

# Part 2. Actions-River Reaches

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## River Reaches

- 2.1 Hāpua/Estuary
- 2.2 Coastal , Hapua to Badham Road
- 2.3 Lower Main Stem, Badham Rd to Arundel Rd Bridge
- 2.4 Foothills, Arundel Road Bridge to Gorge
- 2.5 Highcountry, Gorge to Havelock River
- 2.6 Headwaters, Havelock River confluence upstream
- 2.7 Generic Whole River

## Suggested delivery time frames

Against each reach action a priority has been assigned, these are defined as follows;

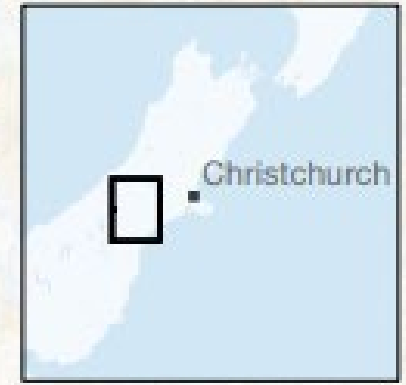
- SHORT TERM      1-5 YEARS
- MEDIUM TERM    5-10 YEARS
- LONG TERM        10-100 YEARS
- ASPIRATIONAL
- ONGOING            ONGOING

Plan ahead in appropriate agencies long term plans





Consideration to be given to these aspects on an ongoing basis, applies to all development works



Upper Rangitata River catchment



Lower Rangitata River catchment

-  Reach boundary
-  Wetland (ground survey)
-  Wetland (aerial survey)
-  Rangitata River catchment



# Rangitata River catchment



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## 2.1 Hāpua – coastal lagoon



### About this reach

The Rakitata hāpua is a distinctive landform of the braided river system forming critical breeding habitat for both fish and birdlife. Hāpua are unique coastal estuaries -characterised by long, narrow, shallow, and predominantly freshwater lagoons at least partially enclosed by a gravel barrier beach that experience episodic mouth closure. Hāpua are uncommon landforms globally, and a distinctive component of the character of the Canterbury coastline.

This reach extends from the marine environment to the upper tidal limit and includes the interface of the riverine/marine environment, coastal lagoon system, the lowest reach of the main river stem, and estuarine creeks. It is highly dynamic, with major changes to features from both riverine and coastal processes and sensitive to climate change impacts. The river mouth may close at residual flows below 30 cumecs with mechanical opening being carried out periodically to prevent flood risks to the hut communities on both banks.

The reach is well used for a variety of recreational activities, particularly whitebaiting and sports fishing when seasons are open, and a high degree of public recreational use is facilitated with quad trail access to the mouth from the huts on both sides.

The estuarine area is abundant with seasonal fish and birdlife and is a significant mahinga kai resource for Manawhenua. It was an important node in the transit of people and social relationships along the Awa on the Ara Tawhito/ ancient trails, and for the preservation of produce both locally sourced and from the hinterland. Significant sites, including kāika nohoanga (settlements), pā tawhito (historic Pā sites) and urupā (burial sites) lie within the hāpua reach.

### Issues and opportunities

Enhancement opportunities include protection of critical habitat for īnaka/īnanga spawning, protection of mega-colony breeding grounds for maritime birds and wader nesting habitat along the lower braid plain; and enhancement of the tidal wetlands and berm lands where exotic vegetation and weeds are dominant. This will create natural vegetation recovery providing wildlife corridors and cultural/ecosystem value, that will be further enhanced by the removal of aggressive exotic weeds.

Research will support long term management by considering climate change impacts on the hāpua including landward migration of the coastal-marine environment, greater understanding of altered flow regimes on hāpua and coastal landforms, and mahinga kai and taonga(native) species status. Keystone species such as paraki/Stokell's smelt, are poorly understood, and are often regarded as depleted, but with little understanding of why this is. The hāpua forms a start point for the 'cultural trail' that travels the length of te awa supporting restoration access, promoting recreational use, and telling the story of cultural heritage along the Rakitata.







# Hapua

**1** Inanga spawning habitat is enhanced. Spawning vegetation is well represented at spawning sites, with clean water for fish nursery functioning.

**2** Native vegetation that supports native birdlife and fish predominates on riparian edges. Invasive weeds like yellow flag iris and false tamarisk are not permitted to gain a foothold.

**3** Estuarine stream. Mahinga kai plantings of harakeke, te kouka, tutu and carex thrive and are available for harvest, water flows are restored, fish barriers removed.

**4** Cultural River Trail. Here begins the Ara Tawhito (ancient trails) telling the story of Manawhenua area heritage, opening up access for restoration, and providing recreational access along the southern bank.

**5** Mega colonies of white fronted tern and black billed gull breed successfully on the ocean berm and lowest river islands.

**6** Effective predator control protects birdlife, fish spawning and nursery areas.



**7** Coordinated research provides a more informed picture of hapua and fish community dynamics-so we can best protect them.

**8** South side berms begin transition towards native dryland forest habitats.

**9** Climate change resilience. Hapua are dynamic systems prone to impacts of climate change. Sea level rises are likely to cause inland migration and crown land behind the existing hapua need to be managed to allow this process to occur.

**10** Our thriving communities connect with te awa and each other. Hut holder communities, fishers, landowners and other community groups can be actively engaged to align our work and support each other to revive the hapua.

**11** The river displays a wide clean braid plan, allowing for high volume flood event capacity and braided river wildlife habitat.

ACTION	EXPLANATION	DELIVERY TIMEFRAME
Sediment, flow, and braid dynamics understood and action plan in place by 2025 if required.	Advocate for natural communities, habitats, and processes. To do this our understanding of river processes and natural characteristics requires research.	Long term
Seek and develop common research projects between agencies.	<p>Key amongst research needs in this reach are:</p> <ul style="list-style-type: none"> <li>• Understanding the impact of river mouth closure, artificial flow regimes and sedimentation.</li> <li>• Status/occupancy of mahinga kai and taonga species such as paraki and other migratory fish species.</li> <li>• Climate change impacts and development of restoration techniques.</li> </ul>	Short term
Establish action plans for mahinga kai and taonga (native/threatened) species.	Specialist cultural knowledge is sought during buildup of hāpua restoration plan and implementation.	Short term
Specialist knowledge sought regarding species status, protection and monitoring including cultural monitoring.	Cultural resource abundance of īnaka/īnanga, paraki, tī kōuka, harakeke, tutu, and tuna are targeted in hāpua restoration plans using Arowhenua cultural consultants.	Ongoing
Mana whenua trail's theme is developed for community use and cultural appreciation.	The hāpua represents an important node in a developing a trail network that will support restoration, promote public use, and tell the story of the culturally significant Rakitata trails.	Medium term
Culturally significant sites, trails, Wahi Taonga, mapped and management plan in place.	The hāpua is a focal area on the Awa for Manawhenua, with its rich mahinga kai resources and coastal climate. Associated with the river mouth lie wahi taonga such as ara tawhito (ancient trails) and the permanent settlement at Otuakiri on the southern side of the awa. Working Group to support Te Rūnanga o Arowhenua to catalogue Rakitata sites and develop a management plan for the Awa.	Ongoing
Integrated predator control applied to reduce predation on taonga (native) species.	Predator control is afforded to taonga threatened bird colonies and īnaka /īnanga spawning sites. Techniques include mammalian predator trapping, management of avian predators and habitat enhancement (e.g., bird islands are created).	Short term

Plant pest control plan is in place for whole Awa, reducing weed dominance by 2025.	Exotic weed dominance is reduced, and native vegetation promoted. Invasive weeds such as gorse, broom, yellow flag and false tamarisk are removed from sensitive sites and native vegetation becomes more dominant.	Short term
Main stem berm lands transition to native ecosystems.	<p>The corridor recovery concept is based on spatial designs from Meurk and Hall (2006). Prescriptively, it requires the establishment of a series of large 6.25ha 'core sanctuary' reserves at 5km spacing along the Awa. Supplementing this 1.6ha 'habitat steppingstones' at 1-2km spacing, and a 0.1ha finer grain steppingstones at 0.2km spacing. The objective of the corridor is to facilitate movement of fauna and provide source genetic material for radiation of native vegetation into the bermlands. (Pers com Stanley. G. 2021)</p> <p>Design is predominantly to be across the south side bermlands. Spatial design should consider microhabitat variables within the berm to maximize success. E.g., Sites of springs or weeps provide advantage in establishment success, and often known historical mahinga kai sites correspond with these features allow for wider mahinga kai benefits. Habitat transition should be targeted for recovery of culturally significant coastal dryland shrubland and forest within this low rainfall reach. Key dryland forestland species include +tī kōuka (cabbage tree), kōhūhū (black matipo), kōwhai, kanuka, mingimingi, olearia, toetoe. Along estuarine margins: harakeke (flax), pukio (very good for īnaka/īnanga spawning), oi oi (jointed rush), limited habitat opportunities for pingao (sand sedge) exist because of lack of sand on beachfront.</p> <p>Active braid areas/Fairway: Fairway areas are weeded with an "increasing sensitivity". Fairway weed management continues to keep sections of river clear of weed species whilst promoting retention of low-stature plant communities occupying gravel islands.</p>	Ongoing
Support (large scale) restoration projects to get best possible outcomes, include community participation and training of participants.	Agencies should seek to add value to works across the Awa including mentoring and supporting community and other agencies works.	Short term
Science support on climate change impacts is considered in all plans developed.	Hāpua are dynamic systems prone to the impacts of climate change. Sea level rises are likely to force inland migration and crown held lands behind the hāpua need to be consistently managed to allow projected spatial movement of the hāpua.	Long term
Support riparian restoration of tributaries / Proactive and collaborative engagement with adjacent landowners.	Water quantity and quality at the hāpua needs to be protected to allow for aquatic dependent life, especially sensitive fish spawning sites and culturally significant springs and streams. Support adjacent landholders to protect waterways feeding the hāpua and promote riparian habitat protection through fencing and native planting.	Short term
Seek greater understanding of water quality and quantity issues.	Research provides understanding of riverine/ hāpua/ mouth dynamics and coastal processes.	
BRAG (Braided River Action Group) crown lands management prescription or surrogate developed, is agreed, and implemented across all agencies.	Having coordinated crown lands management across the Awa will provide a vehicle for the implementation of this plan. Crown administered lands fall on either side of the river above the hāpua.	Medium term

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Encourage community interest groups to support wider restoration and align their efforts with identified priorities.	Hut holders and salmon fishermen at Rangitata Huts are actively seeking engagement in hāpua restoration. Align their efforts with strategy priorities and provide support.	Short term
Wider ECan river engineering scheme review provides for both community and river values protection.	Working Group to support ECan in this process. Alongside this reach hut communities on both banks and farmers have interests in sustainable flood protection.	Short term

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## 2.2 Coastal reach – top of estuarine area to Badham Road

### About this reach

This reach extends 7.5kilometers from the top of the estuarine influence to Badham Road. The reach is generally constrained by a steep river terrace on the north bank, and on the southern bank by flood protection engineering and exotic berm-land that protects surrounding farmland and infrastructure.

