens on the valley floor. • Steep riverine gorge habitats, and only habitat for the Nevis galaxias. • Steep upper catchments and streams remain weed-free and free of man-made structures. • Very high water quality throughout the area. • Unmodified flow regimes throughout the area. <u>Margins</u> • Predominantly native vegetation including tall tussock grassland, snow tussock, and in the upper reaches of herbfield, mossfield and sedgeland, including intact alpine seepages. • Few small-scale modifications, such as tracks. <u>Context</u> • Highly natural landscape context including the mountainous headwaters and alpine valley floors. • Areas of tall tussock grassland and snow tussockland on upper and mid mountain slopes. Typical alpine ecosystems are well represented, although shrublands are confined to the wetter parts of the area or as remnants around rock tors. • Sensitive landscape due to its high natural character values, remoteness, and openness.	
OWB100	Doolans Creek	**Landscape LAN33** • Narrow, and rocky active *bed* with limited structures and consents. • Margins have been modified for grazing at the base of the valley however the upper reaches remain tall tussockland.	Between E1283826/N4999856 and E1287277/N5002141 MAP [OWB] – Outstanding water bodies

		• The Nevis River forms the distinctive valley to the east of the Remarkables and is highly expressive of its tectonic formative processes (Department of Geology Otago University, n.d.). • Te Papapuni is the Māori name for the Nevis River and was a traditional travel route connecting Central Otago to Murihiku (Southland). • While the river forms part of Ben Nevis Station, there are still remnants of historic mining activity within the margins of the river. • Wild and scenic characteristics identified in Water Conservation (Kawarau) Order.	
OWB101	Flood Burn	**Landscape LAN26** • Largely intact braided river and wider catchment with historic modifications associated with gold mining. • Margins within the upper reaches are less modified and clad in tall tussockland and sub alpine vegetation. Lower reaches includes grassland, tall tussockland, and areas of regenerating native vegetation (manuka and kanuka). • Highly memorable river within the Queenstown context for its history and vast catchment. • River is highly expressive of its formative processes with legible braided river channels. • Kimiākau is the Māori name for the Shotover River and was a kāinga mahinga kai (food-gathering place). • Associated with 1860s Otago Gold Rush with remnants of this activity still present today. • Protected by the Water Conservation (Kawarau) Order 1997 for historic purposes related to goldmining.	Between E1252923/N5037100 and E1260731/N5038697 MAP [OWB] – Outstanding water bodies

OWB102	Glencairn Creek	**Natural character NAT8.2** Active bed • Pristine or largely unmodified waterbodies in Conservation Areas and reserves which encompasses areas of the Richardson and Harris Mountains, including alpine tarns, streams and wetlands. • Headwaters of the Shotover River/Kimiākau include Lochnagar/Ōtaka, a large lake formed through a natural rockslide. • Steep upper catchments and streams weed-free and free of man-made structures. • Very high water quality throughout the area. • Unmodified flow regimes, including absence of water takes and bores. Margins • Along incised steep streams predominantly native vegetation including sub-alpine scrub, cushionfield, tall tussock grassland, and snow tussock. • Few small-scale modifications, such as tracks. • Grey shrublands, particularly those in steep, shaded gullies unaffected by fire and browsing animals, are important wildlife habitats. Context • Highly natural landscape context within the headwaters and alpine valley floors. Conservation areas in the catchment are adjacent to the highly natural area that falls within Tititea/Mount Aspiring National Park. • Areas of snow tussock, cushionfield, and alpine herbfields on upper and mid mountain slopes.	As shown on MAP [OWB] – Outstanding water bodies

		• Sensitive landscape due to its high natural character values, remoteness, and openness. **Natural character NAT8.1a** **Natural character NAT8.4** **Natural character NAT8.3a** **Natural character NAT8.3a**	
OWB103	Gold/Rich Burn	**Landscape LAN28** • Rocky narrow riverbed characterised by the schist underlying geology. • Margins of the river become more modified in the lower reaches with willows and grassland being the predominant vegetation. Upper reaches are clad in tall tussockland. • Distinctive and memorable local feature for the township of Arrowtown. • Haehaenui is the Māori name for the Arrow River. • The Arrow River/Haehaenui is associated largely with the Otago Gold Rush during the mid-1800s with remnants of mining within the active *bed* still present.	Between E1266296/N5026207 and E1269481/N5023717 MAP [OWB] – Outstanding water bodies
OWB104	Hāwea River	**Recreation REC39** • Nationally significant for white water kayaking. • Regionally significant for rafting.	Between E1302519/N5053528 and E1298502/N5045478 MAP [OWB] – Outstanding water bodies
OWB105	Kawarau River	**Landscape LAN30** • Incised, narrow, semi braided river turning into a gorge near the confluence with the Swift Burn.	Between E1263942/N5005062 and E1295263/N5003530

		• Margins consist of several vegetation types including pasture, grassland, matagouri scrub, willows, and isolated areas of indigenous forest. • Highly legible and coherent feature within the Gibbston Valley and eastern extent of the Whakatipu Basin. • The Kawarau River was a traditional travel route between Lake Whakatipu and the Clutha River (Mata-au). The river is also recorded as a kāinga mahinga kai (food-gathering place) where weka, kākāpō, kea, and tuna (eel) were gathered.	MAP [OWB] – Outstanding water bodies
		Recreation REC44 • Protected by the Water Conservation (Kawarau) Order 1997 and recognised as outstanding for recreation (in particular rafting, kayaking, and jetboating). • Nationally significant for rafting. • Nationally significant for white water kayaking. • Nationally significant for jet boating. • Regionally significant for angling.	Between E1263693/N5005190 and E1301447/N5004377 MAP [OWB] – Outstanding water bodies
		Physical PHY11 • Outstanding within New Zealand/Aotearoa. • A spectacular steep gorge notable for the volume and fast flowing nature of its water. • The gorge is continually being modified by landslides.	Between E1282078/N5006911 and E1295263/N5003530 MAP [OWB] – Outstanding water bodies
OWB106	Lake Alta	**Landscape LAN31** • Small, glacially carved lake forming the headwaters of the Rastus Burn.	As shown on MAP [OWB] – Outstanding water bodies

		• Margins are clad in coherent stands of tall tussockland, as well as scree slopes and bare rock. • Distinctive, legible, and highly accessible local feature within the Remarkables ski field. • Located at head of the Lake Alta Track and Wye Creek Route making it a popular recreational destination.	
		Physical PHY13 • Outstanding within the Otago region. • A classic lake-filled cirque with steep rocky sides and back, and patches of moraine over schist bedrock at the front lip.	As shown on MAP [OWB] – Outstanding water bodies
OWB107	Lake Creek (tributary to Shotover River/Kimihau)	**Natural character NAT8.8** See description for OWB102 – Glencairn Creek.	As shown on MAP [OWB] – Outstanding water bodies
OWB108	Lake Hayes/Waiwhakaata	**Ecology ECL12** • Considered as one of two most important breeding sites for Australasian crested grebe. Lake Hayes/Waiwhakaata continues to have a large number of sightings and supports breeding pairs.	As shown on MAP [OWB] – Outstanding water bodies
		Landscape LAN29 • Intact, glacially carved lake. • Margins are modified with grassland, houses, and willows. • Memorable and central focal point within the eastern Whakatipu Basin. • Waiwhakaata is the Māori name for Lake Hayes. • Popular recreational destination for walkers, kayakers, and mountain bikers with trails within the margins of the lake.	As shown on MAP [OWB] – Outstanding water bodies

OWB109	Lindis River	**Landscape LAN35** • Narrow, rocky riverbed with limited structures and consents. • Margins within the upper reaches are clad in tall tussockland and grassland, while lower reaches are more modified with productive farmland. • Highly memorable and legible feature within the Lindis Pass. • Ōmakō is one of the Ngāi Tahu names for the Lindis Pass. Sections of the river form part of the traditional travel route between Te Manahuna (the Mackenzie Basin) and Central Otago. • The Lindis River had a fleeting gold rush during 1861 and is now bordered by State Highway 8 between the Mackenzie Basin and Central Otago.	Between E1326114/N5058764 and E1323406/N5051848 MAP [OWB] – Outstanding water bodies
OWB110	Lochnagar/Ōtaka	**Landscape LAN25** • Unmodified, glacially carved lake within the upper reaches of the Shotover catchment. • Margins are clad in intact sub alpine and tall tussockland. • Lake is highly expressive of its glacial formative processes. • Ōtaka is the Māori name for Lochnagar. • Can be accessed from the Rees Saddle by expert trampers, and from the south-east from Lake Creek.	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT8.1b Active bed • Pristine or largely unmodified waterbodies in Conservation Areas and reserves which encompasses areas of the Richardson and Harris Mountains, including alpine tarns, streams and wetlands.	As shown on MAP [OWB] – Outstanding water bodies

		• Headwaters of the Shotover River/Kimiākau include Lochnagar/Ōtaka, a large lake formed through a natural rockslide. • Steep upper catchments and streams weed-free and free of man-made structures. • Very high water quality throughout the area. • Unmodified flow regimes, including absence of water takes and bores. <u>Margins</u> • Along incised steep streams predominantly native vegetation including sub-alpine scrub, cushionfield, tall tussock grassland, and snow tussock. • Few small-scale modifications, such as tracks. • Grey shrublands, particularly those in steep, shaded gullies unaffected by fire and browsing animals, are important wildlife habitats. <u>Context</u> • Highly natural landscape context within the headwaters and alpine valley floors. Conservation areas in the catchment are adjacent to the highly natural area that falls within Tititea/Mount Aspiring National Park. • Areas of snow tussock, cushionfield, and alpine herbfields on upper and mid mountain slopes. • Sensitive landscape due to its high natural character values, remoteness, and openness.	
		Physical PHY12 • Outstanding within the Otago region. • One of Aotearoa's best and larger examples of a debris-dammed lake caused by a large scale blockslide.	As shown on MAP [OWB] – Outstanding water bodies

		• No direct outlet, water flows through the dam with a subterranean outlet.	
OWB111	Luggate Creek	**Natural character NAT10.1** <u>Active bed</u> • Intact small order streams and alpine wetlands and tarns within the plateau area of the Pisa Range. • Steep and confined catchments feeding the Clutha River/Mata-au. • No structures and limited modifications. • Unmodified flow regimes due to absence of *bores* and water takes on the high-lying plateau area. • Water quality is high. <u>Margin</u> • Margins are predominantly lined with alpine fescue, snow tussock, and blue tussock. • Alpine wetlands are predominantly surrounded by sedges. <u>Context</u> • Partly encompassed within the Pisa Conservation Area. The area is highly natural and largely undisturbed with the exception of sheep grazing. • Upper reaches of the catchment are characterised by several schist tors and are clad in tall tussock grassland including snow tussock, golden speargrass and blue tussock. • No settlements and limited modification and structures. • Overall, the natural elements, patterns, and processes remain dominant and legible.	As shown on MAP [OWB] – Outstanding water bodies

		• The Pisa Conservation Area includes an open and vast landscape with a high level of perceived naturalness that offers visitors opportunities for exposed and remote experiences throughout the year.	
OWB112	Moke Creek	**Landscape LAN26b** • Largely intact braided river and wider catchment with historic modifications associated with gold mining. • Margins within the upper reaches are less modified and clad in tall tussockland and sub alpine vegetation. Lower reaches includes grassland, tall tussockland, and areas of regenerating native vegetation (manuka and kanuka). • Highly memorable river within the Queenstown context for its history and vast catchment. • River is highly expressive of its formative processes with legible braided river channels. • Kimiākau is the Māori name for the Shotover River and was a kāinga mahinga kai (food-gathering place). • Associated with 1860s Otago Gold Rush with remnants of this activity still present today. • Protected by the Water Conservation (Kawarau) Order 1997 for historic purposes related to goldmining.	Between E1250947/N5007936 and E1257087/N5011844 MAP [OWB] – Outstanding water bodies
OWB113	Moke Lake/Punamāhaka/Waikāmāhaka	**Landscape LAN27** • Small, glacially carved lake forming the upper headwaters of Moke Creek. • Margins have largely been modified to accommodate areas of grassland for farming, recreation, and camping. • Memorable lake within the local Queenstown context.	As shown on MAP [OWB] – Outstanding water bodies

		• Punamāhaka / Waikāmāhaka are the traditional names for Moke Lake and is thought to mean “twin waters” referencing the unique shape of the lake. • Popular local recreational destination for walking, and camping.	
OWB114	Nevis River/Te Papapuni	**Ecology ECL13** • The Nevis galaxias occupies the Nevis River and tributaries and is restricted to this catchment.	As shown on MAP [OWB] – Outstanding water bodies
		Landscape LAN33 • Narrow, and rocky active *bed* with limited structures and consents. • Margins have been modified for grazing at the base of the valley however the upper reaches remain tall tussockland. • The Nevis River forms the distinctive valley to the east of the Remarkables and is highly expressive of its tectonic formative processes (Department of Geology Otago University, n.d.). • Te Papapuni is the Māori name for the Nevis River and was a traditional travel route connecting Central Otago to Murihiku (Southland). • While the river forms part of Ben Nevis Station, there are still remnants of historic mining activity within the margins of the river. • Wild and scenic characteristics identified in Water Conservation (Kawarau) Order.	Between E1269996/N4959907 and E1288088/N5002622 MAP [OWB] – Outstanding water bodies
		Recreation REC45 • Protected by the Water Conservation (Kawarau) Order 1997 and recognised as outstanding for recreation (Nevis River/Te Papapuni mainstem gorge from Nevis Crossing to Kawarau River confluence (recreational purposes, in particular fishing and kayaking), Nevis	Between E1269996/N4959907 and E1288088/N5002622 MAP [OWB] – Outstanding water bodies

