Wāhanga tuatoru:

Nō Papatūānuku
Ō Ngā Pākihi
Whakatekateka o Waitaha

Section 3:

Canterbury Plains

Te whenua te wai u mō ngā tamariki

Plains	Braided rivers	Streams
Groundwater	Drains	Sewage
Forests	Drain cleaning	Discharge
Indigenous vegetation	Earthworks	Riparian zones
Weeds	Mahinga kai	Wāhi tapu
Dairy farming	Agriculture	Repo raupō
River works	Settlements	Irrigation
Pest control	Fisheries	Pastoral farming

Ō Ngā Pākihi Whakatekateka o Waitaha

The Canterbury Plains are a highly altered landscape. Historically a rich source of mahinga kai, agriculture has replaced the seasonal use of resources. The landscape today is a reflection of drainage, agricultural and pastoral farming focused planning. The extensive network of wetland areas that existed across the Canterbury Plains as part of the larger Te Waihora ecosystem have been drastically reduced over the last 160 years, replaced by an extensive network of modified waterways and drainage ditches.

Key resource management issues associated with the plains region relate to the focus on agricultural and associated settlement activity and the impacts on Te Whenua and Te Wai.

The Selwyn District Plan cites the demand for small residential land allotments (less than 4 hectares) as the single most significant resource management issue on the plains, particularly within a 30 km radius of Christchurch. This demand must be considered in terms of increased pressure on natural resources such as water and soil.

3.1 Ngā Mea Hira - *Values*

- Wai taonga values (repo raupō, waipuna, waiora, waitohi, waihāpua)
- Wāhi tapu (middens, tūāhu, umu, urupā)
- Wāhi pakanga – places where historical battles took place
- Culturally important plants (raupō, harakeke, wīwī, and toitoi) and wāhi raranga (plant gathering sites)
- Huarahi – trails and access routes
- Mahinga kai values
- Maintenance of the mauri of the land and water
- Capacity of wetlands and other waterways to support mahinga kai and provide vital ecosystem services
- Historical and cultural significance of ngā wai
- Community values - Taumutu and Ngāti Moki Marae
- Waikekewai and other significant places
- Kāinga sites and pā tuna on the waterways such as the Waikirikiri (Selwyn River), Waiwhio (Irwell) and Rakaia.
- Tī kōuka (cabbage tree) and harakeke (flax) that were planted as markers for specific purposes
- Wāhi ingoa – place names

3.2 Ngā Whāinga - *General policy objectives*

- *The quality and quantity of water in all waterways be improved to the point where it supports those fish and plant populations that were sourced from them in the past, and that these mahinga kai are fit for human consumption in accordance with tikanga kai.*
- *Respect for rivers and other waterways.*
- *An understanding of tāngata whenua values such as no artificial mixing of waters to protect mauri.*
- *That land use practices on the plains be appropriate to the nature of the land and waterways.*
- *That the values of ecosystems such as wetlands/ repo raupō be restored and recognised.*
- *That land use practices in these regions be appropriate to the nature of the landscape and natural carrying capacity of the land and water.*
- *All mahinga kai must have uninhibited passage from the rivers to the sea at all times.*
- *That riparian and wetland enhancement is seen as a means for erosion control and as a means to enable waterways to regain their natural protection functions (e.g. bank stabilisation).*
- *That natural resource management in these regions reflect catchment based planning and the continued capacity for future generations to access, use and protect the resources.*
- *That the history of tāngata whenua remain on the landscape, through the protection of wāhi taonga, wāhi tapu, mahinga kai and wāhi ingoa.*

3.3 Ō Te Whenua

Natural resource issues in lowland regions are primarily related to the intensity of land use and settlement, and the cumulative impacts on ecosystems. Primary land use activities include agriculture, pastoral farming, horticulture, lifestyle blocks, industry and settlements.

3.3.1 Discharge to land

Discharges to land come from activities such as dairy farming (spray irrigating of effluent and dairy shed wash down, using roads to move animals), piggeries (spray irrigating of effluent) and industrial activities.

Ngā Take/ Issues:

- Discharge of dairy cow effluent and dairy shed wash down water
- Effluent spreading on land
- Nature of the soil and absorptive capacity
- Ponding from discharge of effluent
- Agricultural topdressing
- Nitrogen loading
- Offal pits – proximity to groundwater
- Soil contamination (from industry, storm water, timber yard, chemicals)
- Spray drift of pathogens (pathogen transfer) from spray irrigation of effluent
- Erosion as a result of continuous discharges
- Intensity of agricultural activities
- Lifestyle blocks and discharges to land
- Use of drains to discharge to land
- Impacts on riparian zones

KAUPAPA - POLICY

1. There will be a minimum 20 m buffer zone from any effluent spreading activity in the vicinity of a creek, river, stream, wetland or spring.
2. Buffer zones must have riparian planting along the waterway.
3. No discharge within a minimum of 20 m of any bore.
4. No discharge such that contaminants are likely to run off and enter a surface water body.