In recent years threatened bird breeding colonies historically present within this reach (black fronted tern and black billed gulls), have had less success establishing due to lack of available habitat. Anecdotally, woody weed dominance on open gravels and islands and karoro (black backed gull) dominance being implicated.

The reach is well used for a variety of recreational activities, such as camping, walking, fishing and gamebird hunting-with public access available from the Rangitata Huts and Badham Road. Campervans often utilise the Badham Road berms for longer stays over the fishing season. Access up and down the river in this reach can be facilitated on river management haul roads in places, however flooding and river dynamics have made this a fractured network. Motor vehicle use is limited mainly to these tracks given the risks inherent in riverbed travel.

The riverbed surface is generally dominated by lupin, gorse and broom growths that is periodically swept by floods or sprayed for river management purposes. Berm-lands are dominated by crack willow and poplar plantings with understories of blackberry and broom/gorse in more open areas -some native regeneration is notable (tī kōuka, ferns and pittosporum predominate).

Associated rare spring fed systems run parallel to the river on the southern bank, notably McKinnon's Creek.

On the northern bank between the open riverbed and backed by a steep terrace scarp, the downriver portion of the DOC administered Coldstream Reserve comprises 132hectares of lower terrace in a seldom found relatively intact landform. Mean rainfall for the ECan Hinds Plains recorder shows only 748mm. Vegetation favours dryland specialists on the north bank, pasture grasses, gorse and broom has aggressively colonised the stone fields, rock gardens, moss flats and dryland vegetation that formed the original covers.

### Issues and opportunities

There are good opportunities to enhance the main stem and berm lands for ecological, cultural, recreational and flood protection purposes. River form and function - flows, species residency, sediment drifts, braid dynamism and algal growths need to be better understood to inform management decisions.

Priority restoration in the main stem should; protect breeding grounds for taonga braided river birds, promote a wider and clearer (weed free) braid channel and initiate the transition of exotic dominated berm lands to an effective native corridor that supports wider and more resilient natural habitats. The significant scale of berm-land transition to a native dominated ecosystem will mean this is a long-term action.

Non main stem site restoration should target to high priority sites including spring fed creeks, culturally valuable sites, rare ecosystems, or activities and process with direct impacts on river health.

Cultural mahinga kai, travel routes and traditional trail camp sites fall along the river within this reach. Oher recognisable cultural river features, provide the opportunity for cultural restoration and for the whakapapa (lineage and connection) to be recognised within the river environment.

Springs and wetlands fall within this reach. The spring fed Ōtakitane/McKinnon's Ck arises on the south bank below Badham Road and runs with elevated and rising nitrite and E. coli levels through dairy farms before striking the salmon hatchery and entering the main stem.

Opportunities exist to restore riparian zones to improve water quality, create exemplar sites to showcase riparian recovery, fix point discharges, work with landowners and hatchery staff, understand and reduce sediment/nutrient inputs, and support native-mahinga kai species recovery.

The dryland shrubland, stonefield, moss field and lichen field dryland habitats on low river terraces of the Coldstream block on the northern side of the river have become dominated by gorse and exotic grasses, creating significant fire risk. They retain important botanical values that can be enhanced if the woody weed growth can be controlled sympathetically.





**1** Predator control protects wildlife. Black fronted terns and black billed gull colonies are successful in raising chicks, and grass skinks are prolific in grasslands.



**2** Native vegetation plots fuel bermlands transition to native dryland forest along the south bank and provide corridors for the return of taonga wildlife.



**3** Research provides specific water quality and quantity targets to protect ecosystems.



**4** Spring fed creeks and drains on adjacent farmland have fenced and planted riparian margins, including harakeke, Carex and te kouka. This improves water quality and provide habitat for fish development and mahingakai.



**5** Willow swamp on heavier ground in the McKinnon's Ck complex transitions to Kahikatea and Carex that filter flows protecting the salmon hatchery and supporting further mahingakai developments with Arowhenua kaitiaki such as cress gathering and kakahi beds.



**6** The river displays a wide clean braid plain, allowing for high volume flood event capacity and braided river wildlife habitat.

**7** Cultural River Trail. The Ara Tawhito (ancient trails) run the length of the reach through the southern berm land, telling the story of Manawhenua area heritage, opening up access for restoration, recreational and educational activities.

**8** Rare stonefield, mossfield, dryland scrub and reptile communities are protected from broom and gorse invasion along the Coldstream terraces.

**9** Crown agencies align management across administered land including working with our community to develop the vision for the South Branch.

**10** Diversified and viable alternative land uses. Riparian restoration is unlikely to achieve sought water and habitat improvements. Only by working with farmers and industry will these be met.



# Coastal Reach



ACTION	EXPLANATION	DELIVERY TIMEFRAME
Plant pest control plan in place for the whole Awa, reducing weed dominance in the Awa by 2025.	Woody weed growths of broom, tree lupin, gorse and false tamarisk dominate the open river space between flushing floods limiting habitat availability for braided river birds, reducing dynamism in the braid plain and reducing flood capacity. The Working Group will need to balance resources over the river getting the best return on weed control. This may be an aggressive whole river treatment if ongoing resourcing can be found, or values and practicality-based prioritisation. Seek to apply weed control in similar multi agency and community model to existing upper Rakitata weed control. Within this reach the low terrace stone fields of Coldstream and the ecological, recreational, and culturally significant Ōtakitane/McKinnon's system proposed restoration works should receive consideration.	Short term
Culturally significant sites, trails, Wahi Taonga mapped and restoration plan in place.	Within this reach lies focal mahinga kai areas such as Ōtakitane/McKinnon's Ck, and significant placenames are still remembered along this stretch of the Awa. Working Group to support Te Rūnanga o Arowhenua to catalogue Rakitata sites and develop a management plan.	Ongoing
Ngāi Tahu regenerative farming trials are considered as a model of diversified and alternative land use.	Riparian restoration alone is unlikely to have the sought water and habitat improvements. Only by working with our farming community and industries will transition to more sensitive land uses occur.	
Provide aligned alternative and economically viable land use options.	Riparian restoration alone is unlikely to have the sought water and habitat improvements. Only by working with farming community and industry will transition to more sensitive land uses occur	



Integrated predator control applied to reduce predation on taonga species.	Predator control is afforded to taonga, threatened bird colonies and spawning sites through mammalian predator trapping, management of avian predators and habitat enhancement (e.g., bird islands could be created).	Ongoing
Create ecosystem corridors, starting with the lower reaches of the river.	Tarahaoa (Mount Peel) is visible from much of the river within this reach. Returning the native taonga plants and wildlife to the lower riverbed requires habitat linkages through this reach to be developed.	
Support riparian restoration of tributaries to create wildlife corridors and improve water quality.	Ōtakitane/McKinnon's creek and other south side spring systems require native fish passage and riparian margins restored with native vegetation to enable migration and dispersal of native species. Stock exclusion and riparian zone revegetation will improve water quality and aquatic habitats.	Short term
Seek greater understanding of water quality and quantity issues	Greater understanding of Impacts of water quality and quantity across both the main stem and spring fed systems will support targeted restoration and taonga protection.	
Ngāi Tahu regenerative farming trials considered as model of diversified and alternative land use	Riparian restoration alone is unlikely to have the sought water and habitat improvements. Only by working with farming community and industry will land use practices transition to impacts at levels consistent with this plan.	Medium term
BRAG crown lands management prescription or surrogate is developed, is agreed, and implemented across all agencies.	The cross organizational BRAG (Braided Rivers Action Group) is running a pilot on the Rangitata to align management of Crown Lands across the Awa. The Working Group supports BRAG outcomes implementation.	Short to medium term
Mana whenua travel and trail's theme is developed for community use and cultural appreciation.	The southern side of this reach is guarded by willow and polar dominated berm lands, with public access at the estuary and Badham Road to the management haul road system. These offer an excellent opportunity for the public to see restoration activities and learn about Manawhenua history and presence within the public by developing the cultural trail narrative. Some development of access and public vehicle parking at Badham Road may be required if this access point proves popular.	Medium term
Wider ECan river engineering scheme review provides for both community and river values protection	The Working Group supports Environment Canterbury in reviewing river management. We recognize the significance of a community flood protection, maintaining a dynamic braid plain with room to move, and natural landforms and habitats.	Short term
South Branch investigation completed to identify how to best align South Branch and main stem management as a 'whole river' concept (ki uta ki tai).	In its lower run the Awa was historically split into multiple channels known as the North Branch, (the lesser referenced Middle Branch) and the South Branch, separated by Huakina / Rangitata Island. While most of the river's flow has been carried by the northern branch for nearly 100 years, floods have regularly passed down the South Branch (ECan 2017). Flood protection works maintained by ECan and funded by targeted rates include low stop banks that are designed to prevent flows down the South Branch in floods less than 1,500 m <sup>3</sup> /s, which have a 5-year return period (ECan 2017). However, over the last 20 years, the region's dairy boom has seen significant development on flood-prone land in South Branch and Rangitata Island. This has resulted in increased land values for farming and hence created a greater desire to keep flood flows out of the South Branch. This has put greater pressure on ECan to provide a greater level of flood protection for land in the South Branch and it has greatly reduced the natural values of the braid plain. (Burrell 2019).	18
Main stem berm lands transition to native ecosystems.	The corridor recovery concept is based on spatial designs from Meurk and Hall (2006). Prescriptively, it requires the establishment of a series of large 6.25ha 'core sanctuary' reserves at 5km spacing along the Awa. Supplementing this 1.6ha 'habitat steppingstones' at 1-2km spacing, and a 0.1ha finer grain steppingstones at 0.2km spacing. The objective of the corridor is to facilitate movement of fauna and provide source genetic material for radiation of native vegetation into the bermlands. (Pers com Stanley. G. 2021) Design is predominantly to be across the south side bermlands. Spatial design should consider microhabitat variables within the berm to maximize recruitment success. E.g., Sites of springs or weeps provide advantage in establishment success, and often	Long term