		River/Te Papapuni mainstem above Nevis Crossing to source (recreational purposes, in particular fishing)). • Nationally significant for white water kayaking – regionally outstanding. • Nationally significant for angling. • Considered nationally significant for packrafting.	
OWB115	Nokomai/Roaring Lion Complex	**Ecology ECL11** • A large low-alpine (elevation between 1250-1500 metres) string bog or patterned mire at the southern end of the Garvie Mountains, spanning both Otago and Southland districts. • Large size (more than 220 hectares), relatively unmodified nature and contiguous expanse provides habitat for a wide range of ecosystems and services. • Considered by experts the best remaining example of an alpine patterned string bog in Aotearoa. • Rare habitat and wetland type with a high degree of naturalness.	As shown on MAP [OWB] – Outstanding water bodies
OWB116	Pisa Range Cirques	**Physical PHY14** • Outstanding within the Otago region. • Good examples of small cirque lakes and moraine.	As shown on MAP [OWB] – Outstanding water bodies
OWB117	Potters Creek	**Natural character NAT9.3** See description of OWB99 – Coal Creek.	As shown on MAP [OWB] – Outstanding water bodies
OWB118	Roaring Lion Creek	**Landscape LAN33** • Narrow, and rocky active *bed* with limited structures and consents. • Margins have been modified for grazing at the base of the valley however the upper reaches remain tall tussockland.	Between E1278402/N4963304 and E1274823/N4967084 MAP [OWB] – Outstanding water bodies

		Natural character NAT9.1 See description of OWB99 – Coal Creek.	As shown on MAP [OWB] – Outstanding water bodies
OWB119	Roaring Meg/Te Wai-o-Koroiko	**Landscape LAN34** • Incised and steep rocky river with limited structures in the upper reaches. Roaring Meg power station is located at the confluence with the Kawarau River, and the dam is located mid-reach. • Margins within the upper reaches are clad in coherent stands of tall tussock land. Lower reaches are more modified with areas of grassland and exotic deciduous species. • Highly legible and memorable stream within the Kawarau River catchment. • Te Wai-o-Koroiko is the Māori name for the Roaring Meg. The river was a traditional travel route from Kawarau River into the Ōrau (Cardrona River). The river is also considered a kāinga mahinga kai (food-gathering place) where tuna (eels) and weka were gathered. • Associated with the Roaring Meg Hydro Scheme.	Between E1288764/N5018748 and E1290333/N5009351 MAP [OWB] – Outstanding water bodies
OWB120	Shotover River/Kimiākau	**Recreation REC46** • Protected by the Water Conservation (Kawarau) Order 1997 and recognised as outstanding for recreation (in particular rafting, kayaking, and jetboating). • Nationally significant for jet boating with very high commercial value – regionally outstanding. • Nationally significant for white water kayaking. • Nationally significant for rafting. • Considered nationally significant for packrafting.	Between E1256246/N5055663 and E1267393/N5006687 MAP [OWB] – Outstanding water bodies

		Landscape LAN26 • Largely intact braided river and wider catchment with historic modifications associated with gold mining. • Margins within the upper reaches are less modified and clad in tall tussockland and sub alpine vegetation. Lower reaches includes grassland, tall tussockland, and areas of regenerating native vegetation (manuka and kanuka). • Highly memorable river within the Queenstown context for its history and vast catchment. • River is highly expressive of its formative processes with legible braided river channels. • Kimiākau is the Māori name for the Shotover River and was a kāinga mahinga kai (food-gathering place). • Associated with 1860s Otago Gold Rush with remnants of this activity still present today. • Protected by the Water Conservation (Kawarau) Order 1997 for historic purposes related to goldmining.	Between E1254928/N5049175 and E1267393/N5006687 MAP [OWB] – Outstanding water bodies
OWB121	Sixteen Mile Creek Headwaters	**Natural character NAT8.4** See description for OWB102 – Glencairn Creek.	As shown on MAP [OWB] – Outstanding water bodies
OWB122	Skippers Creek	**Landscape LAN26** • Largely intact braided river and wider catchment with historic modifications associated with gold mining. • Margins within the upper reaches are less modified and clad in tall tussockland and sub alpine vegetation. Lower reaches includes grassland, tall tussockland, and areas of regenerating native vegetation (manuka and kanuka).	Between E1258755/N5029866 and E1259719/N5025632 MAP [OWB] – Outstanding water bodies

		• Highly memorable river within the Queenstown context for its history and vast catchment. • River is highly expressive of its formative processes with legible braided river channels. • Kimiākau is the Māori name for the Shotover River and was a kāinga mahinga kai (food-gathering place). • Associated with 1860s Otago Gold Rush with remnants of this activity still present today. • Protected by the Water Conservation (Kawarau) Order 1997 for historic purposes related to goldmining.	
OWB123	Tummel Burn	**Natural character NAT8.3a** See description for OWB102 – Glencairn Creek.	As shown on MAP [OWB] – Outstanding water bodies
OWB124	Tyndall Creek	**Natural character NAT8.3b** See description for OWB102 – Glencairn Creek.	As shown on MAP [OWB] – Outstanding water bodies
Manuherekia rohe			
OWB125	Bickerstaffe Creek	**Ecology ECL15a** • Occupied by Clutha flathead which survive in harsh temperature and low flow conditions possibly creating populations that are adapted to the localised extreme environment. • Provides a significant area of habitat for Clutha flathead with low or no modification and no introduced species. The populations present are also likely to be adapted to the local environmental conditions.	As shown on MAP [OWB] – Outstanding water bodies
OWB126	Dunstan Creek	**Landscape LAN41** • Intact and narrow braided river with no structures of consents.	Between E1337377/N5048385 and E1345279/N5032005

		• Vegetation within the margins includes tall tussockland and matagouri scrub. Some areas of grassland are also present. • Distinctive feature within the narrow valley between the St Bathans Range, and Dunstan Mountains. • Forms a significant section of the Manuherekia Marginal Strip, however, is not publicly accessible.	MAP [OWB] – Outstanding water bodies
OWB127	Hopes Creek	**Ecology ECL15b** • Occupied by Clutha flathead which survive in harsh temperature and low flow conditions possibly creating populations that are adapted to the localised extreme environment. • Provides a significant area of habitat for Clutha flathead with low or no modification and no introduced species. The populations present are also likely to be adapted to the local environmental conditions.	As shown on MAP [OWB] – Outstanding water bodies
OWB128	Ida Burn	**Landscape LAN43** • Distinctive incised gorge within the Raggedy Range. • Active *bed* is surrounded by coherent areas of grassland, steep rock, and willows. • Incised gorge is a highly legible landscape feature and expressive of its formative processes. • Located on the Otago Central Rail Trail, a popular tourist cycle trail.	Between E1341994/N5006636 and E1343664/N5004576 MAP [OWB] – Outstanding water bodies
OWB129	Lauder Creek	**Landscape LAN40** • Narrow, rocky stream devoid of structures and consents. • Margins are largely clad in tall tussockland and regenerating native vegetation (manuka and kanuka). The south-western extent of Lauder Creek is bordered by grassland.	Between E1331574/N5020194 and E1333200/N5015723 MAP [OWB] – Outstanding water bodies

		• Coherent river channel is highly expressive of their formative processes. • Upper extent is encompassed within the Lauder Basin Conservation Area.	
OWB130	Manorburn and Greenland Reservoirs	**Landscape LAN38** • Artificial water reservoirs completed in 1914 for irrigation purposes. • While artificially constructed, active *bed* remains devoid of structures with the exception of the Manorburn Dam. • Greenland Reservoir is surrounded by tall tussockland while the lower reaches near the Manorburn Reservoir is surrounded by grassland. • Highly memorable and legible features within the Rough Ridge landscape. • Popular for recreational fishing.	As shown on MAP [OWB] – Outstanding water bodies
OWB131	Manuherekia River	**Ecology ECL14** • The only habitat for the Alpine galaxias 'Manuherekia' that occupies the Manuherekia River upstream of Falls Dam reservoir to the confluence of the West and East branches of the Manuherekia River. At present the Alpine galaxias 'Manuherekia' is restricted to the braided unstable reach of the Manuherekia River downstream of the confluence. • The braided river habitat also has breeding populations of black fronted tern, banded dotterel, black billed gull and wrybill. • The spring fed tributaries and adjacent wetland support wetland vegetation and macrophyte communities and are feeding habitat for pied stilts. • A wetland close to Falls Dam supports a small population of Central Otago roundhead galaxias, and this is the only known population of	As shown on MAP [OWB] – Outstanding water bodies

		this *fish* remaining upstream of Falls Dam and as such is a key population for maintaining the geographic range of Central Otago roundhead galaxias.	
		Landscape LAN42 / LAN44 <u>Upstream of Falls Dam</u> • Intact braided river formed through tectonic uplift of the Southern Alps. • Braided river channels remain unimpeded or restricted by modifications and structures. • Margins are clad in grassland within the lower reaches of the river, while the upper reaches are surrounded in intact tall tussockland. • Coherent braided river channels are highly expressive of their formative processes. • Recorded as being a kainga mahinga kaiwhere tuna (eels), pora ('Māori turnip'), weka, pārera (grey duck), pūtakitaki (paradise duck), and kōareare (edible rhizome of raupō/bulrush), were gathered. • Largely inaccessible to the public due to mostly passing through private land. Some recreational opportunities are available in the upper reaches. <u>Ophir Gorge</u> • Distinctive incised, rocky gorge to the north-east of the Raggedy Range. • Active *bed* is surrounded by coherent areas of grassland, steep rock, matagouri scrub, and willows. • Incised gorge is a highly legible landscape feature and expressive of its formative processes.	Upstream of Falls Dam between E1354220/N5041643 and E1356188/N5028411 MAP [OWB] – Outstanding water bodies Ophir Gorge between E1331406/N4998483 and E1327442/N4995593

		• The gorge is inaccessible to the public and is associated with Lauder Creek and Rockdale Farms.	
OWB132	Poolburn Reservoir	**Landscape LAN39** • Artificial water reservoir completed in 1931 for irrigation purposes. • While artificially constructed, active *bed* remains devoid of structures with the exception of the Pool Burn Dam. • Margins are surrounded by grassland. • Highly memorable and legible feature within the Rough Ridge landscape. • Popular for recreational fishing.	As shown on MAP [OWB] – Outstanding water bodies
Roxburgh rohe			
OWB133	Butchers Dam	**Landscape LAN46** • Located in the lower reaches of Butchers Creek, a small tributary of the Clutha River, and includes the artificial lake, Butchers Dam. • Vegetation within the margins and wider context comprises low producing grassland, with isolated areas of matagouri, coprosma propinqua and kowhai scrub and Glasswort herbfield. • The southern extent falls within the Flat Top Hill Conservation Area. • Recreational destination with visitors able to walk the perimeter of the dam and into the Flat Top Conservation Area.	As shown on MAP [OWB] – Outstanding water bodies
OWB134	Earnscleugh River headwaters	**Natural character NAT15.1** Active bed • Intact and unmodified streams with intricate and steeply incised catchments.	As shown on MAP [OWB] – Outstanding water bodies

		• Water quality is high due to catchments largely being encompassed in conservation land. • No structures and limited modifications. • Intact and extensive wetlands including bogs, seepages, and tarns in the upper reaches of the Earnscleugh River. • Unmodified flow regimes. <u>Margin</u> • Margins are predominantly lined with tall tussock grassland dominated by *Chionochloa spp.* and cushion and herbfield communities. • Limited structures and isolated modifications such as vehicle tracks, tramping tracks, and relic gold workings. <u>Context</u> • Located partially within the Kōpūwai Conservation Area. The area is characterised by intact alpine tussockland from the headwaters to the mid slopes. • Few huts are scattered throughout the area associated with several tramping tracks. • Overall the natural elements, patterns, and processes remain intact in the upper reaches of the catchment. • Opportunities for exposed and remote experiences due to the open character of the natural mountain landscape.	
OWB135	Fortification Creek	**Natural character NAT16.1** <u>Active bed</u>	As shown on MAP [OWB] – Outstanding water bodies

		• Intricate system of intact wetlands, and streams forming the upper catchment of Lake Onslow and a tributary of the Clutha River/Mata-au. • Water quality is high due to being in the upper reaches of the catchment with minor influence of stock. • Includes the Fortification Creek Wetland, a large intact wetland spanning between Fortification Creek and Teviot River South Branch. The area is unique due to its associated oxbow lakes and ponds. • Unmodified flow regimes. <u>Margin</u> • Margins of tributaries in the headwaters are lined with alpine herbfield and tall tussockland. • The margins of Fortification Creek Wetland contain one of the last remaining uniform areas of red tussock (*Chionochloa rubra*). • Some limited low intensity grazing is present within the tussockland. • No structures, but some vehicle tracks present. <u>Context</u> • Forms the upper catchment of the Teviot River and a southern tributary of man-made Lake Onslow. • The wider plateau area is characterised by intact tall tussockland and intermittent wetlands within the gullies due to poor drainage. • Included within the pastoral lease of Beaumont Station, therefore largely inaccessible to the public. • No settlements or large structures, only farm tracks associated with Beaumont Station.	