5. Methods of effluent spraying are to avoid ponding of discharge on ground.
6. The best practice for effluent spreading is the use of spray irrigation. Border dyke irrigation systems may result in uneven distribution of both water volumes and nutrient concentrations. When border dyke systems are used, the planting of downstream areas in wetland plants is encouraged.
7. Low-pressure irrigators are better than high pressure, for minimizing the effects of spray drift of pathogens.
8. Spraying shall be done in such a way to localise and minimise impact (efforts made to contain spray). Consideration must be given to prevailing winds and odour.
9. Spraying of effluent must adhere to best practice sound application rate, to prevent over saturation of soils.
10. Where the spraying of effluent occurs, there should not be further applications of additional fertilizer.
11. That Council uphold consent conditions that require record keeping and monitoring of areas/times and volume of spray with regard to spray irrigation.
12. There shall be more comprehensive monitoring and stronger penalties applied to non-compliance.
13. Storm water discharge must be to land, and no discharge will occur within a minimum of 20 m of any surface water body.
14. Storm water discharge schemes should include a monitoring component for soil contamination. Monitoring should occur approximately every 5 years with results supplied to Te Taumutu Rūnanga and council.
15. Advocate the use of riparian and wetland plants to minimise adverse effects on land from discharges of contaminants.

3.3.2 Solid waste disposal (sewage)

Solid waste disposal in this section refers primarily to sewage disposal, but is also relevant to offal pits and other farm dumps, landfills and rubbish dumps.

Ngā Take/ Issues:

- Ensuring that private landowners use best practice
- Monitoring of single home sewage systems for effectiveness
- Unsound septic tanks that runoff into groundwater, aquifers
- Effective monitoring
- Impact of sewage discharge on land

- How to best dispose of human sewage from settlements
- Avoiding contamination of water
- Treatment of sewage at source
- Proximity of offal pits to waterways
- Proximity of landfills and rubbish pits to waterways
- Contamination of mahinga kai sites

KAUPAPA - POLICY

1. Absolutely no discharge of solid waste in the coastal area from Ashburton to Kaitōrete Spit.
2. No discharge of treated sewage into waterways (including drains). Dilution of pollution is not acceptable.
3. Sewage, post-treatment, should be filtered through land, not discharged into water. Consideration must be given to soil structure and permeability at discharge point, and the potential for adverse effect on ground water.
4. All efforts must be made to use the best possible treatment methods before sewage is discharged.
5. Where existing sewage disposal occurs in a waterway or drain post treatment, appropriate notification must be posted to warn waterways users of the presence of human effluent.
6. Where existing sewage disposal occurs in a waterway post treatment, it must include provisions for wetland species planting in order to further 'polish' the water before reaching the lake.
7. That the duration of the solid waste disposal consents not exceed the lifetime of the disposal or treatment system. All consents must be considered in terms of cumulative and long term impacts.
8. That sewage discharge consents have a 10-15 year duration (depending on scale of activity) with review clause and upgrade if required, because of the potential impact on groundwater from systems that become inefficient over the longer term consent duration.
9. That sewage discharge consents include stipulations for regular monitoring (with results supplied to Te Taumutu Rūnanga), mitigation or remediation of impacts on waterways and cultural values (mahinga kai), and inclusion of plans for future reductions of existing discharge.
10. When sewage disposal is in an area with a large amount of springs or mahinga kai sites in the vicinity, these water bodies should be monitored regularly for contamination as a requirement of the consent.

11. Existing contaminant loads, as a result of solid waste, must be reduced in Te Waihora.
12. Border dyke systems for sewage disposal should have wetland buffers in place, particularly on the downstream side.
13. That consultation with Te Taumutu Rūnanga will occur on all resource consent applications related to the disposal of solid waste.