	known historical mahinga kai sites correspond with these features allowing for wider benefits. Habitat transition should be targeted to recovery of culturally significant dryland forest and shrubland species within this low rainfall reach.	
Support (large scale) restoration projects to get best possible outcomes, include community participation and training of participants.	Agencies should seek to add value to works across the Awa including mentoring and supporting community and other agencies works.	
Seek and develop common research projects between agencies.	Key amongst knowledge gaps in this reach are shared interests in understanding the impact of flow regimes and sedimentation, current status-occupancy of mahinga kai and taonga species such as kanakana and other migratory fish species, off river impacts and development of restoration techniques, especially native vegetation succession.	Short term



## 2.3 Lower main stem – Badham Road to Arundel Bridge

### About this reach

This reach covers most of the lower main stem, from Badham Road upstream 22kilometers to the Arundel Road bridge. It is heavily represented in river infrastructure- the SH1 and Arundel road bridges, the Rail corridor bridge, main trunk power lines and the bund across the mouth of the South Branch. The river is constrained between terrace banks on the northern bank and rated river protection works on the southern, with woody weed dominated fairways and little available open braid habitat unless recently flood swept. Annual flood returns of 1,186 cumecs cover the entire riverbed and play a role in clearing woody weed growths while more frequent smaller freshes play an important role in scouring periphyton (slimes and algae) and sediment. As flows drop to around mean annual low flow, habitat availability reduces for some aquatic species. Sections of the main braid plain have become aggregated and immobile, with corresponding woody vegetation establishment and reduced braid dynamism. Berms are heavily vegetated in exotic poplar/willow or gorse/broom, with limited pockets of native regeneration.

Downstream flows are modified by the Rangitata Diversion Race, at Klondyke, and the Rangitata South Irrigation intake, below Arundel.

Most of the land tenure within the riverbed is presumed to lie with the Crown through Land Information NZ, but ECan and DOC hold parcels as well, and some areas of private land extend well into the braided riverbed. While data is lacking for many of the other potential threats, encroachment is a known, quantified, and pervasive issue for Canterbury rivers. A recent study on river encroachment found that the Rangitata River was one of the most severely affected rivers in Canterbury, with 2,258 hectares of former braid plain converted to agriculture from 1990 to 2012 (Grove et al. 2015). General fish species declines are indicated by recent fish surveys (Jellyman 2020).

Ealing Springs Reserve contains diverse values and competing but potentially complimentary management interests. It is administered by DOC but vested with Fish and Game. The significant spring fed creeks are noted as historical salmon spawning grounds, the area is culturally significant to Manawhenua containing traditional mahinga kai gathering sites and taonga species presence, spring water significance and wetland presence. For the Dept Of Conservation the area ranks highly on its ecological ranking system due to remnant dryland plain vegetation and spring fed stream habitats.

Within the main braid stem, those areas of open riverbed, without woody weed growth provide critical habitat for ground nesting river birds but mammalian and avian predators have major impacts on colony fledging success.

Adjacent land along this reach is almost wholly dairy farming which as an industry has intensified across Canterbury since the 1990's with conversions from traditional sheep and cropping, and large-scale irrigation application. This has caused declines in groundwater and tributary quality.

Recreational access is predominantly from the southern bank with public access at Badham Road, Dip Road, Old Main South Road, and the Arundel Road bridge. Some 4wd activity occurs along formed management roads, but the predominant users are fishers, walkers, and gamebird hunters. The river below the Arundel Bridge was used in summer as popular swimming holes but recent bank erosion has removed many of the pool features. During the 1879 Smith-Nairn Royal Commission of Inquiry into the Ngāi Tahu land claims, Ngāi Tahu recorded the Rangitata/Rakitata River as a kāinga mahinga kai (significant food gathering place) and the significance is still reflected in many traditional names remembered.

### Issues and opportunities

Measured at the ECan site at the Arundel Bridge, water quality is still at good levels at the top of this reach but deteriorates with E. coli and turbidity increasing by the SH1 road bridge and periodic dense didymo blooms late winter. Significant questions exist around water abstraction impacts on river form and species exist and should be better understood to inform management.

No cohesive management of riverbed or berms is in play, and opportunities exist for the recovery of open braided riverbed from encroached and artificially stabilised bed in areas such as the Upper Rangitata Conservation Reserve. Working with the local river rating group provides the opportunity to align values and could offer efficiency in river management.

The development of a strategic series of native vegetation plots will allow succession across the berm lands and form wildlife corridors.





# Lower Main Stem

- 1** Predator control protects wildlife. Tarapiroe/black-fronted terns and Tarāpuka/black billed gull colonies are successful; Tūturiwhatu/banded dotterel, Tōrea/oystercatcher and Poaka successfully raise chicks. Skinks are prolific in grasslands.
- 2** Berm transition to native species. Native vegetation plots fuel bermlands transition to native dryland forest along the south bank and provide corridors for the return of taonga wildlife.
- 3** Research provides specific water quality and quantity targets to protect ecosystems.
- 4** Fenced and planted riparian margins including harakeke, carex and te kouka, on spring fed creeks and drains on adjacent farmland improve water quality and provide habitat for fish development and mahingakai gathering.

- 6** Cultural River Trail. The Ara Tawhito (ancient trails) run the length of the reach through the southern berm land, telling the story of Manawhenua area heritage, opening up access for restoration, and providing recreational access.
- 7** Crown agencies align management across administered land including working with our community to develop the vision for the South Branch.

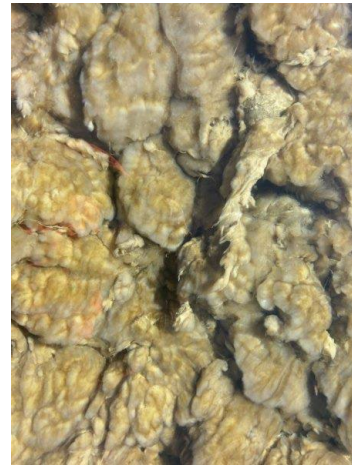
- 9** Ealing Springs is recognised as a valued reserve on the Canterbury Plain, becoming a showcase of mahingakai, ecological, recreational and community interests that maintains rare plains vegetation seeds and vegetation that hold whakapapa to the Awa. Enhanced salmon spawning, protection of spring heads, native riparian vegetation, mahingakai recovery of te kouka/kakahi/tuna/waterfowl, native grassland and shrubland recovery, fish passage.

- 8** Both community flood protection and river values are protected by formal river engineering programmes including scheme reviews.
- 10** Infrastructure is resilient. River revival actions align with protection of core community infrastructure at the Main Road bridge, Arundel road bridge and main electricity transmission easement.
- 12** The significant kaik/camp and tuna/eel harvesting site 'Te Tuna o te Whiwhi' and other mahingakai sites are catalogued and developed with Arowhenua to allow ongoing harvest.

- 5** The river displays a wide clean braid plain. Sustained woody weed dominance, encroachment and relict braids are recaptured into the braid system allowing for high volume flood event capacity, river dynamism and braided river wildlife habitat.