		• Overall due to the lack of modification the natural elements, patterns, and processes dominate, remaining highly legible, in particular in relation to the scroll plains.	
OWB136	Fortification Creek Wetland	**Ecology ECL18** • Relatively large (526 ha) upland (~740 m elevation) fen with high site integrity (98% natural with 47% left). • Site scored a weighted conservation rank of 5.0 within the FENZ/WONI analysis (Very High). • One of the last remaining relatively uniform areas of red tussock (*Chionochloa rubra*) wetland combined with meandering streams. • Regionally significant habitat for waterfowl and harbours the threatened Banded Dotterel (*Charadrius bicinctus bicinctus*). • Threatened plant species Cardamine sp. and *Ranunculus ternatifolius* are also present.	As shown on MAP [OWB] – Outstanding water bodies
OWB137	Fraser River	**Landscape LAN45** • Very narrow, and rocky active *bed* with no structures and limited consents. • Margins are clad in grassland in the lower reaches, and tall tussockland in the upper reaches. • Distinctive and legible incised gully formed by the active *bed* of the Fraser River. • Located within the Kopuwai Conservation Area. The Kopowai and The Sisters tracks traverse the active *bed* and margins of the river.	Between E1297602/N4977771 and E1300889/N4981276 MAP [OWB] – Outstanding water bodies
OWB138	Talla Burn	**Ecology ECL16** • Largest estimated area of occupancy of dusky galaxias, with 21.8% of the total estimated area of occupancy.	As shown on MAP [OWB] – Outstanding water bodies

OWB139	Teviot River tributaries	**Ecology ECL17** • Three tributaries to the Teviot River that include the three largest populations of Teviot flathead galaxias in the Teviot River and comprises 54% of the total estimated habitat.	**First tributary:** between E1329599/N4946273 and E1328681/N4948628, including tributaries between: E1328742/N4947713 and E1328801/N4948238 **Second tributary:** between E1329868/N4947459 and E1329339, including tributaries between: E1330182/N4948195 and E1330001/N4948540 E1329355/N4949185 and E1329639/N4949800 **Third tributary:** between E1330453/N4947265 and E1330839/N4950342, including tributaries between: E1331203/N4947656 and E1330961/N4949442 E1331396/N4949488 and E1331051/N4949622 E1330735/N4949547 and E1331021/N4949592
Lower Clutha rohe			

OWB140	Lake Tuakitoto Wetland / Roto-nui-a-Whatu	**Ecology ECL20** • Relatively large (540 hectares), low-lying swamp considered the best remaining example of a previously widespread wetland type. A diverse mosaic of vegetation types and habitats exists. • Scored a weighted conservation rank of 8.0 within the FENZ/WONI analysis. • Exceptionally high diversity of bird life reflected by the high habitat diversity present at the wetland. Over 50 species of bird have been recorded. • Provides roosting, feeding and breeding habitat for the threatened Australasian Bittern (*Botaurus poiciloptilus*) and Banded Dotterel (*Charadrius bicinctus bicinctus*). • Regionally and nationally important habitat for waterfowl, waders and swamp birds. Supports a significant proportion of the national population of Mallard (*Anas platyrhynchos*) and Aotearoa Shoveller (*Anas rhynchotis variegata*), Grey Teal (*Anas gracilis*) and Black Swan (*Cygnus atratus*). All these species breed here. • Described as number 5 in the top 10 Aotearoa Wetland Wildlife Habitats, with large numbers of Fernbird (*Bowdleria punctata*). • Considered nationally important as a fresh water fishery habitat, supporting the Threatened giant kokopu (Galaxias argenteus), longfin eel (*Anguilla dieffenbachii*), shortfin eel (*Anguilla australis*), whitebait (*Galaxias spp*.) and common bully (*Gobiomorphus cotidianus*) populations as well as a commercial eel fishery and recreational fisheries for perch and brown trout (Salmo trutta). • Freshwater mussels (*Hyridella menziesii*) within the lake have been found to filter a volume of water equal to that of the lake once every 32 hours, enhancing water clarity.	As shown on MAP [OWB] – Outstanding water bodies

		• The threatened plant species swamp nettle (*Urtica linearifolia*) and *Isolepis basilaris* are present on swamp margin with a high composition of flax.	
OWB141	Pomahaka/Poumāhaka River	**Landscape LAN54** • Rocky, narrow, and meandering river with limited structures and consents. • Margins are clad in tall tussockland in the upper reaches, and grassland in the lower reaches. Remnants of indigenous forest are also present in the incised gullies. • Remote and isolated river within the northern extent of the Umbrella Mountains. • Poumāhaka is the correct spelling for the Pomahaka River. The river was once a popular location for catching wild ducks. • Much of the Pomahaka/Poumāhaka River is encompassed within private farmland, however the upper reaches can be accessed from the Pomahaka Conservation Area.	Between E1300873/N4950427 and E1301943/N4940968 MAP [OWB] – Outstanding water bodies
Taiari FMU			
OWB142	Deep Stream/Deep Creek	**Ecology ECL22** • Contains over 50% of all the Eldon's galaxias habitat with 29.6% and 28.5% of the total estimated area of occupancy respectively. • Parts of the Deep Stream catchment are also protected lands in the DCC water catchment reserve and Te Papanui Conservation Park that protects the habitat and water quality in this stream.	As shown on MAP [OWB] – Outstanding water bodies
OWB143	Great Moss Swamp/Te Paruparu-a-Te-Kaunia	**Ecology ECL29** • Site scored a high weighted conservation rank of 29.7 within the FENZ/WONI analysis (high rank).	As shown on MAP [OWB] – Outstanding water bodies

		• Large, but remnant wetland area (422.6 hectares), with outstanding site integrity (100% natural with 47% left). • One of the few remaining subalpine swamp areas in the Rock and Pillar Ecological District. • Recorded threatened plant species include the tufted hair-grass (*Deschampsia caespitosa*) and *Carex secta* var. *tenuiculmus*. Areas of red tussock (*Chionochloa rubra*), silver tussock (*Poa cita*), sedge tussock (*Schoenus pauciflorus*) and *Sphagnum squarrosum*. • Presence of Sphagnum porina (*Heloxycanus patricki*), a moth classified as in 'gradual decline', has been recorded. *Hemiandrus 'Rocklands'*, a small ground weta, has also been recorded here.	
OWB144	Kye Burn	**Ecology ECL23** • Contains the largest population of the Central Otago roundhead galaxias with 45.5% of the total area estimated to be occupied by Central Otago roundhead galaxias. • Supports three small populations of Taieri flathead galaxias in Kye Burn tributaries in the Dansey Pass area, including a rare sympatry zone with both Taieri flathead galaxias and Central Otago roundhead galaxias.	As shown on MAP [OWB] – Outstanding water bodies
OWB145	Lake Waihola/Waihora and tributaries (including Waipōuri/Waihola wetland complex)	**Ecology ECL26** • Supports a landlocked population of giant kōkopu, the most northerly major population on the east coast of the South Island. • Lake Waihola/Waihora are also habitat for inanga and provide inanga spawning areas in the tidal areas of the two lakes. The lakes and their tributaries also provide habitat for common bully, redfin bully, longfin eel, shortfin eel, lamprey, banded kōkopu and common smelt.	As shown on MAP [OWB] – Outstanding water bodies

		• Sixteen waterfowl species are reported from the two lakes: Australasian bittern, Australasian shoveler, black backed gull, black billed gull, grey teal, New Zealand scaup, Otago shag, paradise shelduck, pūkeko, royal spoonbill, pied stilt, sacred kingfisher, South Island pied oystercatcher, spotless crake, variable oystercatcher, white faced heron. • The wetland's large size (2000 hectares) and contiguous expanse provides habitat for a wide range of ecosystems and services. It is considered the best remaining example of a lowland wetland remaining in Otago and one of the largest and most significant remaining in New Zealand. • The wetland complex is nationally and internationally recognised as a refuge for threatened flora and fauna. A considerable portion of the wetland is relatively undisturbed and contains a sequence of different vegetation types which adds to the botanical value. Plant communities are largely native including the Threatened swamp nettle and tufted hair-grass.	
OWB146	Loganburn Reservoir and Logan Burn	**Landscape LAN48** • Artificial water reservoir completed in 1983 for irrigation purposes. • While artificially constructed, active *bed* remains devoid of structures with the exception of the Loganburn Dam. • Surrounded by tall tussockland, grassland, and remnants of the Great Moss Swamp. • Highly memorable and legible features within the Rock and Pillar Range. • Te Paruparu-a-Te-Kaunia is the Māori name for the Loganburn Dam (previously the Great Moss Swamp prior to flooding). The swamp was recorded as a lagoon where pūtakitaki (paradise duck), pārera (grey	As shown on map X and incudes Logan Burn between E1359932/N4954717 and E1357480/N4960281 MAP [OWB] – Outstanding water bodies

		duck), kukupako (black teal), pāteke (brown teal), whio (blue duck) and totokipio (New Zealand dabchick) were gathered. • Accessible by the Old Dunstan Road, and popular for fishing.	
OWB147	Maungatua/Mauka Atua Summit Wetland	**Ecology ECL32** • Site scored an extremely high weighted conservation rank of 2.0 within the FENZ/WONI analysis (very high rank). • Large wetland area (1213 hectares), with very high site integrity (91% natural with 47% left). • Only remaining example of high altitude wetlands on the eastern side of the Waipōuri Ecological District and has been described as 'a tarn, restiad bog, and tussockland cushion bog of national significance.' • Cushion-forming plants are confined to poorly drained areas on the summit ridge. Scattered tarns are surrounded by Sphagnum spp. and sedges. Small sized cushion bog areas occupy the poorly drained peaty depressions in snow-tussock grassland at a height of about 800 m above sea level on the summit-ridge. • Over 10 different cushion plant species can be found in the wetland, together with an insectivorous sundew (*Drosera arcturi*) and several lichens. The prominent rounded cushions are of *Donatia novaezelandiae*, a species confined to cool peaty wetlands between the Tararua Range and Stewart Island.	As shown on MAP [OWB] – Outstanding water bodies
OWB148	Nenthorn Stream	**Landscape LAN51** • Very narrow, incised, rocky creek with no structures or consents. • Margins include matagouri scrub as well as areas of grassland and willows. • High sense of remoteness due to lack of structures, and consents.	Between E1388878/N4951738 and E1384569/N4943692 MAP [OWB] – Outstanding water bodies

		• Inaccessible to the public and associated local farms.	
OWB149	Patearoa Inland Saline Wetland	**Ecology ECL33** • Considered the most important example of a saline wetland in Central Otago and Aotearoa due to its combined botanical and entomological values. • Soil site of international importance. • Home to a range of saline adapted invertebrate species and a diverse plant community.	As shown on MAP [OWB] – Outstanding water bodies
OWB150	Rock and Pillar Creek	**Natural character NAT20.3** <u>Active Bed</u> • Extensive and intricate network of minor streams and creeks on the Rock and Pillar, Lammerlaw and Lammermoor/Te Papanui Ranges which remain largely intact. • Water quality is very high in the plateau areas within the Te Papanui Conservation Park and Rock and Pillar Conservation Area. • No structures or water takes present. • Upper Taieri/Taiari River only catchment in NZ with populations of Taieri flathead galaxias, Teviot flathead galaxias and dusky galaxias (full catchment from the base of the Canadian Flat rapids upstream to headwater sources of the Taieri River and all its tributaries). No introduced *fish* present. • Unmodified flow regimes. <u>Margin</u> • Margins to the north are lined with short and sub-alpine tall tussockland, and *Hebe odora* shrubland. Further south intact areas of	As shown on MAP [OWB] – Outstanding water bodies

		low to mid altitude short and tall tussockland is present including species such as *Chionochloa rigida*, red tussock, hard tussock. • No crack willow present in upper Taieri/Taiari catchment. • Very limited structures and modifications. Context • Located in the upper reaches of the Taieri/Taiari River, the area remains largely unmodified and intact. • Presence of some low intensity stock grazing. • No settlements and limited structures and modifications present, such as vehicle tracks and huts. • Overall natural elements patterns and processes remain intact, regardless of isolated modifications and stock grazing outside the conservation areas. • Opportunities for wild and remote experiences due to sub alpine terrain. Large parts of the ranges included in Te Papanui Conservation Park and Rock and Pillar Conservation Area.	
OWB151	Styx Creek and headwaters	**Natural character NAT20.2** See description of OWB150 – Rock and Pillar Creek.	As shown on MAP [OWB] – Outstanding water bodies
OWB152	Sutton Salt Lake and wetland	**Landscape LAN52** • Enclosed, shallow basin with no outlet and a unique saline environment. • Margins are clad in salt tolerant species including herbs and grasses, and grassland beyond. • Seasonal loss of water during the summer months forming a dry lake *bed*, and refilling during the winter months is a key characteristic of this lake.	As shown on MAP [OWB] – Outstanding water bodies

		• Highly expressive of its formative processes. • Located in proximity of a traditional travel route between the Taieri/Taiari River mouth and Middlemarch where weka and woodhen were gathered. • Sutton Salt Lake Track provides access to the lake edge from the north.	
		Physical PHY18 • Outstanding within New Zealand/Aotearoa. • Unusual inland saline lake. Only salt lake in Aotearoa. • Forms each year during rainy season and evaporates away during dry season.	As shown on MAP [OWB] – Outstanding water bodies
		Ecology ECL31 • Aotearoa's only inland salt lake. • The lake has an important sequence of salt tolerant vegetation around its margin and there are five main vegetation zones that have been described at the lake: a narrow fringe of salt tolerant vegetation at the margin, an algal zone submerged in winter or when lake is full, rough pasture with exotic grasses and hard grasses, communities on rock outcrops, and shallow boggy depressions near the lake dominated by rushes. • Other native plants include *Lilaeopsis ruthiana*, *Apium sp.,* and halophyte coastal goosefoot *Chenopodium glaucum* subsp. *ambiguum*. North of the northern large bog a dense mat of *Selliera sp.*, native celery, hawkbit (*Leontodon taraxacoides*) and *Scirpus antarcticus* occurs. Threatened plant species *Gratiola nana*, *Isolepis basilaris* and *Crassula peduncularis* have been recorded on site. • A range of water birds and waders use the lake, feeding on the tiny shrimplike organisms which occur there.	As shown on MAP [OWB] – Outstanding water bodies

		• The roundhead galaxiid (*Galaxias anomalus*) has been recorded on site.	
OWB153	Sutton Stream	**Landscape LAN49** • Very narrow, incised, rocky creek with no structures or modifications. • Margins are clad in a mixture of grassland and willows. • Highly legible incised gully formed by the active *bed*. • Inaccessible to the public and associated with high country stations on the Rock and Pillar Range.	Between E1361639/N4946182 and E1377004/N4946112 MAP [OWB] – Outstanding water bodies
OWB154	Lower Taieri/Taiari River Mouth and Gorge	**Landscape LAN53** • Naturally formed coastal gorge. • Margins are clad in a mixture of indigenous forest, regenerating indigenous vegetation including broadleaf species and manuka and kanuka, grassland and gorse. • Highly memorable landscape feature within the lower Taiari River and expressive of its formative processes. • Taiari is the correct spelling for the Taieri River and is an abundant mahika kai resource. The river mouth was an important area of occupation, with the true left of the gorge being allocated as an occupational reserve in 1884. • Includes the Taiari River track which extends along the true right of the gorge.	Between E1381415/N4900068 and E1382728/N4896633 MAP [OWB] – Outstanding water bodies
		Physical PHY17 • Outstanding internationally. • Unmodified and well-defined coastal gorge.	Between E1381415/N4900068 and E1382728/N4896633 MAP [OWB] – Outstanding water bodies