3.3.3 Earthworks

Ngā Take/ Issues:

- Disturbance of soil and vegetation can make it easier for weeds to establish
- Unstable land
- Induced soil erosion and damage to soil structure
- Loss of vegetation
- Damage to indigenous vegetation on a mahinga kai site
- Earthworks in areas of significance to tāngata whenua (i.e. silent file areas, wāhi tapu sites and wāhi taonga management areas) and potential for accidental finds
- Impact on waterways
- Destruction of archaeological sites
- Shifting of contaminated land and soil

KAUPAPA - POLICY

1. No earthworks activity may disturb or damage a wāhi tapu site.
2. Any earthworks activity near a wāhi taonga management or other areas considered culturally significant, including sites of past occupation and settlement, is only permitted providing appropriate consultation with Te Taumutu Rūnanga has occurred.
3. All protocols for accidental finds must be followed.
4. Efforts shall be made to minimise damage of indigenous vegetation. Any clearance of culturally significant plant material may be offered to tāngata whenua if not to be used by landowners.
5. Earthworks activity must leave a buffer of at least 20 m from waterways.
6. When earthworks activity occurs near a waterway, there must be no refuelling in the waterway, no storage/refuelling of

machinery on riverbank or within at least 20 m from the riverbank, and no fuel containers shall be stored on site.

7. Any noxious weeds (land or aquatic) that may establish as a consequence of the activity, on site or in the immediate vicinity must be removed as part of the activity plan.
8. Earthworks activity that results in significant damage to existing vegetation shall include provisions for replanting with indigenous vegetation.

3.3.4 Drainage

The Waihora catchment is very flat and subject to drainage problems. In order to support land usage such as agriculture, a network of drains was created across the plains. Many of these drains empty into existing waterways and ultimately Te Waihora or Muriwai.

The definition of a river in the Resource Management Act 1991 excludes any artificial water course, including drains. Therefore many local authority policies for waterways (including riparian margins) do not apply to water-races, irrigation channels or to man-made drains. The policies do apply to natural streams that have been modified for land drainage.

Te Taumutu Rūnanga views drains as waterways that should be managed in the same way as naturally occurring waterways. Many drains "drain" what were historically streams and/or large wetland areas of natural character.

Ngā Take/ Issues:

- Drains considered separate from waterways
- Lack of recognition of cumulative affects
- Discharge of stormwater from roads into open drains
- Drain cleaning and the impact on stream health
- Drain cleaning and impact on mahinga kai
- Removal of culturally important plants such as raupō and the loss of ecosystem services such as filtration and bank stabilization
- Removal of sediment in drains during cleaning. Young elvers are generally found living in the weeds and silt.
- The adverse effects of drain cleaning on mahinga kai

- Cumulative effects of drain cleaning on customary eel fishery
- Nature of the runoff in drains and impact on receiving waterway
- Setting minimum flow regimes in drains
- Drains that are dug so deep that they break through the confining layer of heavy clay, and this impacts surface flows and wetland areas
- Stock water races used to drain land and divert water

Under the Resource Management Act 1991, the adverse effects of drain cleaning must be mitigated. Tāngata whenua have found that drain cleaning is affecting mahinga kai and degrading receiving waterbodies.

You can't tell a fish what the difference is between a drain, river, stream, creek or spring.

- David O'Connell, Te Taumutu Rūnanga

KAUPAPA - POLICY

1. That all drains are considered in the same way as natural waterways, unless they are part of a closed system. Drainage networks are often draining water that was already there in some form, whether as an intermittent creek or string of wetland areas. Drainage networks are linked to natural waterways, often emptying into them.
2. Minimum flow considerations should be applied equally to drains as to other waterways.
3. Irrigation systems with drainage networks may be able to operate as closed systems, provided they use practices such as fish screens.
4. Te Taumutu Rūnanga supports the mechanical clearing of weeds from waterways as an alternative to chemical spraying, as long as it does not adversely impact on mahinga kai (see Section 3.4.4 Weed Cleaning).
5. Planting along the margins of drains should be used to control sedimentation, reduce weed growth and the amount of weed cutting necessary.

6. Drainage works must not breach confining layers. No drainage works shall result in the draining of surface flows into what was once a confined layer.
7. Best practice must be used for all drain cleaning, and will be reviewed and if necessary updated every five years.
8. Council shall include Te Taumutu Rūnanga in yearly planning for drains and drain management.

Te Taumutu Rūnanga opposes any drain management being a permitted activity (not requiring a resource consent). The Rūnanga position is that drain management activity can be as extensive as diverting waterways, causing significant impacts on mahinga kai including the drainage of important wetlands, the drying up of existing water bodies, or the transport and discharge of silt or contaminant laden waters into other water bodies. Historically, drain management throughout the district has resulted in reduced biodiversity, water quality, water quantity and the overall health of waterways. Drain management has, in many cases, weakened the resilience (ability to function and absorb perturbations) of water-based ecosystems, such as Te Waihora.