ACTION	EXPLANATION	DELIVERY TIMEFRAME
River encroachment halted and action plan in place by 2025.	River impoundment through aggressive river protection, weed growth stabilization and land use intensification has resulted in significant loss of braid channel. River braid channel is restored to wide, open nature that supports braid dynamism, flood capacity and returns braided wildlife habitats.	Short term
Advocacy for statutory and regulatory action to protect braided river and related ecosystems.	Working Group to elevate strong management options and recommendations to Steering Group with regards to Statutory change if required.	Short term
Sediment, flow and braid dynamics are understood, and action plan is in place if required by 2025	Agencies need to seek greater understanding of river processes, impacts and ecosystems/species to inform management decisions.	Short term implementation
Plant pest control plan is in place for the whole Awa, reducing weed dominance in the Awa by 2025.	Woody weed growths of broom, tree lupin, gorse and false tamarisk dominate the open river space between flushing floods limiting habitat availability for braided river birds, reducing dynamism in the braid plain and reducing flood capacity. The Working Group will need to balance resources over the river, to get the best return on weed control. This may be a whole river treatment if ongoing resourcing can be found, or values and practicality-based prioritization to specific sites. Seek to apply weed control in similar multi agency and community model to existing upper Rakitata weed control. Within this reach, Ealing Springs represents a significant ecological, cultural, and recreational opportunity that must be considered for weed control complimentary to restoration.	Short term
Culturally significant sites, trails, Wahi Taonga are mapped and restoration plan in place	Within this reach lies focal mahinga kai areas such as Ealing Springs, significant eel harvesting creek Te Tuna a te Whiwhi with its associated kaika (camp), and many other significant places are still remembered along this stretch of the Awa. Working Group to support Te Rūnanga o Arowhenua to catalogue Rakitata sites and develop a management plan.	Ongoing
Seek and develop common research projects between agencies.	Key amongst these issues in this reach are shared interests in understanding the impact of artificial flow regimes and sedimentation, design of revival strategy complimentary flood protection, current status-occupancy of mahinga kai and taonga species such as kanakana and other fish species, and development of restoration techniques. Partnerships with Ngāi Tahu, tertiary and research institutions will grow a mass of understanding across agencies/ educational facilities/ management professionals and strengthen community focus on the Awa.	Short term

Leverage the best research across agencies.	Working Group to develop a catalogue of current research with implications on management, identify research gaps and seek to align resourcing and priorities across agencies.	Short term
South Branch investigation completed to identify how to best align S Branch and main stem management as a 'whole river' concept (ki uta ki tai).	In its lower run the Rangitata River was historically split into multiple channels known as the North Branch, (the lesser referenced Middle Branch) and the South Branch, separated by Huakina / Rangitata Island. While most of the river's flow has been carried by the northern branch for nearly 100 years, floods have regularly passed down the South Branch (ECan 2017). Flood protection works maintained by ECan and funded by targeted rates include low stop banks that are designed to prevent flows down the South Branch in floods less than 1,500 m <sup>3</sup> /s, which have a 5-year return period (ECan 2017). However, over the last 20 years, the region's dairy boom has seen significant development on flood-prone land in South Branch and Rangitata Island. This has resulted in increased land values for farming and hence created a greater desire to keep flood flows out of the South Branch. This has put greater pressure on ECan to provide a greater level of flood protection for land in the South Branch and it has greatly reduced the natural values of the braid plain. (Burrell 2019). Over this entire period Te Rūnanga o Arowhenua have expressed the South Branch role in consideration of the river, Ki Uta Ki Tai, and requirement to see it restored to active role in the Awa.	Short term
Ngāi Tahu regenerative farming trials are considered as a model of diversified and alternative land use.	Riparian restoration alone is unlikely to have the sought water and habitat improvements. Only by working with farming community and industry will the transition to more river sensitive land uses occur.	
Provide aligned alternative and economically viable land use options.		
Integrated predator control applied to reduce predation on taonga (native/threatened) species.	Predator control is afforded to taonga species, threatened bird colonies and spawning sites. Techniques include mammalian predator trapping, management of avian predators and habitat enhancement (e.g., bird islands are created). Tarapiroe (black fronted tern) colonies establish along this reach but suffer intense predation pressure, and ngutu pare (wrybill) nesting is limited to a small number of nests per season reflecting lack of suitable predator free habitat.	Short term
Main stem berm lands transition to native ecosystems.	The corridor recovery concept is based on spatial designs from Meurk and Hall (2006). Prescriptively, it requires the establishment of a series of large 6.25 hectare 'core sanctuary' reserves at 5 kilometers spacing along the Awa. Supplementing this 1.6 hectare 'habitat steppingstones' at 1-2 kilometer spacing, and a 0.1ha finer grain steppingstones at 0.2 kilometer spacing. The objective of the corridor is to facilitate movement of fauna and provide source genetic material for radiation of native vegetation into the bermlands. (Pers com Stanley. G. 2021) Design is predominantly to be across the south side bermlands. Spatial design should consider microhabitat variables within the berm to maximize recruitment success. E.g., Sites of springs or weeps provide advantage in establishment success, and often known historical mahinga kai sites correspond with these features allowing for wider benefits. Habitat transition should be targeted to recovery of culturally significant dryland forest and shrubland species within this low rainfall reach.	
Support (large scale) restoration projects to get best possible outcomes, include community participation and training of participants.	Agencies should seek to add value to works across the Awa including mentoring and supporting community and other agencies works.	
Create ecosystem corridors, starting with the	Tarahaoa (Mt Peel) is visible from much of the river within this reach. Returning the native taonga plants and wildlife to the	



lower reaches of the river.	lower riverbed requires native vegetation corridors through this reach to be developed.	
Water quality and quantity	Increased quality and quantity of water goals need to be established to protect and connect ecosystems.	
Seek greater understanding of water quality and quantity issues	Greater understanding of Impacts of water quality and quantity across both the main stem and spring fed systems will support targeted restoration and taonga protection.	Short term
BRAG crown lands management prescription or surrogate is developed, agreed, and implemented across all agencies.	Most of the riverbed and a significant proportion of associated lands are held across Crown Agencies. The cross organizational Braided Rivers Action Group (BRAG) is running a pilot on the Rakitata to align management of Crown Lands across the Awa. Working and Steering Group to support BRAG towards an outcome.	Short to medium term
Manawhenua travel and trail's theme is developed for community use and cultural appreciation.	The southern side of this reach is guarded by willow and polar dominated berm lands, with public access at the estuary and Badham Road, connected to the management haul road system offer an excellent opportunity for the public to see restoration activities and learn about Manawhenua history and presence within the public by developing the cultural trail narrative. Some development of access and public vehicle parking at Badham Road may need to be developed if this access point proves popular.	
Wider ECan river engineering scheme review provides for both community and river values protection	This reach was heavily impacted from the Dec 2019 floods and suffered damage to the flood protection structures guarding the southern margins. Working Group to support ECan in this process with recognition of the significance of maintaining a dynamic braid plain with room to move and modify landforms and habitats. Opportunities exist around reclaiming artificially stabilized margins to increase both braided river habitat and increase alluvium (loose clay, silt, sand or gravels) movement and flood capacity of main stem.	
Advocate for and support of infrastructure resilience, public safety and planning consistent with the restoration plan.	This reach contains the majority of the strategic infrastructure – State Highway 1, rail and Arundel bridges, rated river protection and main trunk power corridor. Work with infrastructure providers to align their plans with this programme to gain resilient public assets that are not detrimental to river values.	

## 2.4 Foothills reach – Arundel Bridge to Rangitata Gorge

### About this reach

The passengers of Arai-te-uru waka that capsized off Matakaea (Shag Point) are immortalised as Maunga (sacred mountains) throughout this area. Tarahaoa is the Ngāi Tahu name for Mount Peel and Huatekerekere, his wife, the name for Little Mount Peel. Their children, Kirikirikatata and Aroarokaehe, are now represented by two large trees in Peel Forest. From the slopes of Tarahaoa and Huatekerekere falls several significant streams, with Lynn Stream and Boundary Creek being the largest and containing notable flora and fauna.

This reach runs from the Arundel Road bridge 24 kilometers up to the bottom of the Rakitata Gorge. It is distinct from other reaches, being steeper in gradient than the lowland braid plain, with increased channelling and velocity in the upper sections. The maunga (sacred mountain) and wahi tahu (locating landmark), Tarahaoa guards the entrance to this reach, seeing the transition from lowlands to hill country, and the first appearance of any sizable native forest area on his slopes. This forms the most significant forested catchment below the Rangitata Gorge -a mosaic of podocarp, broadleaf and beech forest forming part a rare east coast uninterrupted sequence of habitats from riverbed to alpine zone. It is predominantly administered by the DOC.

Within this reach, both the Rangitata Diversion Race and Rangitata South Irrigation draw water from the Awa. Water abstraction from the river to feed the agricultural intensification of Canterbury is significant. The rivers natural flow at 65 cumecs (a low flow) can be potentially reduced to half this volume once allocated abstraction occurs. A Water Conservation Order, applied for by Fish and Game, was granted in 2006 that protects 'outstanding values' in the river but the Rangitata remains the only significant east coast river not to have an allocation cap in place, and the result in recent times has seen supplementary take applications for 'flood harvesting'. Debate remains around the impact of the reduced flow regime, flood harvesting and further abstraction on braided river form and river life. Outstanding features of this reach identified in the water Conservation Order include waters in natural state, amenity or intrinsic values, wild scenic and other natural characteristics, indigenous plant communities, rafting, canoeing, significance to Ngāi Tahu, contributions to salmon spawning and passage, and aquatic macroinvertebrates.

No southern riverside trails exist along this section of the Awa, but rafts from Rangitata Rafting having passaged the grade 5 rafting decent over the gorge step, use the rafter access at the Mount Peel woolshed to leave the river.

Dairy farming peters out during this reach and the transition to High Country Stations begins with Mt Peel Station located on the southern bank and Tenahaun Station at the upriver northern bank. Water quality still sits in the higher value classes, with little additional nutrient or sediment detected by the ECan monitoring at the Arundel Bridge.

### Issues and opportunities

Water quantity is one of the immediately identifiable measures of river health and tension around levels of abstraction and flow regimes dominate much community interest within this reach. This project is non statutory in nature but recognises the growing demand of water and the potential for ongoing incremental applications for water allocation. Building better understanding of water flow impacts on the Mauri of the Awa, braided river form, native species, ecosystems, recreational activities, and community interests, is key to informing agencies management decisions around water allocations.

Project Peel, Jobs4Nature, Upper Rangitata Gorge Landcare Group and the Peel Forest Outdoor Centre are local environmental groups with interests in pest control and environmental restoration along the Rakitata. Alignment of these groups could support them to gain efficiencies in works and resources. Linking the lower Awa cultural trail, over Tarahaoa to Hamua, Coal Hill via the established DOC administered trails should be considered in linking the Awa restoration to these maunga offering the opportunity for complimentary cultural interpretation whilst using established infrastructure.