OWB155	Upper Taieri/Taiari River Gorge	**Landscape LAN50** • Incised, rocky, and narrow active *bed*. • Margins are clad in grassland and willows. • Canyons and gullies formed by the active *bed* are highly legible and expressive of their formative processes. • Taiari is the correct spelling for the Taieri River and is an abundant mahika kai resource. • Largely inaccessible to the public and is associated with local farms. The Taieri/Taiari Gorge railway travels along the margins of the river gorge allowing tourists scenic views of the river.	Between E1381448/N4944107 and E1386013/N4919240 MAP [OWB] – Outstanding water bodies
		Physical PHY16 • Outstanding within the Otago region. • Excellent example of a large, deeply incised, meandering river gorge. • High scenic and aesthetic value.	Between E1381448/N4944107 and E1386013/N4919240 MAP [OWB] – Outstanding water bodies
OWB156	Upper Taieri/Taiari Wetlands Complex	**Ecology ECL28** • Large size (2727 hectare) and contiguous expanse provides habitat for a wide range of ecosystems and services. • Only scroll-plain in Aotearoa with a unique combination of wetland habitats and significant hydrologic values. • Considered the best remaining example of this type in Otago and the only significant inland/upland (600 m max altitude) habitat of this type left in Aotearoa. • The Aotearoa Landform Inventory has given the Taiari wetland a high rating, with scenic, scientific and educational importance. • Scored a 1.0 (highest rank) within the FENZ/WONI analysis with a weighted conservation rank of 19.3 produced.	As shown on MAP [OWB] – Outstanding water bodies

		• Internationally important habitat for waterfowl and noted as one of the 10 most valuable habitats for waterfowl in Aotearoa. Noted presence of 52 bird species and several threatened species, including the Nationally Threatened Australasian Bittern and the Banded Dotterel. 27 of these birds are considered dependant on the wetland to meet specialized needs. • Contains very high species diversity and provides critical habitat for the lifecycles of fauna, including many indigenous birds. • Native fish present include longfin eel (*Anguilla dieffenbachii*), lamprey (*Geotria australis*), common bully (*Gobiomorphus cotidianus*), upland bully (*Gobiomorphus breviceps*) and other non-migratory galaxiids. • Vegetation noted on site includes *Lepidium sisymbrioides*, the Threatened tufted hair-grass (*Deschampsia cespitosa*) and the Aotearoa mousetail (*Myosurus minimus subsp. novae-zelandiae*), a spring annual which has a threat status of Nationally Critical.	
		Landscape LAN47 • Three distinctive serpentine sections of the upper Taieri/Taiari River with multiple intact river channels and wetlands. • Margins are clad in herbaceous freshwater vegetation including rushes, sedges, and flax, and immediately adjoined by farmland. • Habitat for several wetland bird and *fish* species. • Scroll plain pattern is a highly legible landscape feature and expressive of its formative processes. • Taiari is the correct spelling for the Taieri River and is an abundant mahika kai resource.	As shown on MAP [OWB] – Outstanding water bodies

		Physical PHY15 • Outstanding within New Zealand/Aotearoa. • Best example of a meandering river in Aotearoa. Has a high degree of curvature and shows all stages of ox-bow formation.	As shown on MAP [OWB] – Outstanding water bodies
OWB157	Upper Taieri/Taiari River and tributaries	**Ecology ECL25** • Largest population of Taieri flathead galaxias, comprising 19.7% of the estimated total area occupied by Taieri flathead galaxias. • This population of Taieri flathead is one of the highest altitude populations for this species and a significant contrast to the other large population in Nenthorn Stream. • Populations of dusky galaxias. • Red Swamp has the largest Teviot flathead galaxias population (25.7% of the total estimated habitat) giving rise to high non-diadromous galaxiid species diversity in this area together with large populations of Taieri flatheads and Teviot galaxias.	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT20.1 • See description of OWB150 – Rock and Pillar Creek.	As shown on MAP [OWB] – Outstanding water bodies
North Otago FMU			
OWB158	Kākaunui River	**Ecology ECL35a** • Lowland longjaw galaxias (Galaxias cobitinis) occupies areas of the lower Kākaunui river. • Largest fragment of Canterbury Galaxias is in the Kākaunui catchment (29.2% of the area in Otago). • Other native *fish* species include: banded kōkopu, bluegill bully, Canterbury galaxias, common bully, giant bully, inanga, koaro,	Between E1422629/N5011719 and E1430442/N4996516 MAP [OWB] – Outstanding water bodies

		lamprey, longfin eel, redfin bully, shortfin eel, torrentfish, upland bully.	
OWB159	Kauru River	**Ecology ECL35b** • Lowland longjaw galaxias (Galaxias cobitinis) occupies areas of the lower Kākaunui and Kauru rivers. • Other native *fish* species include: banded kōkopu, bluegill bully, Canterbury galaxias, common bully, giant bully, inanga, koaro, lamprey, longfin eel, redfin bully, shortfin eel, torrentfish, upland bully.	Between E1422097/N5002269 and E1427104/5006053 MAP [OWB] – Outstanding water bodies
OWB160	Shag River/Waihemo Estuary and Salt Marsh	**Physical PHY20** • Outstanding within the Otago region. • Least modified of a series of estuaries south of Shag Point/Matakaea. • Extensive dune system, mudflats, swamp and salt marsh in an estuarine environment separated from the sea by a small sandspit.	As shown on MAP [OWB] – Outstanding water bodies
OWB161	Waitaki River	**Physical PHY19** • Outstanding within the Otago region. • Well defined braids in river. • Braids are most well defined near the mouth of the Waitaki River.	As shown on MAP [OWB] – Outstanding water bodies
OWB162	Welcome Creek catchment	**Ecology ECL34** • Canterbury mudfish (nationally critical) occur in the Welcome Creek catchment in ponds, wetland areas and instream habitat on the south bank of the Waitaki River and the population straddles the Otago and Canterbury Regional Council boundaries. • Most southern population of Canterbury mudfish and the only population in Otago.	As shown on MAP [OWB] – Outstanding water bodies

Dunedin and Coast FMU			
OWB163	Akatore Creek and tributaries	**Ecology ECL39** • Unique coastal stream catchment, the only one with diadromous and non-diadromous native fish including banded kokopu, giant kokopu black flounder, common bully, redfin bully, Taieri flathead, common smelt, inanga, lamprey, longfin eel, redfin bully, shortfin eel, upland bully • Catchment expected to be free of introduced fish	As shown on MAP [OWB] – Outstanding water bodies
OWB164	Akatore Estuary	**Ecology ECL43** • Recognised as having habitat providing nationally significant wildlife areas for waterfowl and waters and abundant numbers of South Island fernbird (At Risk – Declining).	As shown on MAP [OWB] – Outstanding water bodies
		Physical PHY22 • Outstanding in the Otago region. • Outstanding example of a narrow, deeply incised gorge cut through uplifted coastal block opening out into fault-controlled estuary.	As shown on MAP [OWB] – Outstanding water bodies
OWB165	Aramoana Saltmarsh	**Ecology ECL42** • Considered to be of international and national significance. • Marsh is considered to be biologically significant both as the most important habitat for wading birds, as well as the most extensive and least modified saltmarsh in Otago. • Contains a high degree of naturalness (79%) and is considered largely intact, including a complete vegetation sequence from the intertidal to dry land (which most other saltmarshes in Otago no longer retain).	As shown on MAP [OWB] – Outstanding water bodies

		• Area above mean high water springs lies adjacent to the second largest representation of dune slacks area in Aotearoa. • Grades into an oioi (*Leptocarpus similis*) and saltmarsh ribbonwood (*Plagianthus divaricatus*) community. Beyond the salt influence, some of the wet dune hollows, known as 'slacks' contain swamp areas dominated by Aotearoa flax (*Phormium tenax*), native rush and sedge communities. • Noted as breeding grounds for insects with eighty species of moth that have been recorded. • Marine mammals such as sea lions have been seen pupping within the Aramoana saltmarsh. • Identified as feeding grounds for many bird species including the Eastern Bar-tailed Godwit (*Limosa lapponica baueri*), South Island Pied Oystercatcher (*Haematopus ostralegus finschi*), Pied Stilt (*Himantopus himantopus*), Spur-winged Plover (*Vanellus miles novae hollandiae*), Banded Dotterel (*Charadrius bicinctus*), White-faced Heron (*Ardea novae hollandiae*), and various species of Ducks (*Anatidae*) and Gulls (*Laridae*).	
		Landscape LAN55 • Highly intact tidal to dry land vegetation sequence. • Vegetation includes several saline and wetland species including oioi, saltmarsh ribbonwood, and harakeke. • Highly memorable local feature within the Otago Harbour, and expressive of its formative processes. • Included within the Aramoana Conservation Area and is a popular recreational destination for walking.	As shown on MAP [OWB] – Outstanding water bodies

OWB166	Blueskin Bay Estuary	**Ecology ECL45** • Outstanding ecological value for birds as it supports a significant proportion of the world's population of black-billed gulls. • Supports numerous threatened and at risk native freshwater fish. • Supports the greatest macrofaunal richness and some of the highest species' diversity of estuaries monitored in Otago, with large numbers of species which are sensitive to habitat disturbance. • Provides habitat for a very high biomass of bivalves, hosting a nationally recognised population of cockles.	As shown on MAP [OWB] – Outstanding water bodies
		Physical PHY24 • Outstanding internationally. • Best Holocene and good Late Pleistocene section in Otago. • Important as a location of many carbon dated shells used to construct Aotearoa's sea level curve. • Tidal flats, low bluffs and cuttings around Blueskin Bay.	As shown on MAP [OWB] – Outstanding water bodies
OWB167	Hoopers Inlet	**Landscape LAN57** • Intact tidal estuary with limited structures, and consents. • Margins include a mixture of saltmarsh, and salt meadows as well as areas cutty grass/rautahi (Carex coriacea), Carex virgata, Carex gaudichaudiana and knobby clubrush. • Highly expressive of its tidal influence and formative processes. • Public access to the inlet is available from Allans Beach Road and Hoopers Inlet Road.	As shown on MAP [OWB] – Outstanding water bodies
		Physical PHY27 • Outstanding within the Otago region. • Excellent example of a drowned valley forming a tidal inlet.	As shown on MAP [OWB] – Outstanding water bodies

		• Scenic value. • Drowned valleys eroded in rocks of the Dunedin Volcanic Complex. • Inlet is almost closed at the mouth by a sandspit formed by south to north longshore drift.	
OWB168	Ōkia Wetland	**Ecology ECL40** • Okia Flat has sections or sites of potential national importance for aquatic biodiversity values. • Best example of dune hollow vegetation in the Otago Coast Ecological Region with many species in decline. Very diverse native wetland vegetation within the dune hollows. Some paddocks are of special interest in having *Sphagnum sp.,* which is only known to exist on Otago Peninsula. • Four species of threatened bird species have been recorded including the Yellow-eyed Penguin (*Megadyptes antipodes*), which is acutely threatened-nationally vulnerable; Blue Penguin (*Eudyptula minor*) and South Island Rifleman (*Acanthisitta chloris chloris*), both with a threat status of gradual decline; and South Island Fernbird (*Bowdleria punctata punctata*), which is classified as sparse • A number of moth species are present such as Diasemia grammalis, Pterophorus innotatalis, Arctesthes and Delogenes limodoxa. • Three species of indigenous mammal have been recorded including the Aotearoa fur seal (*Arctocephalus forsteri*); southern elephant seal (*Mirounga leonine*), which has a threat status of nationally critical; and Aotearoa sea lion (*Phocarctos hookeri*), which has a threat status of range restricted. • Three species of indigenous lizard species and 2 exotic species of frog have been recorded: common gecko (*Hoplodactylus maculatus*); jewelled gecko (*Naultinus gemmeus*), which has a threat status of	As shown on MAP [OWB] – Outstanding water bodies

		gradual decline; common skink (*Oligosoma nigriplantare polychrome*); green and golden bell frog; and whistling frog.	
OWB169	Papanui Inlet/Makahoe	**Ecology ECL44** • Outstanding ecological values for birds, the only estuary in Otago providing breeding habitat for yellow-eyed penguins (Threatened – Nationally Endangered). • Provides critical habitat for New Zealand sea lions (Threatened – Nationally Vulnerable) and represents the most heavily used site in Otago. • Extensive seagrass habitat which covers 111.1 hectares, 38.3% of the intertidal area, supports high biodiversity, ecological processes, and provides habitat for a range of estuarine species. •	As shown on MAP [OWB] – Outstanding water bodies
		Landscape LAN56 • Intact tidal estuary with limited structures, and consents. • Margins include a mixture of seagrass, saltmarsh, as well as areas farmland. • Habitat for a range of shore and seabirds including the white-faced heron and eastern bar-tailed godwit. • Highly expressive of its tidal influence and formative processes. • Makahoe is the Māori name for the Papanui Inlet, and was an area where pātiki (flounders), makō (shark), tuere (blind eel/hagfish), kōkopu (native trout), tuaki (cockle), roroa (shellfish sp.), tio (oysters) and pāua were gathered. • Public access to the inlet is available from Papanui Inlet Road.	As shown on MAP [OWB] – Outstanding water bodies

		Physical PHY26 • Outstanding within the Otago region. • Excellent example of a drowned valley forming a tidal inlet. • Scenic value. • Drowned valleys eroded in rocks of the Dunedin Volcanic Complex. • Inlet is almost closed at the mouth by a sand spit formed by south to north longshore drift.	As shown on MAP [OWB] – Outstanding water bodies
OWB170	Pūrākaunui Inlet	**Physical PHY25** • Outstanding within the Otago region. • An easily accessible, almost pristine example of a small, drowned valley forming an intertidal estuary with a sand dune barrier across the entrance. • A steep-sided inlet with salt meadows and salt marshes around the fringes. A wide barrier spit composed of numerous longitudinal dunes almost closes off the entrance to the estuary.	As shown on MAP [OWB] – Outstanding water bodies
OWB171	Ross Creek Reservoir	**Physical PHY21** • Outstanding within New Zealand/Aotearoa. • The first major water supply in New Zealand/Aotearoa.	As shown on MAP [OWB] – Outstanding water bodies
OWB172	Swampy Summit Swamp/Whawha-raupō	**Ecology ECL41** • Somewhat small in size (48.4 hectares) but high elevation (720 metres) and recorded to have outstanding site integrity (99% natural with 15% left). • Site scored an outstanding weighted conservation rank of 1.0 within the FENZ/WONI analysis. • Presence of the carabid beetle (*Oregus inaequalis*), a Category B species of Aotearoa's threatened fauna.	As shown on MAP [OWB] – Outstanding water bodies