3.3.5 Bores

Bores are used to tap aquifers for the taking of groundwater. In terms of resource consent applications, the activity of digging a bore is viewed as distinct from the abstraction of groundwater from the bore, with each activity requiring a separate consent. As such, Te Taumutu Rūnanga is consulted on bore consent applications only in terms of proximity to a site of significance or other land related concern. The experience of the Rūnanga with such applications is that water abstraction concerns are not considered relevant.

Ngā Take/ Issues:

- Proximity of bores to significant sites
- Proximity of bores to waterways or other surface water body
- Depth of bore and nature of the soil structure
- Lack of administrative connection between the digging of the bore and the abstraction of water
- Presumption that the consent holder of the bore will get consent to abstract water
- Cumulative effects

KAUPAPA - POLICY

1. Te Taumutu Rūnanga views bores as the preferred method of water abstraction for agricultural and other purposes, as opposed to surface water takes.
2. Bores should not be located where they may disturb a site of significance.
3. Te Taumutu Rūnanga opposes all new bores that have a connection to surface water (drain, spring or wetland).
4. Te Taumutu Rūnanga concerns related to water abstractions must be considered at the same time as the bore consent application. Silent files taken into consideration for such applications are inadequate in accounting for tāngata whenua concerns.
5. Te Taumutu Rūnanga will oppose new shallow wells for irrigation that are shown to affect the flow levels of streams and springs.

It is hard to make your living off the land now, as we used to long ago. The land is not as healthy now. – Auntie Ake (Mrs. Maria Johnson), Te Taumutu Rūnanga

3.4 Ō Te Wai

Rivers, creeks, streams, wetlands, groundwater and springs

On the Canterbury Plains, Te Taumutu Rūnanga is concerned with the impacts of human activity on water quality and quantity. Water is taonga, and tāngata whenua maintain a close association with waterways, wetlands and springs of the region.

Waterways are a source of mana. They carry meaning and history, and are a source of identity. They are also mahinga kai – providing tuna and other fish, birds and weaving materials. Maintenance and enhancement of the mauri of waterways is a central principle of resource management for Ngāi Te Ruahikihiki ki Taumutu.

Many of the primary lowland waterways are rain and spring fed, including the Waikirikiri (Selwyn), Huritini (Halswell), Ararira (LII), Waikekewai, Waiwhio (Irwell), Hakatere (Ashburton), Kaituna, Lee, Tentburn Stream and Waitataari (Harts Creek). Many are tributaries of Te Waihora and will also be addressed in Section 4. Other waterways, such as the Rakaia, are snow fed glacial rivers that flow from the mountains to the sea.

One of the primary challenges for water management is balancing current use demands of pasture and cropping, settlements, and industry with the need to protect the mauri and basic ecosystem health of waterways. Many of the lowland rivers and streams in the Taumutu takiwā are under stress or severely degraded.

The Mauri of a waterway can be characterized by many spiritual and environmental factors, including:

Size
Water quantity
Water quality
Force
Volume and flow
Provider of mahinga kai
Cultural purposes

3.4.1 Discharge to water

Discharges to water come in two main forms: a) point source discharge to water (i.e. actual discharges into water) and b) non point discharge (i.e. from land to water). Discharges may include agricultural herbicides or effluent, industrial chemicals or stormwater.

Ngā Take/ Issues

- The view that dilution of contaminants is a solution to discharge issues
- Impact of agricultural runoff of herbicides on mahinga kai
- Lack of knowledge on the effects of chemicals on indigenous species in waterways
- Nitrogen loading in waterways
- Impact on water from offal pits
- Cumulative effects on waterways from discharge
- Increased sediment loads in creeks, streams and rivers
- The artificial mixing of water and impact on the mauri of the water
- Discharges to water as a result of agricultural top dressing
- Discharge of nutrient laden effluent into drains, waterways, and ultimately lake itself
- Discharge of storm water from roads into open drains
- Impact of effluent runoff into drains and waterways from moving stock on roadways
- Poor water quality in some areas as a result of contamination
- Inability to swim in some places as a result of contamination
- Contributions of discharges to waterways to the build up of algal blooms in Te Waihora
- Spreading of human ashes to water

Effluent contains nitrogen, potassium, phosphorus, and microorganisms such as bacteria and pathogens. These contaminate waterways and cause increased nitrate and nitrite concentrations. Many of the waterways, rivers and streams on the plains flow through farmland, collecting discharge from agricultural drains before ultimately reaching Te Waihora and emptying into it.