The berms along this reach are thinner and not as heavily covered in willow and polar river protection plantings as the downstream reaches- less opportunity presents itself for riparian afforestation, however rainfall totals are elevated closer to Tarahaoa and lush forest types than the dryland specialists downstream can be viably established along the river berms. If crack willow removal is planned along this reach surrogate natives for late winter bird feed should be included in any restoration planting; kōwhai and lacebarks with tī kōuka and harakeke and pōkākā will support taonga birdlife through early spring to summer and provide cultural context to revegetation.

Opportunities exist to work with White Rock Station and Mount Peel Station to protect riparian values and hill country shrublands along Boundary Stream, strengthening the aquatic and terrestrial corridors from Tarahaoa to the Rakitata. Because the Rakitata Gorge holds an increasing proportion of native vegetation and the reaches above have landscape scale weed control, reinfestation from upstream seed sources will be less than the lowland sites.





**1** Predator control protects taonga wildlife and connects community to Awa and each other. Rare herpetofauna (skinks and geckos), ground nesting river birds, long tailed bats and forest birds flourish under reduced predation pressure from mammalian predators.

**2** Riparian margins on adjoining farms and wetlands are fenced and planted including iconic reach vegetation such as sedges, kahikatea, kowhai, totara, shrubland and forest vegetation- water quality is improved and natural habitats and corridors for wildlife are restored.

**4** Thriving community connects with Te Awa and each other. We acknowledge and support the existing high country stations beginning in this reach as members of the Landcare Group and agencies that continue to develop collaborative landscape scale river management.

**5** Within this reach lies Tarahoa, Maunga of Te Rūnanga o Arowhenua. The passengers of Ārai-te-uru waka that capsized off Matakaea (Shag Point) are immortalized as Maunga (sacred mountains) throughout this area, and many other significant places are still celebrated along this stretch of the Awa. Te Rūnanga o Arowhenua are supported to catalogue Rakitata cultural sites and develop a management plan.



**6** Berm transition to native species. Native vegetation plots fuel bermlands transition to native dryland forest along the south bank and provide corridors for the return of taonga wildlife.

**7** Both community flood protection and river values are protected by formal river engineering programmes including scheme reviews.

**8** Cultural River Trail. The Ara Tawhito (ancient trails) run the length of the reach telling the rich story of Manawhenua and high country station heritage.

**9** Translocations and/or recovery plans of absent and functionally significant keystone and mahinga kai species are developed as appropriate. Whio/ blue duck, weka, kanakana, kiwi pukupuku have been proposed.

**3** Both the Rangitata Diversion Race and Rangitata South Irrigation draw water from the Awa that feeds agriculture across large areas of Canterbury. Applications for further water use have occurred since the Water Conservation Order was enacted. Seeking greater understanding of water quality and quantity issues will inform best management.



# Foothills Reach



Photographs: credit Jason Van Beers DOC

ACTION	EXPLANATION	DELIVERY TIMEFRAME
Sediment, flow and braid dynamics understood and action plan in place if required by 2025	Agencies need to seek greater understanding of river processes, impacts and ecosystems/species to inform management decisions.	Short term. Medium term more realistic?
Plant pest control plan in place for the whole Awa, reducing weed dominance in the Awa by 2025.	The river profile of the upper runs of this reach are more incised and channeled than the wider braid plain from Peel Forest downstream. As a result, narrow bands of invasive broom and gorse exist along the river's edge in the upper sections rather than deep willow and poplar berm lands below.	
Seek and develop common research projects between agencies.	Key amongst these issues in this reach are shared interests in, design of revival strategy complimentary flood protection, current status-occupancy-decline drivers of mahinga kai and taonga species, and development of restoration techniques.	Short term
Culturally significant sites, trails etc. mapped and restoration plan in place.	Within this reach lie the principal Maunga of Te Rūnanga O Arowhenua. The passengers of Arai-te-uru waka that capsized off Matakaea (Shag Point) are immortalized as Maunga (sacred mountains) throughout this area, and many other significant places are still remembered along this stretch of the Awa. The Working Group will support Te Rūnanga o Arowhenua to catalogue Rakitata sites and develop a management plan.	
Ngāi Tahu regenerative farming trials considered as model of diversified and alternative land use.	Riparian restoration alone is unlikely to have the sought water and habitat improvements.  Only by working with the farming community and industry will the transition to more sensitive land uses occur.	
Provide aligned alternative economically viable land use options.		
Integrated predator control applied to	Within this reach taonga species such as rare herpetofauna, ground nesting river birds and forest birds are all under predation pressure	



reduce predation on taonga species.	from introduced mammalian predators. Seek alignment with 'Project Peel' and existing control in high country reach and apply whole river predator control concept.
Main stem berm lands transition to native ecosystems.	<p>The corridor recovery concept is based on spatial designs from Meurk and Hall (2006). Prescriptively, it requires the establishment of a series of large 6.25 hectare 'core sanctuary' reserves at 5 kilometers spacing along the Awa. Supplementing this 1.6hectare 'habitat steppingstones' at 1-2 kilometer spacing, and 0.1-hectare finer grain steppingstones at 0.2kilometer spacing. The objective of the corridor is to facilitate movement of fauna and provide source genetic material for radiation of native vegetation into the bermlands. (Pers com Stanley. G. 2021)</p> <p>The design is predominantly to be across the south side bermlands from the maunga Tarahaoa to the coast. Spatial design should consider microhabitat variables within the berm to maximise recruitment success. E.g., Sites of springs or weeps provide advantage in establishment success, and often known historical mahinga kai sites correspond with these features allowing for wider benefits. Habitat transition can include vegetative species more suited to the relatively higher rainfall around Tarahaoa than the dryland habitat below this reach. Key lowland forest species include Totara is a feature of the Peel district, Tī Kōuka Kōhūhū, Ribbonwood, kōwhai Kānuka, broadleaf (Griselinia littoralis), wineberry, karamu, Coprosma propinqua, olearia; In wetter more complex soils; Phorium tenax (flax), Carex secta, astelia, kahikatea.</p>
Support (large scale) restoration projects to get best possible outcomes, include community participation and training of participants.	Agencies should seek to add value to works across the Awa including mentoring and supporting community and other agencies works.
Support riparian restoration of tributaries to create wildlife corridors and improve water quality	Spring-fed and hills-fed creeks arising on adjacent farmland will carry reduced sediment loads and generally higher water quality with riparian management. Wildlife such as herpetofauna will find habitat is recovering hill country forest and shrublands along these riparian margins.
Seek greater understanding of water quality and quantity issues	Within this reach, both the Rangitata Diversion Race and Rangitata South Irrigation draw water from the Awa at times with rates approaching half of the rivers flow. Greater understanding of Impacts of water quality and quantity will support targeted restoration and taonga protection.
Manawhenua travel and trail's theme is developed for community use and cultural appreciation.	Utilize existing trails from Peel Forest to skirt the Rakitata Gorge over Tarahaoa/Mt Peel and Huatekerekere/Little Mount Peel and down Hamua/Coal Hill trail to rejoin the main stem.
Wider ECan river engineering scheme review provides for both community and river values protection	This reach contains one of the river pressure points that broke out during the December 2019 flood -threatening Arundel. The Working Group supports Environment Canterbury in reviewing river management. We recognize the significance of community flood protection, maintaining a dynamic braid plain with room to move, and natural landforms and habitats.

## 2.5 High country reach – Rangitata Gorge to Havelock confluence

### About this reach

This reach runs for 38 kilometers from the bottom of the Rangitata Gorge to the confluence of the Havelock and Clyde Rivers at the base of Cloudy Peak. Large areas with high naturalness fall within this reach. The southern high country is dominated by the 94,000ha Te Kahui Kaupeka Conservation Park and to the north by the 60,000ha Hakatere Conservation Park. Such large areas of public lands have encouraged increased recreational use of the wider area with tramping, climbing, fishing and hunting predominating. The Te Araroa Trail crosses this area as it runs from Takapō (Lake Tekapo) to the Hakatere (Ashburton) Basin. With the area hosting film set from the Lord of the Rings trilogy, locals report increased tourist activity-particularly at Mt Sunday. This high-country landscape is renowned as one of the most visually striking in the river's length.

Many culturally significant features lie along this reach. Travel trails linked the lowlands to Ōtuwharekai (the lakes of the Hakatere/Ashburton Basin) for seasonal food gathering, continuing further upstream to the headwaters, and crossing to the West Coast. The section of river running from the gorge upstream to the Havelock is traditionally known as 'Rangitata' and the ancient trails to the headwaters and O Tu Wharekai (and further afield into the Rakaia) branch within this reach, with traditional names recalling ancestors and taonga. The area is synonymous with High Country Stations and iconic station names reside here; Mesopotamia, Erewhon, Mount Potts, Hakatere, Tenahaun, Forest Creek, Rata Peaks, Ben McLeod, Stew Point, White Rock, Mount Peel and Hakatere. Forest Creek, Bush Stream, and Black Birch represent large tracts of low intensity high country farming and conservation area represented by sweeping tussock lands, shrublands, beech forest and reach up into the rock fields and winter snowpacks of the Sinclair, Two Thumb and Ben McLeod ranges.