		• Contains a high diversity of habitat types, with peat bogs and associated plant communities that provide important habitat for threatened South Island Fernbird (*Bowdleria punctata punctata*) and other species.	
OWB173	Tokomairiro/Tokomairaro salt meadow	**Physical PHY23** • Outstanding within New Zealand/Aotearoa. • Possibly the largest and best developed high-tidal salt meadow in Aotearoa, cut by deeply incised intertidal channels.	As shown on MAP [OWB] – Outstanding water bodies
OWB174	Waikōuaiti River Estuary	**Ecology ECL38** • Outstanding ecological value for birds – supports a significant proportion of the world's population of black-billed gulls. • Outstanding ecological value for saltmarsh – largest area of saltmarsh within the Otago region, supporting significant bird and fish ecological values.	As shown on MAP [OWB] – Outstanding water bodies
Catlins FMU			
OWB175	Catlins Estuary/Kuramea (including Catlins Lake)	**Ecology ECL50** • Largest estuary in the Catlins FMU. • Provides habitat which supports numerous life stages of the threatened NZ sea lion (*Phocarctos hookeri*, Nationally Vulnerable), including critical breeding habitat. The majority of the Catlins population of the NZ sea lion are born within the Catlins River Estuary/Pounawea and the estuary is the most heavily used site within the Catlins. • Extremely rare native vegetation sequence which supports a range of high and very high bird and fish ecological values.	As shown on MAP [OWB] – Outstanding water bodies

		Landscape LAN58 • Large, shallow, tidal lake. • Habitat for several coastal fauna including haul out areas for New Zealand Sea Lions, large cockle beds, and coastal birds including waders, shorebirds, and waterfowl. • Margins have largely been modified into farmland, however areas of seagrass still remain. • Highly legible coastal lake which is expressive of its tidal and coastal influences. • Kuramea is the Māori name for Catlins Lake. • Recreational opportunities include picnicking on the margins, and fishing from the southern shores.	As shown on MAP [OWB] – Outstanding water bodies
		Physical PHY29 • Outstanding within the Otago region. • Easily accessible example of waterfall over near flat-lying Triassic sandstone beds. Popular tourist attraction; aesthetically beautiful cascades as they fall over successive beds. • Hard sandstone beds hold up waterfall. Made of Murihiku Supergroup sedimentary rocks.	As shown on MAP [OWB] – Outstanding water bodies
OWB176	Catlins River/Pounawea	**Landscape LAN59** • Meandering, narrow, rocky riverbed with no active consents and minimal structures. • Margins are largely clad in intact indigenous forest. In the upper extent farmland and gorse and broom are located within the margins. • Heightened sense of remoteness and isolation due to dense indigenous forest.	Between E1323586/N4856317 and E1334609/N4849594 MAP [OWB] – Outstanding water bodies

OWB177	Fleming River and tributaries	**Natural character NAT26.2** <u>Active bed</u> • Unmodified waterbody in the upper reaches of the Catlins Conservation Park. • Water quality is very high. • Limited structures and no modified flow regimes. <u>Margin</u> • Margins are predominantly within intact kamahi, southern rātā, and podocarp forest. • Structures and modifications are very limited and include walking tracks and huts. <u>Context</u> • Located within the Catlins Conservation Park, an area of intact indigenous lowland forest which extends between the upper reaches of the short coastal catchments and their coastal interface. • Overall, the natural elements, patterns and processes remain intact and significant. • No settlements, and limited structures present within the headwaters, including tramping huts and tracks. • Opportunities for remote, and tranquil experiences.	As shown on MAP [OWB] – Outstanding water bodies
		Ecology ECL46 • Lies within the Catlins Conservation Park and the Forest & Bird Fleming River Reserve area and is protected from land use *effects* and without introduced *fish* species for the majority of the catchment.	As shown on MAP [OWB] – Outstanding water bodies

		• Native *fish* species include: black flounder, common bully, giant kōkopu, Gollum galaxias, inanga, koaro, lamprey, longfin eel, redfin bully, shortfin eel • Fleming River area has Australasian bittern, a nationally critical threatened species and South Island fernbird, a declining species.	
OWB178	Maclennan River and tributaries	**Natural character NAT26.1** See description of OWB177 – Fleming River and tributaries.	As shown on MAP [OWB] – Outstanding water bodies
OWB179	Maclennan River/Waimāeroero Podocarp Swamp Complex	**Ecology ECL48** • Site scored a high weighted conservation rank of 32.1 within the FENZ/WONI analysis (high rank). • High site integrity (97% natural). • Contains the largest stand of white pine (*Dacrycarpus dacrydioides*) and silver beech (*Nothofagus menziesii*) forest in South East Otago. Described as a nationally significant forest sequence from swamp to high podocarp forest. • Along with Tahakopa River Bogs, the largest area of pūkio (*Carex secta*) swamp under reserve status in Otago.	As shown on MAP [OWB] – Outstanding water bodies
		Physical PHY31b • Outstanding within the Otago region. • One of the most accessible and least modified beach, estuary and dune systems on the Catlins coast. • Four kilometre long pristine beach. • The hinterland of Tahakopa Bay is made up of a large wedge of an indigenous forest-covered series of foredunes, with the Tahakopa River estuary forming the western border.	As shown on MAP [OWB] – Outstanding water bodies

		• Two kilometres upstream the sand and mud bars of the estuary gradually transform into salt marsh and unmodified brackish forested swamp.	
OWB180	Mokoreta River and tributaries	**Recreation** Recognised by the Water Conservation (Mataura) Order 1997 for outstanding fisheries and angling amenity features.	As shown on MAP [OWB] – Outstanding water bodies
OWB181	Pūrākaunui River	**Landscape LAN60** • Intact and very narrow, meandering riverbed, rocky near the Pūrākaunui Falls. • Distinctive sand bar on the coastal interface. • Immediate margins are largely clad in indigenous forest. Beyond, the river is surrounded by farmland. • Pūrākaunui falls and river mouth is a highly memorable local landscape feature. • Mouth of the Pūrākaunui is recorded as being occupied by tangata whenua with the presence of artefacts and middens. • Pūrākaunui Falls walk, and Pūrākaunui Campsite are both popular recreational opportunities within the river margins.	Between E1336131/N4842928 and E1340294/N4839951 MAP [OWB] – Outstanding water bodies
		Physical PHY28 • Outstanding within the Otago region. • Easily accessible example of waterfall over near flat-lying Triassic sandstone beds. • Popular tourist attraction; aesthetically beautiful cascades as they fall over successive beds. • Hard sandstone beds hold up waterfall. Made of Murihiku Supergroup sedimentary rocks.	Between E1336221/N4842688 and E1336492/N4842328 MAP [OWB] – Outstanding water bodies

OWB182	Tahakopa Bay Podocarp Swamp	**Physical PHY31c** • Outstanding within the Otago region. • One of the most accessible and least modified beach, estuary and dune systems on the Catlins coast. • Four kilometre long pristine beach. • The hinterland of Tahakopa Bay is made up of a large wedge of an indigenous forest-covered series of foredunes, with the Tahakopa River estuary forming the western border. • Two kilometres upstream the sand and mud bars of the estuary gradually transform into salt marsh and unmodified brackish forested swamp.	As shown on MAP [OWB] – Outstanding water bodies
OWB183	Tahakopa River	**Landscape LAN61** • Narrow, meandering, and boggy river. • Lower reaches are clad in farmland and exotic forestry. Upper reaches within the Catlins Conservation Park are surrounded by intact indigenous forest. • Several wetlands and bogs adjoining the active *bed*. • Highly legible and central feature within the Tahakopa valley. • A traditional travel route between Mokoreta and Tahakopa Bay follows the margins of the river. • Largely adjoined by private land, however the upper reaches are accessible with the Catlins Conservation Park and at the mouth the river is accessible by the Tahakopa Bay Walk.	Between E1311297/N4847856 and E1330080/N4837557 MAP [OWB] – Outstanding water bodies
OWB184	Tahakopa River Bog	**Ecology ECL47** • Moderate size (185.9 hectares) with outstanding site integrity (100% natural with 15% left).	As shown on MAP [OWB] – Outstanding water bodies

		• Site scored a weighted conservation rank of 49.5 within the FENZ/WONI analysis (High). • Rare example of riparian white pine/kahikatea (*Dacrycarpus dacrydioides*) and silver beech (*Nothofagus menziesii*) forest. Along with Maclennan River/Waimāeroero Podocarp Swamp Complex, this is the largest area of pūkio (*Carex secta*) swamp under reserve status in Otago. • Active peat deposit (1.3 square kilometres) including peat dome. • High regional scientific value. • Native fish species include: Black flounder, Clutha flathead galaxias, Common bully, Common smelt, Gollum galaxias, Inanga, Koaro, Lamprey, Longfin eel, Redfin bully • Two declining species of birds, black-billed gull and South Island pied oystercatcher have been reported • Provides habitat for nationally or internationally rare or threatened species including the Threatened Australasian Bittern (Botaurus poiciloptilus) and Fernbird (Bowdleria punctata). Good numbers of White-faced Heron (*Ardea novaehollandiae novaehollandiae*) and other waders and Shags have been noted as well as an average number of Finches (*Fringillidae*). • High plant species diversity including a composition of manuka, jointed wire rush (*Leptocarpus similis*) and white pine (*Dacrycarpus dacrydioides*). • Mudflats have been noted to have high faunal value in both shellfish and invertebrates, as well as areas containing whitebait (*Galaxias spp.*) and other fish.	

		Physical PHY31a • Outstanding within the Otago region. • One of the most accessible and least modified beach, estuary and dune systems on the Catlins coast. • Four kilometre long pristine beach. • The hinterland of Tahakopa Bay is made up of a large wedge of an indigenous forest-covered series of foredunes, with the Tahakopa River estuary forming the western border. • Two kilometres upstream the sand and mud bars of the estuary gradually transform into salt marsh and unmodified brackish forested swamp.	As shown on MAP [OWB] – Outstanding water bodies
OWB185	Tautuku River	**Ecology ECL46** • Lies within the Catlins Conservation Park and the Forest & Bird Fleming River Reserve area and is protected from land use *effects* and without introduced fish species for the majority of the catchment. • Native fish species include: black flounder, common bully, giant kōkopu, Gollum galaxias, inanga, koaro, lamprey, longfin eel, redfin bully, shortfin eel • Fleming River area has Australasian bittern, a nationally critical threatened species and South Island fernbird, a declining species. • Tautuku River is proposed an outstanding catchment for diversity and representativeness in the Catlins area.	As shown on MAP [OWB] – Outstanding water bodies
		Natural character NAT26.3 See description of OWB177 – Fleming River and tributaries.	As shown on MAP [OWB] – Outstanding water bodies
OWB186	Tautuku River Estuary	**Ecology ECL49**	As shown on MAP [OWB] – Outstanding water bodies

		• Outstanding value for ecological context due to the relatively pristine nature of this estuary, its margins and catchment. • Outstanding for ecological health broadscale indicators and is classified as a reference estuary.	
		Physical PHY30 • Outstanding within New Zealand/Aotearoa. • A pristine environment containing some of the best examples of typical Catlins coastline landforms. One of the few bays in NZ with an almost completely unmodified catchment except for sparse logging operations. Florence Hill lookout gives a spectacular view. • Tautuku River estuary and salt marsh, Tautuku Bay 4km-long white sandy beach, sandspit and indigenous forested-covered sand dunes, a tombolo opposite the spit at the southern end of the beach linking Tautuku Peninsula to the mainland, and a joint-controlled sea cave (Isas Cave) at the northern end of the beach.	As shown on MAP [OWB] – Outstanding water bodies
OWB187	Thisbe Stream	**Landscape LAN59** • Meandering, narrow, rocky riverbed with no active consents and minimal structures. • Margins are largely clad in intact indigenous forest. In the upper extent farmland and gorse and broom are located within the margins. • Heightened sense of remoteness and isolation due to dense indigenous forest.	Between E1322769/N4852248 and E1326260/N4855032 MAP [OWB] – Outstanding water bodies
OWB188	Waipāti estuary	**Physical PHY32** • Outstanding within the Otago region. • Excellent example of a narrow elongate estuary. • Narrow, elongate tidal estuary at mouth of Waipāti River.	As shown on MAP [OWB] – Outstanding water bodies

SCHED2 – Water bodies where long-term damming is prohibited

This schedule identifies the *water* bodies, or parts of *water* bodies, subject to damming restrictions in accordance with DAM-P1(2) in the DAM chapter. *Water* bodies where damming is restricted or prohibited by water conservation orders in accordance with DAM-P1(1) are identified on MAP[WCO] - Water conservation order layer (areas protected by WCO) and not listed in the table below.

Site identifier	Description	Location
Lake Wānaka and the Upper Clutha River/Mata-au	Lake Wānaka and the Upper Clutha River/Mata-au between its source to its confluence with the Cardrona River/Ōrau.	Lake Wānaka, as shown on MAP[DAM] – Water bodies where long-term damming is prohibited, and the Upper Clutha River/Mata-au from E1298823/N5044987 to Lake Wānaka.
Poumāhaka River and tributaries (including the Waipahī River and its tributaries)	Poumāhaka River, including its tributaries (including the Waipahī River and its tributaries) from its sources to its confluence with the Clutha River/Mata-Au.	Poumāhaka River and all of its tributaries (including the Waipahī River and its tributaries) as shown on MAP[DAM] – Water bodies where long-term damming is prohibited.
Lower Clutha River/Mata-au	Lower Clutha River/Mata-Au from its confluence with the Poumāhaka River to the sea at the mouths of the Matau and Koau Branches.	Clutha River/Mata-au (including the Matau and Koau branches) from E1334950/N4883524 to their mouths.