KAUPAPA - POLICY

1. That the effects of effluent on water be minimised through the employment of treatment and purification systems, that are upgraded as technology becomes available.
2. When existing rights to discharge come up for renewal, they will be considered in terms of alternative discharge methods.
3. No discharge of contaminants or effluent within a minimum of 20 m of any surface waterbody.
4. No discharge of contaminants or effluent within a minimum of 20 m of any bore.
5. No discharge in any water body if it will result in contamination of the receiving water.
6. Agricultural and chemical spraying (herbicides) should be prohibited in any case where the effects of such spraying will be to degrade the quality of water or of the flora and fauna.
7. If the effect of a given chemical or herbicide on mahinga kai, or any indigenous or taonga species, is unknown due to inadequate information or research, Te Taumutu Rūnanga will oppose the discharge of that chemical.
8. No discharge of stormwater to waterways.
9. That for the discharge of stormwater, the filters are replaced on a reasonable timeframe (more often than 20 years) and that greater consideration be given to the development of improved swale systems.
10. That the spreading of human ashes to water is not allowed, unless in an area concurred to by tāngata whenua.
11. That point source discharges include cows and other stock that enter and defecate in waterways.
12. That dilution to pollution is not acceptable.

Water quality is dependent on water quantity

3.4.2 Water abstractions

There are two main issues associated with water abstractions (irrigation, stock and domestic) :

a) Those abstractions that take water directly from surface waters such as those from the Waikirikiri (Selwyn River);
b) Those abstractions that take groundwater from areas that effect the spring and hence water flow.

Ngā Take/ Issues:

- Water extraction for stock watering
- Water extraction for domestic needs
- Volume of abstractions of water for irrigation purposes
- Where water takes occur (i.e. groundwater, surface takes, etc)
- Cumulative effects of water abstractions on surface and groundwater flows
- Minimum flows
- Over abstraction from waterways and the impacts on mahinga kai
- Duration of water abstraction consents
- Effect on lowland rivers from water abstractions in the upper catchment area
- Artificial mixing of waters (e.g. glacial with lowland rainfed)
- Impact on springs from river water and groundwater abstractions
- Large scale irrigation schemes
- Diversion and damming of waterways for water abstraction purposes
- Accelerated drying up of waterways due to extractions
- Impacts must be assessed regardless of whether water is below or above ground

KAUPAPA - POLICY

1. In the case of water abstractions, best practice and more efficient use of water is encouraged.
2. Any water "saved" through efficient use is to be returned to waterways to enhance river flow, not re-allocated to other out of stream users.
3. All water extractions require a full resource consent.
4. Water abstraction from open waters is seen by Te Taumutu Rūnanga as unnecessary as there is readily accessible water from numerous confined aquifers. Existing consent holders should operate bores that uphold efficient use of water that do not impact on surface and spring flows.

5. There shall be more comprehensive monitoring, including cultural monitoring, and enforced penalties for over abstractions and non compliance.
6. Water abstractions for irrigation must include provisions that diverted waters be considered as natural waterways, not artificial, and that no mixing of waters occurs from one catchment to another and between water types.
7. No water abstractions are to impact any spring that is sustaining other waterways.
8. The duration of water abstraction consents shall reflect the existing knowledge and potential risk to waterway health and mauri.
9. The cumulative effects of water abstractions in the whole catchment shall be considered with each new consent.
10. Te Taumutu Rūnanga will oppose new shallow wells for irrigation that may affect the flow levels of streams and springs.
11. There shall be no new abstractions from Waikekewai.
12. All existing uses of Waikekewai water, both ground and surface, shall find alternative sources within the next 10 years.

Te Taumutu Rūnanga advocates catchment-based management, particularly in all matters concerning water. In all decisions pertaining to water, the Rūnanga uses the principle of *ki uta ki tai*, from mountain to sea. The principle is about thinking in terms of the whole catchment, rather than each individual waterway. It means always assessing what is happening at the source, the long-term cumulative effects of any activity, and the potential impacts on other resources.

All resource consent applications involving water must be considered in terms of the wider catchment and all other existing consents. This may mean provisions to renew all water consents for a given activity (i.e. water abstractions) at the same time. This kind of management allows for the assessment of cumulative effects of water abstractions, discharges, minimum flow regimes and other activities on water quality, quantity and overall ecosystem health in the catchment.