Visually, the contrast between the river directly below the gorge and above is striking. Above the gorge the river opens out to cover a wide braid plain that has retained its open alluvial beds and not the channels choked woody weeds that dominate downstream. As many as 60% of all ngutu pare (wrybill) have been calculated to nest here (O Donnell, C./ Schmechel, F.), Tūturiwhatu (banded dotterel) and tōrea (South Island pied oystercatcher) are common and Tarapiroe (black fronted tern) and tarāpuka (black billed gull) colonies form seasonally within this reach. The gorge forms a barrier to many fish, and those that reside here are generally montane specialists, including the threatened upland longjaw galaxias. Tussock lands and tumatakuru (matagouri) faces remain dominant features amongst the green pastures in the lower valley and red tussock wetlands and montane spring systems provide important natal areas for aquatic life.

The montane tributaries of Totara/Forest Creek, O Rae Korokio/Bush Stream and Katawai/Black Birch Creek contain significant mountain beech forests, with smaller remnant patches scattered within the reach.

Anglers form a significant group of users within this reach, with the most heavily used access points being Totara/Forest Creek, Dr Sinclair's, and the Potts River. As recently as 2000, the Rangitata was regarded the most recreationally fished river in the country with an estimated 75 percent of fishers targeting salmon. Chinook salmon were introduced from the Sacramento River in the United States of America and a wild run was established, spawning in the high-country spring fed streams of Deep Stream, Deep Creek, and Tui Stream. One day the genetic stock may return chinook to the dammed river systems of the Californian seaboard. The sea run salmon fishery has been under strain with new season limits in place and reduced fisher success in recent years, salmon returns typically run-in boom to bust cycles, but speculation is that this decline is caused by 'at sea' factors.

Rafters access the top of the gorge from a private access on Stew Point Station, and jetboaters usually launch at Stew Point or Turn Again Point dependant on launch beach conditions.

This entire reach is listed as a protected water in the Water Conservation (Rangitata River) Order 2006 -noting the following outstanding characteristics or features; waters in natural state, amenity and intrinsic values, habitat for aquatic birds, aquatic macroinvertebrates, salmon spawning and passage, salmon fishing, wild scenic and other characteristics indigenous plant communities, spiritual cultural and historic values, rafting canoeing and jetboating, significance for Ngāi Tahu and scientific- braided river.

Water quality remains relatively high in the main stem due to the glacial source but the uncertain future of climate change impacts and reducing snowfields such as the Garden of Allah Ice Plateau, make long term water security uncertain for the Awa.

### Issues and opportunities

Change has come to the high country in the last 20 years. Some stations have been through the High-Country Tenure Review process. Outcomes have been a general retirement of high-country merino farming with intensification of farm practises in the valley bottom and increased recreational traffic into the high-country parks. Highcountry farmers and agencies will need to continue to collaborate to ensure further impacts are sustainable.

The efforts of the Upper Rangitata Gorge Landcare Group combine high country station and agency management to act in a coordinated manner to control weeds and predators. This has set the stage for one of the most intensive areas of river bird nesting in the country. This group is aware that weed and pest threats, such as false tamarisk and wallaby, will become more evident in the future and may have major catchment and river impacts if unchecked.





**1** Predator control protects taonga wildlife. Braided river specialist bird nesting is successful. Ngutu pare/ Wrybill, Tarapiroe/ black fronted tern, Tarāpuka/ black billed gull and Tūturiwhatu/banded dotterel are prolific.

**2** Fenced and planted riparian margins on high country stations including carex, red tussock and montane shrubland vegetation protect spring fed creeks and drains – improving water quality and provide natural habitats and corridors for wildlife.

**3** Iconic red tussock wetlands are protected from stock impacts.

**4** Sensitive montane springs that provide important nursery areas for unique fish and invertebrate communities, like the taonga sites at Black Mountain and Mount Sunday, are protected from stock and sediment inputs.

**5** Thriving community connects with Te Awa and each other. We acknowledge and support the existing high country runholders Landcare Group and agencies to continue to develop collaborative landscape scale river management.

**6** The river displays a wide clean braided plain, free of woody weeds providing braided river wildlife habitat.

**7** Cultural River Trail. The Ara Tawhito (ancient trails) run the length of the reach from Coal Hill to Te Awa o Tukua/Havelock River telling the rich story of Manawhenua and high country heritage.

**8** Whio/ blue duck, Kaki/ black stilt, Kaka -translocations of absent and functionally significant keystone and mahinga kai species is considered and/or recovery plans established if appropriate.

# High Country Reach









ACTION	EXPLANATION	DELIVERY TIMEFRAME
Recognize the outstanding landscapes of the Rakitata.	Support management consistent with the protection afforded to the wild and natural outstanding characteristics identified in the 2006 Water Conservation Order.	Ongoing
Culturally significant sites, trails etc. mapped and restoration plan in place.	Within this reach between the Hakatere Basin and the Rakitata lies Mahaanui (Te Nohoaka-o-Mahaanui)/ Mount Harper, the resting place of a rock representation of Maui's waka. This and many other significant places are still remembered along this stretch of the Awa. Working Group to support Te Rūnanga o Arowhenua to catalogue Rakitata sites and develop a management plan.	
Integrated predator control applied to reduce predation on taonga species.	Within this reach taonga species such as rare herpetofauna, ground nesting river birds and forest birds are all under predation pressure from introduced mammalian predators. Seek alignment between existing multi-agency and Landcare Group predator control to apply whole river predator control concept.	
Translocation of culturally significant or keystone species that enhance ecosystem functioning.	Translocations need to be balanced against threats to current at risk species and developed with Arowhenua as a long-term goal to ensure the best opportunity of success. Prerequisites would be effective pest control, cultural benefits, species fit and habitat availability. Investigation will reveal if this action may be better suited to other reaches for some species. Current suggestions include O Rae Korokio /Bush Stream as a site for whio (blue duck) restoration or weka translocation (historic habitat).	Aspirational
Support (large scale) restoration projects to get best possible outcomes, including community participation and training of participants.	Agencies should seek to add value to work across the Awa including mentoring and supporting community and other agencies works. Currently this is done in the high-country reach through multiagency landscape scale weed and animal pest control plans (ECan's Braided River Flagship, DOC Ngā Awa, Upper Rangitata Gorge Landcare Group, Jobs4Nature and LINZ Biodiversity-Biosecurity programmes).	
Support riparian restoration of tributaries and	Traditionally low intensity farms, the high-country stations often have wetlands and waterways open to stock access.	



wetlands to create wildlife corridors and improve water quality.

Supporting farmers to protect these areas with fencing and native vegetation will provide protection for water quality within the river, buffer aquatic habitats from increasing farm intensity, protect these important habitats from sediment and nutrient additions, buffer flood impacts, allow natural riparian habitats to recover and provide wildlife corridors.

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Manawhenua travel and trail's theme is developed for community use and cultural appreciation.

The opportunity to add real cultural insight into the lower river cultural trails system exists here. By extending the trail over Tarahaoa (Mt Peel) to Hamua (Coal Hill) major cultural themes associated with the Maunga can be explored, before continuing up Rangitata Gorge Road to Mesopotamia to join the DOC trail network in the upper valley following the pre-European crossing routes.

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Support existing multi agency and Landcare Group landscape management in Upper catchment- and use as a 'river champion' example for application at greater scale across the river.

The Upper Rangitata Gorge Landcare Group and interagency cooperation has seen a sustained commitment to integrated and landscape scale weed and pest control across the high-country reach. Typically, all agencies meet at Landcare Group hosted forum several times a year to discuss upper catchment management issues. This work requires ongoing energy and resourcing from all parties. Extending the scale of work and identifying other 'river champions' in the lower reaches would allow this work to be rolled across the whole river.

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## 2.6 Headwaters reach – Havelock/Clyde confluence to Main Divide

### About this reach

This reach runs from the confluence of “Te Awa o Tukua” (the river of Tukua)/Havelock and “Te Awa o Moinaina” (the river of Moinaina)/Clyde Rivers to Tiritiri-O-Te-Moana (the Southern Alps). It includes diverse habitats including alpine/montane rock buttresses, glacial fields, tarns, alpine springs, tussock lands and extensive scrublands, stone fields, beech forest remnants, creeks and active braided river channels.

The headwaters form a part of the wānanga (place of learning), where Atua (gods) could be communed with, that stretches across the headwaters of the Mackenzie and major east coast riverheads. For fast access into Westland from Te Umu Kaha (Temuka) the Rakitata was followed up to a high pass crossing into the Whataroa headwaters.

Much of the upper catchment is remote. Only Erewhon and Mesopotamia Stations reach high enough up the Rakitata to run into this reach, and stocking is light and seasonal. Hunters, ski tourers and trampers predominate amongst visitors. Helicopter access is limited to approved landing sites and banned from the DOC administered Adams Wilderness Area, which straddles the main divide icepacks and mountain tops across the headwaters. 4WD access up main riverbeds is demanding and specialised vehicles are best to navigate the unformed routes to Mistake Flat or Lawrence Hut.

The Water Conservation (Rangitata River) Order acknowledges and protects the natural state of the waters within this reach, noting as outstanding characteristics; amenity and intrinsic values, indigenous plant communities, wild and scenic and other natural characteristics, and significance for Ngāi Tahu.

### Issues and opportunities

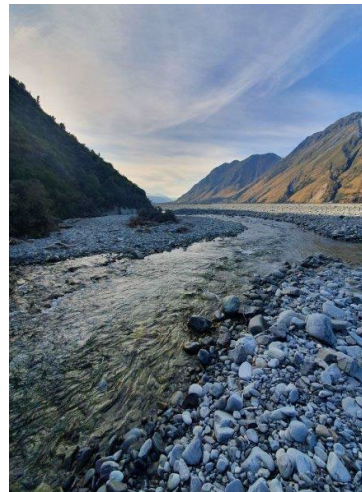
Protection of critical habitats-low terrace springs including those in the Havelock and Lawrence Rivers provide habitat for threatened fish, invertebrate and non-migratory fish community. These sites are extremely sensitive to sediment/nutrient inputs and land use changes.