SCHED3 – Rivers: A Block environmental flows, levels and take limits

This schedule provides the environmental flows, levels and take limits for A –Block allocation from rivers, set in accordance with the provisions in the EFL chapter.

Part 1 – Rivers with bespoke environmental flows and take limits

Part 1 identifies rivers with bespoke environmental flows and *take limits* for A block allocation.

River: Site Identifier	Allocation zone	Take limit (L/s)	Minimum Flow (L/s)
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, Mahika kai, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Clutha Mata-au *main stem* (whole catchment)	The combination of all 3 reaches of the Clutha Mata-au	The sum of the *take limits* for all 3 reaches of the Clutha Mata-au	*Minimum flow* The taking of *water* from the Clutha Mata-au *main stem* upstream of the Roxburgh Dam must cease when: (1) the combined flow and levels in the following *rivers* are below 250,000 L/s: (a) Clutha Mata-au at Cardrona/ Ōrau (at or near NZTM Northing 5044887 NZTM Easting 1298823) plus 10,000 L/s, less the Hawea/ Hāwea River flow as measured at the Camp Hill site (at or near NZTM Northing 5049073; NZTM Easting 1331736); (b) Kawarau at Chards Road (at or near NZTM Northing 5008034; NZTM Easting 1274429) (Site No. 75262); (c) Nevis at Wentworth (at or near NZTM Northing 5002191; NZTM Easting 1287447) and (d) Manuherikia at Ophir (at or near NZTM Northing 4999073; NZTM Easting 1331736);
Clutha Mata-au – Kawarau Catchment	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Clutha%20Mata-au%20–%20Kawarau%20Catchment&showlayers=[EFL1A]%20–%20Rivers%20with%20bespoke%20environmental%20flow%20and%20take%20limits	8,800	
Clutha Mata-au – Upper Clutha Catchment up stream of the Clyde	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885	17,400	

River: Site Identifier	Allocation zone	Take limit (L/s)	Minimum Flow (L/s)
Dam (excluding the Kawarau Catchment)	20fd9b4a13f71&find=Clutha%20Mata-au%20–%20Upper%20Clutha%20Catchment%20up%20stream%20of%20the%20Clyde%20Dam%20(excluding%20the%20Kawarau%20Catchment)%20&showlayers=[EFL1A]%20–%20Rivers%20with%20bespoke%20environmental%20flow%20and%20take%20limits		AND(2) the level of Lake Hāwea is at or below 338.2 metres above datum as measured at Hāwea Dam site (at or near NZTM Northing 5053596; NZTM Easting 1302520).
Clutha Mata-au – Clutha Catchment downstream of the Clyde Dam to sea	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Clutha%20Mata-au%20–%20Clutha%20Catchment%20downstream%20of%20the%20Clyde%20Dam%20to%20sea&showlayers=[EFL1A]%20–%20Rivers%20with%20bespoke%20environmental%20flow%20and%20take%20limits	63,200	
Upper Lakes rohe			

River: Site Identifier	Allocation zone	Take limit (L/s)	Minimum Flow (L/s)
Bullock Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Bullock%20Creek&showlayers=[EFL1A]%20–%20Rivers%20with%20bespoke%20environmental%20flow%20and%20take%20limits	20	400 at Bullock Creek at Dunmore Street Footbridge (at or near NZTM Northing 5043640; NZTM Easting 1293897)
Dunstan rohe			
Lindis River (headwaters to confluence with Clutha Mata-au)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Lindis%20River%20-%20headwaters%20to%20confluence%20with%20Clutha%20Mata-au&showlayers=[EFL1A]%20–%20Rivers%20with%20bespoke%20environmental%20flow%20and%20take%20limits	1,612	550 from 1 October to 31 May 1,600 from 1 June to 30 September At the Lindis River at the Ardgour Road flow monitoring site (at or near NZTM Northing 5023467; NZTM Easting 1314455)
Lindis River - upstream of the Lindis Peak flow monitoring site (grid reference E:1323545 N:5039400).	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885	132	

River: Site Identifier	Allocation zone	Take limit (L/s)	Minimum Flow (L/s)
	20fd9b4a13f71&find=Lindis%20River%20-%20upstream%20of%20the%20Lindis%20Peak%20flow%20monitoring%20site&showlayers=[EFL1A]%20–%20Rivers%20with%20bespoke%20environmental%20flow%20and%20take%20limits		
Lindis River – tributaries downstream of the Lindis Peak flow monitoring site (grid reference E:1323545 N:5039400).	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Lindis%20River%20–%20tributaries%20downstream%20of%20the%20Lindis%20Peak%20flow%20monitoring%20site&showlayers=[EFL1A]%20–%20Rivers%20with%20bespoke%20environmental%20flow%20and%20take%20limits	265* **This figure includes 28 L/s, which can be taken from either a tributary or mainstem downstream of Lindis Peak flow recorder, but not from both at the same time. This results in total allocation being 1,612 L/s for the Lindis catchment.*	
Lindis River - mainstem between the Lindis Peak flow monitoring site (at or near NZTM Northing:5039400; NZTM Easting:1323545), and the Ardgour Road flow monitoring site (at or near	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Lindis%20River%20-%20mainstem%20between%20the%20Lindis%20	1,104* **This figure includes 28 L/s, which can be taken from either a tributary or mainstem downstream of Lindis Peak flow*	

River: Site Identifier	Allocation zone	Take limit (L/s)	Minimum Flow (L/s)
NZTM Northing 5023467; Easting 1314455).	Peak%20flow%20monitoring%20site%20and%20the%20Ardgour%20Road%20flow%20monitoring%20site&showlayers=[EFL1A]%20–%20Rivers%20with%20bespoke%20environmental%20flow%20and%20take%20limits	*recorder, but not from both at the same time. This results in total allocation being 1,612 L/s for the Lindis catchment.*	
Lindis River - mainstem downstream of the Ardgour Road flow monitoring site.	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Lindis%20River%20-%20mainstem%20downstream%20of%20the%20Ardgour%20Road%20flow%20monitoring%20site&showlayers=[EFL1A]%20–%20Rivers%20with%20bespoke%20environmental%20flow%20and%20take%20limits	138	
Lower Clutha rohe			
North Otago FMU			

River: Site Identifier	Allocation zone	Take limit (L/s)	Minimum Flow (L/s)
Values: Ecosystem Health, Human Contact, *Threatened Species*, Mahika kai, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Shag/ Waihemo River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Shag/Waihemo%20River&showlayers=[EFL1A]%20–%20Rivers%20with%20bespoke%20environmental%20flow%20and%20take%20limits	280	150 at Shag/Waihemo River at Craig Road (at or near NZTM Northing 4967124; NZTM Easting 1417203)
Dunedin and Coast FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, Mahika kai, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Waikōuaiti River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Waikouaiti%20River&showlayers=[EFL1A]%20–%20Rivers%20with%20bespoke%20environmental%20flow%20and%20take%20limits	130	From 1 July 2040: 150 L/s from 1 November to 30 April 350 L/s from 1 May to 31 October. At Waikōuaiti River at 200m downstream DCC intake (at or near NZTM Northing 4946563; NZTM Easting 1413424)

Part 2 – Rivers with bespoke environmental flows and interim and future take limits

Part 2 identifies rivers with bespoke environmental flows and interim *take limits* until the date future take limits apply.

River: Site Identifier	Allocation zone	Take limit (L/s)	Minimum Flow (L/s)
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Dunstan rohe			
Arrow River/Haehaenui	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Arrow%20River/Haehaenui&showlayers=[EFL1B]%20–%20Rivers%20with%20bespoke%20environmental%20flows%20and%20interim%20and%20future%20take%20limits	Until 30 June 2030: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2030: 700	From 1 July 2030: 1,000 at Arrow River at Cornwall Street (at or near NZTM Northing 5014525; NZTM Easting 1272287)
Cardrona River/Ōrau - upstream of the Mt Barker flow monitoring site	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Cardrona%20at%20Mt%20Barker	Until 30 June 2030: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2030: 600, with a maximum combined instantaneous	From 1 July 2030: 750 from 1 November to 30 April & 2,100 from 1 May to 31 October at Cardrona/ Ōrau River at Mount Barker (at or near NZTM Northing 5037446 NZTM Easting 1292777)

		rate of take for all consented takes within A block of 350	
Cardrona River/Ōrau – Mt Barker to SH6 (middle reach)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Cardrona%20Lower%20S1	Until 30 June 2030: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2030: 0	n/a
Cardrona River/Ōrau – SH6 to confluence with Clutha Mata-au	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Cardrona%20Lower%20S2	Until 30 June 2030: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2030: 35	From 1 July 2030: 340 at Cardrona/ Ōrau River at Clutha Mata-au confluence (at or near NZTM Northing 5044857; NZTM Easting 1298391)
Low Burn	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Low%20Burn%20(2)	Until 30 June 2038: Interim *take limit* calculated in accordance with EFL-M1. From 1 July 2038: 140	From 1 July 2029: 80 from 1 October to 31 March 100 from 1 April to 30 September at Low Burn at Sugarloaf Drive (at or near NZTM Northing 5010097; NZTM Easting 1301373)
Luggate Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Luggate%20Creek&showlayers=[EFL1B]%20–%20Rivers%20with%20bespoke%20environment	Until 30 June 2045: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2045: 320	From 1 July 2035: 450 at Luggate Creek at SH6 Bridge (at or near NZTM Northing 5038216; NZTM Easting 1304632)

	al%20flows%20and%20interim%20and%20future%20take%20limits		
Mill Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Hayes%20Creek	Until 30 June 2028: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2028: 80	180 at Mill Creek at Fish Trap (at or near NZTM Northing 5012135; NZTM Easting 1269921)
Lower Clutha rohe			
Poumāhaka River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Pomahaka%20rest	Until 30 June 2040: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2040: 1,056	2, 800 for period 1 October to 30 April 7,000 for period 1 May to 30 September. At Poumāhaka River at Burkes Ford (at or near NZTM Northing 4893113; NZTM Easting 1321718)
Poumāhaka River tributary – Waipahī	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Waipahi%20River	Until 30 June 2045: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2045: 110	From 1 July 2040: 490 at Waipahī (at or near NZTM Northing 4886994; NZTM Easting 1309792)
Te Waiwhero River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Waiwera%20River&showlayers=[EFL1B]%20–%20Rivers%20with%20bespoke%20environment	Until 30 June 2049: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2049: 46	210 for period 1 October to 30 April 400 for period 1 May to 30 September at Maws Farm (at or near NZTM Northing 4881621; NZTM Easting 1334153)

	al%20flows%20and%20interim%20and%20future%20take%20limits		
North Otago FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Kākaunui River (excluding Kauru, Waiareka and Island stream)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Kakanui%20rest	Until 30 June 2030: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2030: upstream of Clifton Falls: 110 downstream of Clifton falls to Mill Dam: 205 downstream of Mill Dam :213	From 1 July 2030: 570 at Kākaunui at McCones (from 2029) (at or near NZTM Northing 4995225; NZTM Easting 1433686)
Kākaunui River– Kauru	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Karau%20River	Until 30 June 2052: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2052: 24	From 1 July 2030: 122 at Kauru river at Kauru Hill Road 700m Upstream (at or near NZTM Northing 5002223; NZTM Easting 1421935) 570 at Kākaunui at McCones (at or near NZTM Northing 4995180; NZTM Easting 1433513)
Waianakarua River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Waianakarua%20River&showlayers=[EFL1B]%20–%20Rivers%20with%20b	Until 30 June 2029: Interim *take limit* calculated in accordance with EFL-M1 From 1 July 2029: 190	200 for period 1 October to 30 April At Waianakarua at Browns (at or near NZTM Northing; 4986676; NZTM Easting1430610

	espoke%20environmental%20flows%20and%20interim%20and%20future%20take%20limits		

Part 3 – Rivers with bespoke environmental flows and interim take limits

Part 3 identifies rivers with bespoke environmental flows and the date that they apply, and where interim *take limits* are calculated in accordance with EFL-M1.