3.4.3 River works

Ngā Take/ Issues:

- Impact on mahinga kai from river works
- River works that impede access to and of mahinga kai
- Extent of modification of river channels
- Erosion of river banks, loss of riparian vegetation
- Habitat destruction through the management of waterways to prevent flooding
- Extent of gravel and other material abstractions
- Cumulative effects of river works
- Establishment of weed species as a result of soil disturbance
- Contamination from machinery

KAUPAPA - POLICY

1. That river works activities take all measures to minimise disturbance and damage to river bed and banks.
2. River works activities, including gravel extractions, are not permitted at times of the year when the activity may interfere with fish passage or spawning.
3. There must be no refuelling in the waterway, no storage/refuelling of machinery on river bank or within at least 20 m from the river bank, and no fuel containers shall be stored on site.
4. Damage of indigenous vegetation must be minimised in any river works activity. Any clearance of culturally significant plant material may be offered to tāngata whenua if not to be used by landowners.
5. All river works activity that results in the loss of riparian vegetation should include provisions for restoration with indigenous species.
6. No river work activity may cause mahinga kai to be left stranded in pools or channels.
7. Any machinery working in waterways must be cleaned before entering the waterway to ensure that noxious weeds are not introduced.
8. Any noxious weed (land or aquatic) that may establish itself as a consequence of the activity, on site or in the immediate vicinity must be removed as part of the activity plan.
9. All river works should seek to maintain the natural character of the waterway (i.e. braided rivers such as the Waikirikiri are not channelled into single confined flow channels).

3.4.4 Weed cleaning

In the Canterbury region, many of the drains and waterways are annually cleared of weeds in order to maintain flow and provide flood protection.

Ngā Take/ Issues:

- Aquatic weed control that adversely affects mahinga kai
- Juvenile fish being caught in machinery
- Amount of vegetation removed and impact on cover for fish species such as tuna
- Weed removal and impact on indigenous plants, particularly riparian
- Destruction of river habitat
- Downstream effects (e.g. aquatic weed discharge into Te Waihora)
- Cut weed increases biological oxygen demand
- Cut weed gets caught in nets downstream
- Impact of weed clearing on fishing reserves and mahinga kai (Te Koraha Fishing Reserve, Te Ahuriri Lagoon)
- Spraying effects – kills cover, impact on fish
- Cut weed depositing on Te Waihora lakebed (owned privately by Ngāi Tahu)
- Creation of bunds (mounds or embankments of sediment and vegetative matter dug from stream bottom and piled on streambank) along waterway edges. In many cases, these bunds will also contain eels, caught in the weeds and sediments removed from the bed of the waterway. The concern is that when spoil is added to the bund, eels tend to move towards the landwards side and not return to the water.

KAUPAPA -- POLICY

1. Te Taumutu Rūnanga will not allow the discharge of cut tributary weed to Te Waihora.
2. Councils must promote long term solutions to aquatic weed problems (i.e. riparian shading, reduction of nutrients).
3. Te Taumutu Rūnanga recognises that rivers and drains, including tributaries of Te Waihora, must be managed to prevent flooding. However, all efforts must be made to minimise adverse effects on the river habitat and mahinga kai (especially eels).
4. Te Taumutu Rūnanga supports the mechanical clearing of weeds from waterways as an alternative to chemical spraying. Mechanical clearing is more acceptable in terms of providing for shelter and food sources for mahinga kai. This situation may be reviewed (every 5 years) as technology and research finds improved solutions to current issues and impacts.

5. Planting along the riparian margins of drains and waterways will in time reduce weed growth and the amount of weed cutting necessary.
6. That the best practical option is adopted to ensure that the maximum amount of weed is trapped and extracted from the river, and that the design and operation of the barrier be improved when possible to ensure this.
7. Weed cleaning activities must have a boom or similar structure in place to catch cut weed and prevent it from accumulating in the waterway or flowing into Te Waihora. This boom structure must be located at a site best suited to prevent adverse effects on the lake.
8. That a minimum of 90% of the weed cut be trapped and extracted (i.e. 10% slippage rate).
9. Te Taumutu Rūnanga must be informed of any drain cleaning/weed cutting activity at least seven days prior.
10. The timing of weed cutting activity shall not unduly impact on other activities occurring in Te Waihora.
11. Cut weed stock piles must not be allowed to "drain" back into any waterway (i.e. discharge of liquid fertilizer).

3.4.5 Minimum flow levels

As part of the sustainable management of waterways, Environment Canterbury is establishing minimum flow levels for tributaries of Te Waihora. Minimum flow levels are set to protect instream values, including the natural character of the waterway, the availability of drinking water, and habitat. Levels are determined by a combination of methods, and are used to determine appropriate conditions for water abstractions from both surface takes and hydraulically connected groundwater takes in which the flow level of a given waterway may be affected.