Naturalness and wilderness. Protect the dramatic mountain landscapes, Adams Wilderness Area and Mauri of the area. A watching brief is required on vehicle use to ensure use doesn't become more prevalent and cause more impacts.

Weed risks are constantly evolving and require vigilance to maintain control, especially Forbes River Russel lupin and Lawrence River broom and tamarisk outbreaks. Cultural trail concept provides the opportunity to acknowledge cultural trails and provide a recreational-appreciation tool.

Climate change- since 1900 icepack/glacial retreat has seen one third of NZ's permanent glacial packs lost. Positive action will require community support of international conventions and building ties with other government and environmental agencies.

The Water Conservation (Rangitata River) Order 2006 acknowledges key values and core protections that should be applied across other management mechanisms too.





**1** The Upper Rangitata is retained in 'Natural State'. In 2006 the Water Conservation (Rangitata River) Order came to commencement. A record number of submissions were made showing huge public interest. The order required the Headwaters Reach should be retained in the natural state identifying Outstanding Natural Characteristics; Wild and Scenic features, Natural Characteristics, Amenity and Intrinsic Values, Indigenous Plant Communities; and significance for Ngai Tahu.

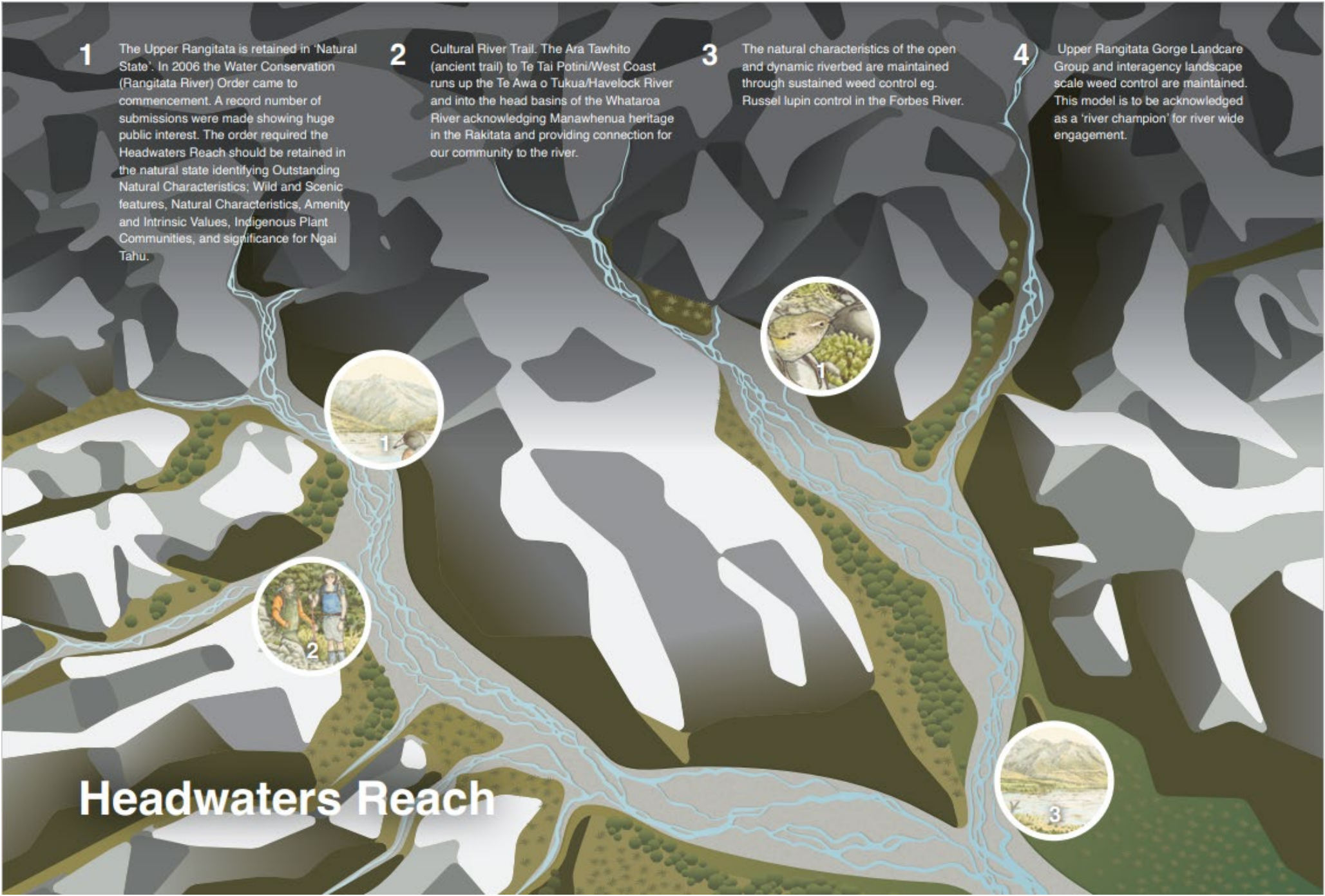
**2** Cultural River Trail. The Ara Tawhito (ancient trail) to Te Tai Potini/West Coast runs up the Te Awa o Tukua/Havelock River and into the head basins of the Whataroa River acknowledging Manawhenua heritage in the Rakitata and providing connection for our community to the river.

**3** The natural characteristics of the open and dynamic riverbed are maintained through sustained weed control eg. Russel lupin control in the Forbes River.

**4** Upper Rangitata Gorge Landcare Group and interagency landscape scale weed control are maintained. This model is to be acknowledged as a 'river champion' for river wide engagement.



# Headwaters Reach





ACTION	EXPLANATION	DELIVERY TIMEFRAME
Recognise the 'outstanding wild and natural values' of the Rangitata.	Support management consistent with the protection afforded to the wild and natural outstanding characteristics identified in the 2006 Water Conservation Order.	Ongoing
Seek and develop common research projects between agencies.	Key research needs in this reach are understanding the impact of climate change, current status/occupancy of mahinga kai and taonga species such as alpine galaxias and other non-migratory fish species, and development of restoration techniques.	Short term
Support (large scale) restoration projects to get the best possible outcomes, include community participation and training of participants.	Agencies should seek to add value to works across the Awa including mentoring and supporting community and other agencies works.	
Support existing multi agency and Landcare Group landscape management in Upper catchment and use as a 'river champion' example for application at greater scale	Upper river weed infestations require ongoing maintenance to prevent source material establishing more dominant weed growths over relatively pristine braided riverbed habitat. Russel lupin in the Forbes and isolated broom and false tamarisk outbreaks threaten large sweeps of open riverbed if not for the ongoing maintenance control from the Upper Rangitata Landcare Group and agencies. This control must be supported on an ongoing basis. Agencies should seek opportunities through the Upper Rangitata Gorge Landcare Group to support high country stations in preserving wilderness values in this reach.	Ongoing
Awa recognition as a World Heritage Site, cultural or whole river 'park' concept by 2025.	Revisit Forest and Bird World Heritage Site proposal with redevelopment of cultural themes or consider another site recognition vehicle.	
Manawhenua travel and trail's theme is developed for community use and cultural appreciation.	The culturally significant travel trails are reflected in modern day tramping routes throughout the upper catchment and need linking into other river trails and acknowledgment to build whole cultural river trail theme.	

## 2.7 Generic whole river themes

### Issues and opportunities

Manawhenua and our community hold deep relationships with te awa over its length, and while some issues remain peculiar to or best represented within individual reaches, others must be considered or applied over the whole river. Interestingly, many of our community engagement actions require the river to be considered 'ki uta ki tai'.



ACTION	EXPLANATION	DELIVERY TIMEFRAME
5–10-year ecosystem recovery plan developed for the whole Awa.	Working Group and community to continue to develop this plan and keep current. Steering group to approve.	Ongoing
Establish monitoring processes to measure progress/achievement.	Agencies are looking to develop river monitoring tools nationally-but the opportunity lies in developing a Rakitata Awa health monitoring framework that acknowledges cultural values to measure progress against the vision.	
Create a guide to share Te Rūnanga o Arowhenua stories, whakapapa and tikanga.	Ensuring tikanga and tika knowledge is embedded in work plans across awa.	
Work to develop the Arowhenua Rakitata Story.	Arowhenua story can grow ownership of the Awa within Manawhenua and tell their story to the wider community.	
Take opportunities to grow Arowhenua project ownership.	Agencies should actively support Arowhenua in their kaitiaki and rangatiratanga role on the Awa.	
Support Arowhenua school involvement.	Opportunities need to be created to integrate river themes into rangatahi curriculum.	
Develop Awa as a wananga -develop an educational course with Arowhenua.	Ensuring tika river theme material is developed.	
Share up to date and authentic information with partners, stakeholders, and communities.	Immediate communications messaging is developed for use across agencies and an enduring communication tool developed e.g., website.	
Specialist knowledge sought regarding species status, protection, and monitoring-including cultural monitoring.	Acknowledged experts should be utilized in the development of plans including Aoraki Environmental Consultants for cultural themes.	
Arising high risk threats on the Awa are addressed immediately.	High risk threats should be discussed across Working Group forums in a timely manner and elevated to the Steering Group 'risk register' if unresolved.	
Awa education plan is developed and used throughout our community (including cultural stories).	The use of awa-centric education opportunities to enrich and empower our wider community. Includes the Development of youth engagement manager/role-to link the youth program to this Awa, creating pathways for youth participation.	



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Identify recreation and sports champions on the Awa.

Include in engagement-comms plan as aspirational champions of the Awa.

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A community engagement plan is developed and implemented by 2022.

The first draft was delivered in 2021 and refined in 2023.