River: Site Identifier	Map	Interim take limit (L/s)	Minimum Flow (L/s)
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Manuherekia rohe			
Manuherekia River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Manuherekia%20River&showlayers=[EFL1C]%20–%20Rivers%20with%20bespoke%20environmental%20flows%20and%20interim%20take%20limits	Interim *take limit* calculated in accordance with EFL-M1	From notification: • 900 From 1 July 2028: • 1,100 From 1 July 2040: • 2,500 at Manuherekia at Campground (at or near NZTM Northing 4983437; NZTM Easting 1318011)
Dunstan Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Dunstan%20Creek&showlayers=[EFL1C]%20–%20Rivers%20with%20bespoke%20environment		From 1 July 2028: • 250 for period 1 October to 30 April • 1,000 for period 1 May to 30 September at Dunstan Creek at Beattie Road (at or near NZTM Northing 5018607; NZTM Easting 1344743)

	al%20flows%20and%20interim%20take%20limits		
Lauder Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Lauder%20Creek&showlayers=[EFL1C]%20–%20Rivers%20with%20bespoke%20environmental%20flows%20and%20interim%20take%20limits		From 1 July 2028: • 100 for period 1 October to 30 April • 360 for period 1 May to 30 September at Lauder Creek at Rail Trail (at or near NZTM Northing 5006353 NZTM Easting 1339001)
Thomsons Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Thomsons%20Creek&showlayers=[EFL1C]%20–%20Rivers%20with%20bespoke%20environmental%20flows%20and%20interim%20take%20limits		From 1 July 2028: • 70 for period 1 October to 30 April • 180 for period 1 May to 30 September at Thomsons Creek at SH85 (at or near NZTM Northing 4999632; NZTM Easting 1331613)
Chatto Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Chatto%20Creek&showlayers=[EFL1C]%20–%20Rivers%20with%20bespoke%20environment		From 1 July 2028: • 100 for period 1 October to 30 April • 250 for period 1 May to 30 September At Chatto Creek at Manuherekia Confluence 100 m upstream (at or near NZTM Northing 4992101; NZTM Easting 1325207)

	al%20flows%20and%20interim%20take%20limits		
Lower Manor Burn	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Lower%20Manor%20Burn&showlayers=[EFL1C]%20–%20Rivers%20with%20bespoke%20environmental%20flows%20and%20interim%20take%20limits		From 1 July 2028: • 15 from 1 October to 30 April • 50 from 1 May to 30 September Expressed as a *site-specific river flow* on resource consents.
Taiari FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Taiari River (whole catchment)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Taiari%20River%20(whole%20catchment)&showlayers=[EFL1C]%20–%20Rivers%20with%20bespoke%20environmental%20flows%20and%20interim%20take%20limits	Interim *take limit* calculated in accordance with EFL-M1	n/a
Taiari River upstream of Paerau	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Tai		850 at Taiari River immediately downstream of the Paerau Dam

	ari%20River%20upstream%20of%20Paerau&showlayers=[EFL1C]%20–%20Rivers%20with%20bespoke%20environmental%20flows%20and%20interim%20take%20limits		
Taiari River between Paerau and Waipiata	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Paurau-Waipiata		1,000 at Taiari River at Waipiata (at or near NZTM Northing 4991252; NZTM Easting 1376400)
Taiari River between Waipiata and Tiroiti	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Taiari%20River%20between%20Paerau%20and%20Waipiata&showlayers=[EFL1C]%20–%20Rivers%20with%20bespoke%20environmental%20flows%20and%20interim%20take%20limits		1,100 at Taiari River at Tiroiti (at or near NZTM Northing 4984856; NZTM Easting 1385941)
Taiari River between Tiroiti and Sutton	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Taiari%20River%20between%20Tiroiti%20and%20Sutton&showlayers=[EFL1C]%20–		1,250 at Taiari River at Sutton (at or near NZTM Northing 4949913; NZTM Easting 1376859)

	%20Rivers%20with%20bespoke%20environmental%20flows%20and%20interim%20take%20limits		
Taiari River between Sutton and Maka Kahikātoa/Outram	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Taiari%20River%20between%20Sutton%20and%20Outram&showlayers=[EFL1C]%20–%20Rivers%20with%20bespoke%20environmental%20flows%20and%20interim%20take%20limits		2,500 at Taiari River at Outram (at or near NZTM Northing 4918942; NZTM Easting 1385927)

Part 4 – Rivers managed by default environmental flows and interim take limits

Part 4 identifies the *Rivers* where an interim *take limit* for A Block allocation is calculated in accordance with EFL-M1 and where the *minimum flow* is calculated in accordance with EFL-M2.

River: Site Identifier	Allocation zone	Interim take limit (L/s)	Default minimum flow (L/s)
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Dunstan rohe			
Albert Burn (1)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Albert%20Burn%20(1)	Interim *take limit* calculated in accordance with EFL-M1	Default minimum flow calculated in accordance with EFL-M2
Amisfield Burn	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Amisfield%20Burn		
Bannock Burn	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Bannock%20Burn		
Bendigo Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885		

	20fd9b4a13f71&find=Bendigo%20Creek		
Camp Creek (1)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Camp%20Creek%20(1)		
Five Mile Creek (1)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Five%20Mile%20Creek%20(1)		
John Bull Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=John%20Bull%20Creek		
Locharburn	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Locharburn		
Park Burn	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Park%20Burn		
Pipeclay Gully Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885		

	20fd9b4a13f71&find=Pipeclay%20Gully%20Creek		
Poison Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Poison%20Creek		
Quartz Reef Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Quartz%20Reef%20Creek		
Rastus Burn	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Rastus%20Burn		
Roaring Meg/Te Wai-o-Koroiko	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Roaring%20Meg		
Shepherds Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Shepherds%20Creek		
Schoolhouse Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Schoolhouse%20Creek		

Scrubby Stream	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Scrubby%20Stream		
Tinwald Burn	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Tinwald%20Burn		
Toms Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Toms%20Creek		
Roxburgh rohe			
Benger Burn	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Benger%20Burn	Interim *take limit* calculated in accordance with EFL-M1	Default *minimum flow* calculated in accordance with EFL-M2
Butchers Creek (1)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Butchers%20Creek%20(1)		
Coal Creek (1)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Coal%20Creek%20(1)		

Coal Creek (2)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Coal%20Creek%20(2)		
Elbow Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Elbow%20Creek		
Fraser River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Fraser%20River		
Shingle Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Shingle%20Creek		
Teviot River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Teviot%20River		
Dunedin and Coast FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Waitati River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885	Interim *take limit* calculated in accordance with EFL-M1	Default *minimum flow* calculated in accordance with EFL-M2

	20fd9b4a13f71&find=Waitati%20River		
Water of Leith	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Water%20of%20Leith		
North Otago FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Awamoa Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Awamoa%20Creek	Interim *take limit* calculated in accordance with EFL-M1	Default *minimum flow* calculated in accordance with EFL-M2
Awamoko Stream	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Awamoko%20Stream		
Bow Alley Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Bow%20Alley%20Creek		
Kākaunui River– Waiareka	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Waiareka%20River		

Kākaunui River– Island Stream	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Island%20Stream		
Welcome Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Welcome%20Creek	Interim *take limit* calculated in accordance with EFL-M1	100 % of *naturalised 7DMALF*

Part 5 – All other rivers

For all other *rivers* not identified in Parts 1 to 4 above, default *take limits* for A Block allocation are calculated in accordance with EFL-M3 and default *minimum flow*s are calculated in accordance with EFL-M2.

SCHED4 – Rivers: B Block environmental flows, levels and take limits

This schedule provides the environmental flows, levels and *take limits* for B Block allocation from rivers, set in accordance with the provisions in the EFL chapter.

Part 1 – Rivers with bespoke environmental flows and take limits

Part 1 identifies rivers with bespoke environmental flows and *take limits* for B block allocation.

River: Site Identifier	Allocation zone	Take limit (L/s)	Environmental flow (L/s)
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Dunstan rohe			
Arrow River/Haehaenui	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Arrow%20River	B Block 1: 250 Subsequent B Blocks: no new allocation of *water* after 30 October 2024	B Block 1: 1,500 at Arrow River at Cornwall Street (at or near NZTM Northing 5014525; NZTM Easting 1272287)

River: Site Identifier	Allocation zone	Take limit (L/s)	Environmental flow (L/s)
Lindis River (headwaters to confluence with Clutha Mata-au)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Lindis%20River	B Block 1: 500 B Block 2: 500 All subsequent B blocks are calculated in accordance with EFL- M7	B Block 1: • 2,200 for period 1 May to 30 November • 1600 for period 1 December to 30 April B Block 2: • 2,700 for period 1 May to 30 November • 2,100 for period 1 December to 30 April at Lindis River at Ardgour Road (at or near NZTM Northing 5023467; NZTM Easting 1314455) All subsequent B block *minimum flo*ws are calculated in accordance with EFL- M6 at flow site above
Luggate Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Luggate%20Creek	B Block 1: 250 B Block 2: 166 All subsequent B blocks are calculated in accordance with EFL- M7	B Block 1: 788 B Block 2: 1038 at Luggate Creek at SH6 Bridge (at or near NZTM Northing 5038216; NZTM Easting 1304632 All subsequent B blocks *minimum flows* are calculated in accordance with EFL- M6 at the flow site above.
Poumāhaka River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Pomahaka%20River	B Block 1: 500 All subsequent B blocks are calculated in accordance with EFL- M7	B Block 1: 13,000 at Poumāhaka River at Burkes Ford (at or near NZTM Northing 4893104; NZTM Easting 1321675 All subsequent B blocks *minimum flows* are calculated in accordance with EFL- M6 at the flow site above.
Te Waiwhero River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885	B Block 1: 100	B Block 1: 600 at Te Waiwhero River at Maws Farm (at or near NZTM Northing 4881621; NZTM Easting 1334153)

River: Site Identifier	Allocation zone	Take limit (L/s)	Environmental flow (L/s)
	20fd9b4a13f71&find=Waiwera%20River	All subsequent B blocks are calculated in accordance with EFL- M7.	All subsequent B blocks *minimum flows* are calculated in accordance with EFL- M6 at the flow site above.
North Otago FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Kākaunui River (excluding Kauru, Waiareka and Island stream)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Kakanui%20rest	B Blocks 1,2 3 and 4: • 300 from 1 October to 30 April • 500 from 1 May to 30 September All subsequent B blocks are calculated in accordance with EFL- M7	B Block 1: • 1,050 for period 1 October to 30 April • 1,500 for period 1 May to 30 September B Block 2: • 1,350 from 1 October to 30 April • 2,000 from 1 May to 30 September B Block 3: • 1,650 for period 1 October to 30 April • 2,500 for period 1 May to 30 September B Block 4: • 1,950 for period 1 October to 30 April • 3,000 for period 1 May to 30 September at Kākaunui at McCones (from 2029) (at or near NZTM Northing 4995225; NZTM Easting 1433686) All subsequent B block *minimum flows* are calculated in accordance with EFL- M6.
Shag/ Waihemo River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Shag%20River	B Block 1: 100 B Block 2: 100 All subsequent B blocks are calculated in accordance with EFL- M7	• B Block 1: 650 at Craig Road (at or near NZTM Northing 4967124; NZTM Easting 1417203); • 401 at Goodwood Pump (at or near NZTM Northing 4961853; Easting 1424508) B Block 2: • 750 at Craig Road (at or near NZTM Northing 4967124; NZTM Easting 1417203)

River: Site Identifier	Allocation zone	Take limit (L/s)	Environmental flow (L/s)
			• 501 at Goodwood Pump (at or near NZTM Northing 4961762; NZTM Easting 1424576) All subsequent B block *minimum flows* are calculated in accordance with EFL- M6 at the flow sites above.
Trotters catchment	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Trotters%20Creek	B Block 1: 15 B Block 2: 30 B Block 3: 30 All subsequent B blocks are calculated in accordance with EFL- M7	B Block 1: • 30 from 1 October to 30 April • 50 from 1 May to 30 September B Block 2: • 60 from 1 October to 30 April • 80 from 1 May to 30 September B Block3: • 90 from 1 October to 30 April • 110 from 1 May to 30 September At Trotters Creek at Mathesons watertake (at or near NZTM Northing 4971537; NZTM Easting 1430525 All subsequent B block *minimum flows* are calculated in accordance with EFL-M6 at the flow site above.
Waianakarua River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Waianakarua%20River	B Block 1: 100 B Block 2: 100 B Block 3: 100 B Block 4: 100 All subsequent B blocks are calculated in accordance with EFL- M7	B Block1: 311 B Block 2: 411 B Block 3: 511 B Block 4: 611 At Waianakarua at Browns (at or near NZTM Northing; 4986676; NZTM Easting1430610 at Waianakarua River at Browns pump (from notification) (at or near NZTM Northing 4986676; NZTM Easting 1430610)

River: Site Identifier	Allocation zone	Take limit (L/s)	Environmental flow (L/s)
			All subsequent B block *minimum flows* are calculated in accordance with EFL-M6 at the flow site above.
Welcome Creek	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Welcome%20Creek	B Block 1: 400 All subsequent B block are calculated in accordance with EFL-M7.	B Block 1: 1,000 at Steward Road All subsequent B block *minimum flows* are set in accordance with EFL-M6.

Part 2 – Rivers managed by interim environmental flows and take limits

River: Site Identifier	Allocation zone	Take limit (L/s)	Environmental flow (L/s)
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Dunstan rohe			
Cardrona River/Ōrau - upstream of the Mt Barker flow monitoring site	https://maps.orc.govt.nz/OtagoViewer232/?map=507d8935060844328852 0fd9b4a13f71&find=Cardrona%20River	The Interim B block *take limit* is calculated in accordance with EFL-M5. No new allocation of *water* after 31 October 2024.	Interim B block *minimum flows* set in accordance with EFL-M4
Cardrona River/Ōrau – Mt Barker to SH6 (middle reach)			
Cardrona River/Ōrau – SH6 to confluence with Clutha Mata-au			
Manuherekia rohe			

River: Site Identifier	Allocation zone	Take limit (L/s)	Environmental flow (L/s)
Manuherekia River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d8935060844328852 0fd9b4a13f71&find=Manuherikia%20River	The interim *take limit* is calculated in accordance with EFL-M5 Subsequent blocks: no new allocation of *water* after 31 October 2024.	Interim *minimum flows* calculated in accordance with EFL-M4
Taiari FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Taiari River (whole catchment)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d8935060844328852 0fd9b4a13f71&find=Taieri%20River	The interim B Block *take limit* is calculated in accordance with EFL-M5 No new allocation of *water* after 31 October 2024.	Interim *minimum flows* calculated in accordance with EFL-M4
Taiari River upstream of Paerau	https://maps.orc.govt.nz/OtagoViewer232/?map=507d8935060844328852 0fd9b4a13f71&find=Paurau		
Taiari River between Paerau and Waipiata	https://maps.orc.govt.nz/OtagoViewer232/?map=507d8935060844328852 0fd9b4a13f71&find=Paurau-Waipiata		

River: Site Identifier	Allocation zone	Take limit (L/s)	Environmental flow (L/s)
Taiari River between Waipiata and Tiroiti	https://maps.orc.govt.nz/OtagoViewer232/?map=507d8935060844328852 0fd9b4a13f71&find=Waipiata-Tiroiti		
Taiari River between Tiroiti and Sutton	https://maps.orc.govt.nz/OtagoViewer232/?map=507d8935060844328852 0fd9b4a13f71&find=Tiroiti-Sutton		
Taiari River between Sutton and Outram	https://maps.orc.govt.nz/OtagoViewer232/?map=507d8935060844328852 0fd9b4a13f71&find=Sutton-Outram		

Part 3 – All other rivers

For all other *rivers* not identified in the tables in Part 1 and Part 2 above, *minimum flows* and *take limits* for B Block allocation are calculated in accordance with EFL-M6 and EFL-M7.