Ngā Take/ Issues:

- That minimum flows are seen as minimums, rather than sustainable flows
- Loss of mahinga kai sites due to low or no surface flow
- Minimum flow standards and planning that are appropriate from a tāngata whenua perspective
- Impact on rivers from land use and development activity (water usage) in the upper catchment area
- Impact of low flows on fish habitat, mahinga kai, mauri and wairua

- Exposure of stream bed margins and impact on mahinga kai from low flow levels
- Impact on ability of plants to "keep their feet wet"
- Need for a secure knowledge base with respect to groundwater and surface water quantity issues
- The impact on springs from low flows in creeks, streams and rivers as a result of water abstractions
- Over abstraction from waterways and cumulative effects
- Long duration of water abstraction consents
- Inclusion of tāngata whenua values in setting minimum flows
- Cultural monitoring of waterways (water quality and quantity)
- Effects on mana of tāngata whenua given reduced flows

KAUPAPA -- POLICY

1. Environment Canterbury must establish minimum flow levels for all tributaries of Te Waihora and the Taumutu takiwā.
2. Minimum flow levels shall be assessed as sustainable, sufficient flows, and not only as minimum flows.
3. Minimum flows must prioritise all instream values ahead of water abstractions.
4. The setting of minimum flows must be assessed in terms of tāngata whenua (cultural, spiritual, ecological) values, not only for ecological (scientific) values.
5. That the mauri of the river is protected by ensuring that there is sufficient level and flow to maintain aquatic ecosystems found in waterways of the Taumutu takiwā.
6. The setting of minimum flows shall reflect the principle of ki uta ki tai – from mountains to the sea, and thus cumulative effects.
7. There must be sufficient level and flow to maintain the natural character and appearance of the water, the waterway's suitability for cultural purposes, and that the habitat requirements of taonga species are met.
8. Periodic monitoring of streams must utilise both western scientific and cultural monitoring. Environment Canterbury shall engage Te Taumutu Rūnanga to monitor waterways in the takiwā to ensure Council is meeting its RMA 1991 s6 (e), s7 (a), and s8 obligations.
9. That Te Taumutu Rūnanga be advised of all consent applications received that affect minimum flow, and provided with a monthly report of all consents granted, for those consents where the Rūnanga is not a directly effected party.
10. That expert panel minimum flow settings for Te Waihora tributaries be subject to a review process after 5 and 10 years.

Consents for water abstractions where there is an adverse effect on a waterway, and where a minimum flow is recommended, shall include a clause putting the consent subject to a review process to reassess stream depletion effects.

11. That minimum flows for Waikekewai be set for the specific purpose of monitoring abstractions and the impact on the waterway. There must always be enough water in Waikekewai.
12. That any water abstraction activity that has adverse effects on springs be restricted.
13. That community care groups be encouraged and supported, to monitor for minimum flow and water quality.
14. That a "stages to cut off" approach is used with minimum flow, in order to allow water users to plan ahead.
15. Overall, a stronger monitoring and enforcement component is needed for consent applications relating to water abstractions and minimum flows.
16. That water quantity in rivers and their tributaries is such that it improves and enhances water quality, wetlands and mahinga kai.
17. That each new consent application for a water abstraction, on a waterway with a set minimum flow level, be considered in terms of the cumulative effects of water abstractions in all parts of that waterway.

3.4.6 Water quality

Ngā take/Issues:

- Need for cultural monitoring of waterways
- Inability to use mahinga kai or wāhi taonga sites due to poor water quality
- Excessive nutrient loads in waterways
- High silt overloading
- Spreading of human ashes in water
- Lack of focus given to the incorporation of tāngata whenua values in water quality monitoring regimes
- Effect on water quality from land use/development activity in the upper catchment area
- Impact on water quality from low flow levels
- Effects on mana of tāngata whenua given poor water quality

KAUPAPA - POLICY

1. That water quantity in rivers and their tributaries is such that it improves and enhances water quality, wetlands, springs and mahinga kai.
2. Te Taumutu Rūnanga views water quality as interconnected with water quantity.
3. No discharge of contaminants, in particular effluent, into waterways.
4. Monitoring of streams must utilise both western scientific and cultural monitoring. Environment Canterbury shall engage Te Taumutu Rūnanga to monitor waterways in the takiwā to ensure Council is meeting its RMA 1991 s6 (e), s7 (a), and s8 obligations.
5. Overall, a stronger monitoring and enforcement component is needed for resource consent applications relating to discharges to water and water quality.
6. Agricultural and chemical spraying (herbicides) should be prohibited in any case where the effects of such spraying will be to degrade the quality of water or of the flora and fauna.
7. Environment Canterbury shall seek to better manage and monitor cumulative effects of discharges on water quality.
8. If the effect of a given chemical or herbicide on a mahinga kai, taonga species or other indigenous species, is unknown due to inadequate information and research, Te Taumutu Rūnanga will oppose the discharge of that chemical.