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## Glossary

**A note about dialect:** In the 19th century many Ngāi Tahu, particularly in the southernmost reaches of the South Island, spoke a distinct dialect of the Māori language - as do Te Rūnaka o Arowhenua today. The Kāi Tahu dialect from southern Te Wai Pounamu substitutes 'k' for 'nga' which means that Rangitata becomes Rakitata for example. This dialect is used here as the living reflection of te reo Māori in the Rakitata region.

**Te Reo:** Definitions for te reo Māori words are sourced from Te Aka, [the Māori dictionary](#) or from the cultural consultants of Te Runaka o Arowhenua.

**Atua** – ancestor with continuing influence, God, demon, supernatural being, deity, ghost, object of superstitious regard, strange being - although often translated as 'god' and now also used for the Christian God, this is a misconception of the real meaning. Many Māori trace their ancestry from *atua* in their *whakapapa* and they are regarded as ancestors with influence over particular domains. These *atua* also were a way of rationalising and perceiving the world. Normally invisible, *atua* may have visible representations.

**Awa:** River. River, stream, creek, canal, gully, gorge, groove, furrow.

**Iwi:** extended kinship group, tribe, nation, people, nationality, race - often refers to a large group of people descended from a common ancestor and associated with a distinct territory.

**Kāinga mahinga kai:** significant food gathering place.

**Ki uta ki tai:** a philosophy that reflects the Kāi Tahu view of environmental and resource management. It is a traditional concept encompassing kaitiakitanga/guardianship from the mountains and great inland lakes, down the rivers to hāpua/lagoons, wahapū/estuaries and to the sea. Ki uta ki tai encapsulates the interconnectedness of the whole environment and the need for an integrated approach in managing the awa.

**Mahika/Mahinga kai:** is about living and connecting in this world. For Kāi Tahu, it is about thriving, about maintaining those things that sustain and nourish us, and that bring us wellbeing – clean water, clean air, clean soil, and sufficient shelter. It includes access to clean and healthy kai, with consideration for future generations.

**Mana whenua:** territorial rights, power from the land, authority over land or territory, jurisdiction over land or territory - power associated with possession and occupation of tribal land.

**Manawhenua:** the indigenous people (Māori) who have historic and territorial rights over the land.

**Nga Awa:** a river restoration programme developed by Dept Of Conservation, manawhenua, agencies and communities to restore 14 rivers nationally from mountains to the sea, including the Rakitata/Rangitata.

**Ngāi Tahu:** tribal group of much of the South Island, sometimes called Kāi Tahu by the southern tribes.

**Rangatiratanga:** chieftainship, right to exercise authority, chiefly autonomy, chiefly authority, ownership, leadership of a social group, domain of the *rangatira*, noble birth, attributes of a chief.

**Rangatahi:** younger generation, youth.

**Rūnaka/Rūnanga:** council, tribal council, assembly, board, boardroom, iwi authority - assemblies called to discuss issues of concern to iwi or the community.

**Tamariki:** children -normally used only in the plural.

**Tika:** to be correct, true, upright, right, just, fair, accurate, appropriate, lawful, proper, valid.



Tikanga: correct procedure, custom, habit, lore, method, manner, rule, way, code, meaning, plan, practice, convention, protocol - the customary system of values and practices that have developed over time and are deeply embedded in the social context.

Tupuna: ancestor

Taonga: treasured, prized. When used in reference to species, Arowhenua apply the term to all native species.

Whakapapa: genealogy, genealogical table, lineage, descent – reciting whakapapa was, and is, an important skill and reflected the importance of genealogies in Māori society in terms of leadership, land and fishing rights, kinship, and status. It is central to all Māori institutions.

### **Place names:**

Ara tawhito: ancient trails.

Hamua: Coal Hill.

Hāpua: unique coastal estuaries characterised by long, narrow, shallow, and predominantly freshwater lagoons at least partially enclosed by a gravel barrier beach that experience episodic mouth closure.

Huakina: Rakitata Island.

Huatekerekere: Little Mount Peel, wife of Tarahaoa.

Katawai: Black Birch Creek (kata means to laugh or sound of chirping birds-wai means water).

Kuramaka: Estuary area.

Mahaanui (Te Nohoaka-o-Mahaanui). Mount Harper, the resting place of a rock representation of Maui's waka.

Maunga: Mountain, mount, peak.

O Rae Korokio -Bush Stream (meaning is a promontory or headland of hard fern or corokia).

Ōtakitane-McKinnon's Creek.

Otuakiri – a settlement on the southern side of the Rakitata estuary.

Ōtuwharekai (the lakes of the Hakatere/Ashburton Basin, originally referring to the two lakes known as 'Māori Lakes').

Pupuatuke -Ealing Springs springhead.

Tarahaoa – Mt Peel. Tupuna mountain. In one version of the Ārai-te-Uru tradition, Tarahaoa and his wife Huatekerekere were passengers on the famous waka, Ārai-te-Uru, which capsized off Matakaea/Shag Point.

Te Awa o Moinaina-Clyde River.

Te Awa o Tukua -Havelock River. Commemorates a Waitaha ancestor.

Te Umu Kaha-Temuka.

Tiritiri-o-te-Moana – Southern Alps, especially the group of mountains of Cook, Dampier, Teichelmann and Silberhorn.

Totara- Forest Creek.

### **Engineering/river management terms:**

Fairway: the central gravel/active part of the riverbed.

Bermlands and berm: Flank the central (gravel) active part of the river.

Braid plain: encompasses both the young alluvial surfaces of the frequently disturbed floodplain and the more mature, less frequently disturbed surfaces towards the edge of the river.

Stopbanks: earth or gravel embankments which run (generally) parallel to rivers to help contain flood water to the river channel.

### Taonga species:

Alpine galaxias, *Galaxias paucispondylus*.

Pukio: *Carex secta*.

Toetoe: *Carex virgata*.

Mingimingi: *Coprosma propinqua*.

Harakeke: flax, *Phormium tenax*.

Īnaka/Īnanga: whitebait species specifically *Galaxias maculatus*.

Kaki: black stilt, *Himantopus novaezelandiae*.

Kanakana: pouched lamprey. A highly valued food of Maori. *Geotria australis*.

Kānuka: tea tree. *Kunzea ericoides*.

Karoro: black backed gull. *Larus dominicanus*.

Kiwi pukupuku: little spotted kiwi. *Apteryx owenii*.

Kōhūhū: black matipo. *Pittosporum tenuifolium*.

Kōwhai: small leaved kōwhai. *Sophora microphylla*.

Makomako: wineberry. *Aristotelia serrata*.

Ngutu pare - wrybill.

Oi oi -jointed rush, traditionally utilised for thatch. *Apodismia similis*.

Pingao: *Desmoschoenus spiralis*.

Pōkākā: *Elaeocarpus hookerianus*.

Tarapiro: black fronted tern. *Childonias albostratus*.

Tarāpuka: black billed gull. *Chroicocephalus bulleri*.

Tī Kōuka: cabbage tree. *Cordyline australis*.

Toetoe: cutty grass. *Astroderia richardii*.

Tōrea: South Island pied oystercatcher. *Haemotopus finschri*.

Tumatakuru: matagouri. *Discaria toumatou*.

Tuna: generic maori word for freshwater eel. *Anguilla dieffenbachii* (long-fin), *Anguilla australis* (short-fin).

Tūturiwhatu: banded dotterel. *Charadrius bicinctus*.



Upland longjaw galaxias: *Galaxias prognathus*.  
Whio: blue duck. *Hymenolaimus malacorhynchus*.

**Group Terms:**

*Arowhenua. Te Runanga o Arowhenua.*

*ECan. Environment Canterbury Regional Council. Kaunihera Taiao ki Waitaha.*

*DOC. Department Of Conservation. Te Papa Atawhai.*

*LINZ. Land Information New Zealand. Toitū Te Whenua.*

*TDC. Timaru District Council. Te Kaunihera ā-Rohe o Te Tihi o Maru.*

*ADC. Ashburton District Council.*

*Fish and Game. Central South Island Fish and Game.*

*BRAG. Braided River Action Group.*

*Steering Group.* High level representatives of Agencies and Manawhenua have come together in a non-statutory alliance committing each agency in a collaborative partnership to meet the vision statement for the river for improved cultural, environmental, and social outcomes.

*Working Group.* A working group was formed with representatives from Manawhenua and each agency and tasked with developing a river restoration plan and annual workplan for steering group approval. The mahi of the working group includes maximising the impact of individual work programmes, developing joint solutions, coordinating activities on the Rakitata, and working with the community based on a shared vision and values to restore the mauri of the awa.

**References**

Environment Canterbury (2017). Rangitata River asset management plan. Environment Canterbury internal report. Provided by David Owen, Principal Biodiversity Advisor, Braided Rivers, June 2019.

Burrell, G. (2019). Rangitata River Catchment Conservation Values. Instream Consulting Ltd for Department Of Conservation.

Grove, P., Parker, M., Gray, D., and Behrens, F. (2015). Land use change on the margins of lowland Canterbury braided rivers, 1990-2012. Environment Canterbury Report R15/49, April 2015.

Jellyman P., and Sinton A. (2020). An update on fish and benthic macroinvertebrate populations of the Rangitata River. NIWA Report DOC20502.

Meurk, C. and Hall, G. (2006). Options for enhancing forest biodiversity across New Zealand's managed landscapes based on ecosystem modelling and spatial design. New Zealand Journal of Ecology 2006. 30(1). pp 131-146.

O'Donnell, C., and Schmechel, F. (2001). Rangitata River - still outstanding for wrybills. Southern Bird 8, 3.

Stanley, G. (2020). Corridor Concept Report. Environment Canterbury informal report.

Stanley, G. (2022). Rakitata Berm Transition Proposal. Environment Canterbury informal report.