SCHED5 – Lakes: Environmental levels and take limits

Part 1 – Natural lakes

Lake: Site Identifier	Allocation zone	Take limit (L/s)	Minimum Level *(metres above mean sea level based on the Dunedin datum)*
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Upper Lakes rohe			
Whakatipu Waimāori / Lake Whakatipu	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Lake%20Wakatipu	3,000	309.80 at Lake Wakatipu at Willow Place (at or near NZTM Northing 5005021; NZTM Easting 1263320)
Lake Wānaka	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Lake%20Wanaka	3,000	277.10 at Lake Wānaka at Roys Bay (at or near NZTM Northing 5044083; NZTM Easting 1293719)
Taiari FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Waipōuri/Waihola wetland complex	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Waipori/Waihola%20Wetland%20Complex	0	0

Part 2 – Controlled lakes

Lake: Site Identifier	Map	Take limit (L/s)	Minimum Level *(metres above mean sea level based on the Dunedin datum)*
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Upper Lakes rohe			
Lake Hāwea	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Lake%20Hawea	*Take limit* for the *Clutha Mata Au*–Upper Clutha Catchment up stream of the Clyde Dam (excluding the Kawarau Catchment)	336.00 (based on a 3 hour rolling average) at Lake Hāwea at Dam (at or near NZTM Northing 5053596; NZTM Easting 1302520)
Dunstan rohe			
Lake Dunstan	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885520fd9b4a13f71&find=Lake%20Dunstan&showlayers=[EFL2B]%20–%20Controlled%20lakes%20with%20bespoke%20environmental%20levels%20and%20take%20limits	*Take limit* for the Clutha Mata Au - Upper Clutha catchment up stream of the Clyde Dam	193.50 at Lake Dunstan at Cromwell (at or near NZTM Northing 5005759; NZTM Easting 1302457)
Roxburgh rohe			

Lake Roxburgh	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Lake%20Roxburgh&showlayers=[EFL2B]%20–%20Controlled%20lakes%20with%20bespoke%20environmental%20levels%20and%20take%20limits	*Take limit* for the Clutha Mata-Au – Clutha catchment downstream of the Clyde Dam to sea	130.15
Lake Onslow	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Lake%20Onslow&showlayers=[EFL2B]%20–%20Controlled%20lakes%20with%20bespoke%20environmental%20levels%20and%20take%20limits	*Take limit* for the *Teviot River*	679.90
Lower Clutha rohe			
Roto-nui-a-Whatu/ Lake Tuakitoto Catchment	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Lake%20Tuakitoto%20Catchment&showlayers=[EFL2B]%20–%20Controlled%20lakes%20with%20bespoke%20environmental%20level	30	100.77 at outlet (at or near NZTM Northing 4874856; NZTM Easting 1355182) *Minimum Flow:* 5 L/s at Lovells Creek at SH1 (at or near NZTM Northing 4883061; NZTM Easting 1355259)

	s%20and%20take%20limits		
Taiari FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Lake Mahinerangi	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885220fd9b4a13f71&find=Lake%20Mahinerangi&showlayers=[EFL2B]%20–%20Controlled%20lakes%20with%20bespoke%20environmental%20levels%20and%20take%20limits	*Take limit* for the Taiari River	378.40

Part 3 – Off-stream artificial lakes

Where the artificial *lake* is not connected to other *freshwater* bodies, no environmental flows, levels or *lake limits* for that artificial *lake* apply.

Where an artificial *lake* is connected to another *freshwater* body, any taking of *water* from that artificial *lake* that is not accounted by a previously authorised take from the original source *water* body must be subject to the environmental flows, levels and *take limits* of the *freshwater* body which the *lake* is connected to.

SCHED6 – Groundwater: Take limits

Part 1 – Aquifers managed by bespoke take limits

Aquifer: Site identifier	Allocation zone/ Map reference(Link)	Take limit (m^3/year)
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use		
Dunstan rohe		
Ardgour Valley Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Ardgour%20Valley%20Aquifer	190,000
Bendigo Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Bendigo%20Aquifer	29,000,000
Lower Tarras Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Lower%20Tarras%20Aquifer	18,800,000
Cromwell Terrace Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Cromwell%20Terrace%20Aquifer	4,000,000
Wānaka-Basin Cardrona Gravel Aquifer - West	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Wānaka%20Aquifer%20West	Western Zone: 1,300,000 + allowance for SW takes from Cardrona losing reach going to *groundwater*

Wānaka Aquifer Eastnaka-Basin Cardrona Gravel Aquifer - East	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Wānaka%20Aquifer%20East	Eastern Zone: 35% of *Mean Annual Recharge*
Hawea/ Hāwea Flat Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Hawea%20Flat%20Aquifer	6,680,000
Grandview Zone Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Grandview%20Zone%20Aquifer	787,000
Terrace Aquifer - Hill	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Terrace-Hill%20Aquifer	410,000
Terrace Aquifer - River	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Terrace-River%20Aquifer	1,560,000
Sandy Point Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Sandy%20Point%20Aquifer	Until 30 June 2035: The interim *take limit* is calculated in accordance with EFL-M9 From 1 July 2035: 462,399
Te Awa Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Te%20Awa%20Aquifer	297,000
Maungawera Flat Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Maungawera%20Flat%20Aquifer	570,000
Maungawera Valley Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Maungawera%20Valley%20Aquifer	Until 30 June 2035: The sum of the annual volume of take in all resource consents granted at 30 October 2024, with no new allocation of *water* after 30 October 2024. From 1 July 2035: 726,000
Butterfield Exclusion Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Butterfield%20Exclusion	0

(*wetland* protection zone)		
Campbell's Exclusion Zone (*wetland* exclusion zone)	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Campbell's%20Exclusion	0
North Otago FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use		
North Otago Volcanic Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=North%20Otago%20Volcanics%20Aquifer	7,000,000
Taiari FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use		
Lower Taiari - West	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=West%20Lower%20Taieri%20Aquifer	3,000,000
Lower Taiari - East	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=East%20Lower%20Taieri%20Aquifer	2,900,000

Part 2 – Alluvial ribbon aquifers

Alluvial ribbon *aquifers* are managed according to the *river* that the *aquifer* is hydraulically connected to. Takes from alluvial ribbon *aquifers* are subject to any *take limits, minimum flows* and *management flows* set for the *river* that the *aquifer* is connected to.

Aquifer: Site identifier	Allocation zone/ Map reference (Link)	Take limit (m^3/year)	Environmental level
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Upper Lakes rohe			
Rees-Dart Alluvial Ribbon Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Rees-Dart%20Alluvial%20Ribbon%20Aquifer	Subject to *take limit* for Dart River/Te Awa Whakatipu	*Groundwater* level managed by minimum *flow* for Dart River/Te Awa Whakatipu
Mātakitaki Alluvial Ribbon Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Matukituki%20Alluvial%20Ribbon%20Aquifer	Subject to *take limit* for MātakitakiRiver	*Groundwater* level managed by *minimum flow* for Mātakitaki River
Dunstan rohe			
Arrow-Bush Alluvial Ribbon Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Arrow-	Subject to *take limit river* for Arrow River	*Groundwater* level managed by *minimum* flow for Arrow River

	Bush%20Ribbon%20Aquifer		
Cardrona Alluvial Ribbon Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Cardrona%20Alluvial%20Ribbon%20Aquifer	Subject to *take limit river* for Cardrona/Ōrau River	*Groundwater* level managed by *minimum flow* for Cardrona/Ōrau River
Lindis Alluvial Ribbon Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Lindis%20Alluvial%20Ribbon%20Aquifer	Subject to *take limit river* for Lindis River	*Groundwater* level managed by *minimum flow* for Lindis River
Lowburn Alluvial Ribbon Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Lowburn%20Alluvial%20Ribbon%20Aquifer	Subject to *take limit river* for Low Burn River	*Groundwater* level managed by *minimum flow* for Low Burn River
Shotover Alluvial Ribbon Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Shotover%20Alluvial%20Ribbon%20Aquifer	Subject to *take limit river* for Shotover/Kimiākau River	*Groundwater* level managed by *minimum flow* for Shotover/Kimiākau River
Manuherekia rohe			
Manuherekia Alluvium Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Manuh	Subject to *take limit* for Manuherekia River	*Groundwater* level managed by *minimum flow* for Manuherekia River

	erikia%20Alluvium%20Aquifer		
Lower Clutha rohe			
Poumāhaka Alluvial Ribbon Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Poumāhaka%20Alluvial%20Ribbon%20Aquifer	Subject to *take limit* for Poumāhaka River	*Groundwater* level managed by *minimum flow* Poumāhaka River
North Otago FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use			
Kākaunui -Kauru Alluvium Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Kakanui-Kauru%20Alluvium%20Aquifer	Subject to *take limit* for Kākaunui River	*Groundwater* level managed by *minimum flow* for Kākaunui River
Shag/Waihemo Alluvium Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d893506084432885 20fd9b4a13f71&find=Shag%20Alluvium%20Aquifer	Subject to *take limit* for Shag/ Waihemo River	*Groundwater* level managed by *minimum flow* for Shag/ Waihemo River

Part 3 – Aquifers managed by default take limits

Aquifers managed by *take limits* and environmental levels set at 35% of *Mean Annual Recharge* in accordance with EFL-P10(3) and EFL-M8.

Aquifer: Site identifier	Allocation zone/ Map reference (Link)
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use	
Upper Lakes rohe	
Glenorchy Groundwater Management Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Glenorchy%20Groundwater%20Management%20Zone
Kingston Groundwater Management Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Kingston%20Groundwater%20Management%20Zone
Dunstan rohe	
Frankton Flats Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Frankton%20Flats%20Aquifer
Ladies Mile Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Windermeer%20Aquifer
Morven Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Morven%20Aquifer
Upper Mill Creek Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Upper%20Mill%20Creek%20Aquifer

Mid Mill Creek Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Mid%20Mill%20Creek%20Aquifer
Speargrass-Hawthorn Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Speargrass-Hawthorn%20Aquifer
Pisa Groundwater Management Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Pisa%20Groundwater%20Management%20Zone
Luggate Groundwater Management Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Luggate%20Groundwater%20Management%20Zone
Roxburgh rohe	
Dunstan Flats Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Dunstan%20Flats%20Aquifer
Earnscleugh Terrace Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Earnscleugh%20Terrace%20Aquifer
Roxburgh East Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Roxburgh%20East%20Basin%20Aquifer
Roxburgh West Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Roxburgh%20West%20Basin%20Aquifer
Manuherekia rohe	
Ida Valley Groundwater Management Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Ida%20Valley%20Groundwater%20Management%20Zone
Manuherekia Claybound Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Manuherikia%20Claybound%20Aquifer

Manuherekia Groundwater Management Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Manuherikia%20Groundwater%20Management%20Zone
Lower Clutha rohe	
Inch Clutha Gravel Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Inch%20Clutha%20Gravel%20Aquifer
North Otago FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use	
Lower Waitaki Plains Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Lower%20Waitaki%20Plains%20Aquifer
Papakaio Aquifer, Waikoura Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Papakaio%20Aquifer,%20Waikoura%20Zone
Papakaio Aquifer Camerons Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Papakaio%20Aquifer,%20Camerons%20Zone
Papakaio Aquifer, Enfield Basin	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Papakaio%20Aquifer,%20Enfield%20Basin
Papakaio Aquifer, Waipati/ Waipāti Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Papakaio%20Aquifer,%20Waipati%20Zone
Dunedin and Coast FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use	
Tokomairaro Plain Groundwater Management Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Tokomairiro%20Plain%20Groundwater%20Management%20Zone

Taiari FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika* kai, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use	
Māniatoto Tertiary Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Maniototo%20Tertiary%20Aquifer
Strath Taieri Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Strath%20Taieri%20Aquifer

Part 4– Aquifers managed by interim take limits

Aquifers with interim *take limits* set as the sum of the annual volume of take in all resource consents granted at 31 October 2024, with no new allocation of water after 31 October 2024.

Aquifer: Site identifier	Allocation zone/ Map reference(Link)
Clutha Mata-au FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use	
Dunstan rohe	
Sandy Point Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Sandy%20Point%20Aquifer
Queensbury Groundwater Management Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Queensbury%20Groundwater%20Management%20Zone
Roxburgh rohe	
South Ettrick Basin Aquifer	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=South%20Ettrick%20Basin%20Aquifer

North Otago FMU Values: Ecosystem Health, Human Contact, *Threatened Species*, *Mahika kai*, Natural form and character, Taoka *species*, *Wāhi tūpuna*, Animal drinking *water*, Fishing, *Cultivation*, and production of food, beverages and fibre, Hydro-electric generation, Commercial and industrial use	
Papakaio Aquifer, Big Hill Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Papakaio%20Aquifer,%20Big%20Hill%20Zone
Papakaio Aquifer, Maerewhenua Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Papakaio%20Aquifer,%20Maerewhenua%20Zone
Papakaio Aquifer, Southern Zone	https://maps.orc.govt.nz/OtagoViewer232/?map=507d89350608443288520fd9b4a13f71&find=Papakaio%20Aquifer,%20Southern%20Zone

Maps

MAP [TS] – Threatened species habitat

MAP [OWB] – Outstanding water bodies

MAP [WCO] – Water conservation order layer (areas protected by WCO)

Advice notes:

(1) In case of a discrepancy between the *water* bodies shown on MAP[WCO] Water conservation order and the description of *water* bodies in Schedules 1 and 2 of the Water Conservation (Kawarau) Order 1997, the latter prevails.

(2) In case of a discrepancy between the *water* bodies shown on MAP[WCO] Water conservation order and the description of *water* bodies in order 2 of the Water Conservation (Mataura River) Order 1997, the latter prevails.

MAP [DAM] – Water bodies where long-term damming is prohibited

MAP [UTSP] – Upper Taieri Scroll Plain areas exempt from Stock Exclusion Regulations 2020

Maps below linked in (Schedules 1-5):

MAP [EFL1A] – Rivers with bespoke environmental flow and take limits

MAP [EFL1B] – Rivers with bespoke environmental flows and interim and future take limits

MAP [EFL1C] – Rivers with bespoke environmental flows and interim take limits

MAP [EFL1D] – Rivers managed by default environmental flows and interim take limits

MAP [EFL2A] – Natural lakes with bespoke environmental levels and take limits

MAP [EFL2B] – Controlled lakes with bespoke environmental levels and take limits

MAP [EFL3A] – Aquifers managed by bespoke take limits

MAP [EFL3B] – Alluvial ribbon aquifers

MAP [EFL3C] – Aquifers managed by default take limits

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