3.4.7 Riparian zones

Ngā Take/Issues:

- Cumulative effects (downstream impacts of lack of riparian vegetation)
- Erosion of river banks from lack of vegetation
- Willows as riparian vegetation
- Impact on habitat and mahinga kai from lack of riparian zone vegetation
- Impact on overall stream health from lack of riparian zone
- Lack of respect for rivers (degradation of riparian zones)
- Loss of valuable ecosystem services provided by riparian vegetation
- Poor water quality and impact on riparian vegetation
- Discharge of treated sewage, stock effluent into rivers
- Damage of riparian areas by stock
- Destruction of habitat through management of waterways with herbicide spraying

- Protection of habitat of indigenous fish species
- Complete removal of willows and other 'pest' species that also remove all existing cover for fish species

The Lee River is an example of a waterway with an acceptably healthy riparian zone on much of its course. When you travel along the Lee River, you see harakeke, rushes, sedge and other riparian vegetation, and small numbers of willow. Several waterways such as the Lee still have high water quality and healthy riparian zones. There is thus excellent potential for protecting them. The policy of Te Taumutu Rūnanga is to protect waterways that are generally in a healthy state, alongside work to improve streams that are already degraded. The Rūnanga advocates monitoring existing healthy waterways to ensure that stream health does not deteriorate, that there is no stock access, and that the land use in the area does not place undue pressure on for water abstractions.

KAUPAPA - POLICY

1. All waterways must have sufficient buffer zones (minimum 20 m) to protect riparian areas and support mahinga kai. These buffers will have no cultivation, stock access or grazing unless required for intermittent weed control.
2. Advocate for the restoration of riparian zones, with indigenous species, where they have been degraded. Restoration should be a component of consent applications.
3. Those streams with existing healthy, functioning riparian zones shall be maintained and monitored.
4. Te Taumutu Rūnanga will focus on erosion control, riparian enhancement and wetland restoration as a proactive measure alongside trying to stop direct impacts on water quality.
5. That efforts are made to control the spread of willow in riparian areas, to protect indigenous plants.
6. Indicators of stream and riparian health should come from cultural monitoring and environmental science.
7. Where willow is to be removed and replaced by indigenous species, this will be done via a process of staged removal and under planting.

Local observations of how the rivers and creeks used to be long ago:

- **The creek by the Ngāti Moki Marae used to be over my head in places.**
- **The creeks used to be shingle bottoms, now they are muddy and dirty.**
- **The old people used to put their corn in the creeks to rot, the rivers were clean back then.**
- **We can't eat the watercress now like we used to because the rivers are dirty.**
- **The early farmers used to use water troughs, now they let stock drink right from the creek. They used to have windmills to pump the water.**
- **The rivers are so shallow now, there is not as much water as before.**

3.4.8 Repo raupō (wetlands) and waipuna (springs)

Repo raupō are rich in biodiversity and provide essential ecosystem services such as filtering and cleaning impurities from water. These areas were and are important areas of mahinga kai, valued for resources including raupō and tuna (eel).

Waipuna are an integral part of the natural environment of the Canterbury plains. Many creeks and streams are spring fed, including the Ararira (LII), Lee River, Tentburn, Waiwhio (Irwell) and Waikekewai.

Ngā Take/ Issues:

- Surface takes from waterways that impact springs and spring fed rivers and streams
- Use of chemicals in aquatic environments
- Loss of quality wetland habitat
- Maintenance of wetlands ability to support mahinga kai
- Ability of mahinga kai to move between waterways and springs
- Protection of wāhi tapu
- Impact of exotic weeds
- Discharge of contaminants into wetlands or springs
- Abstraction of water from springs
- Decline in the number of waipuna
- Leaching of herbicides
- Groundwater abstractions that are connected to springs/wetland areas
- Wetland drainage
- Runoff and stock pugging of wetland areas

KAUPAPA - POLICY

1. No abstractions from springs and connected groundwater.
2. Restoration of productive capacity of wetland ecosystems.
3. No further draining of existing wetland areas.
4. That existing wetland areas be maintained and enhanced to provide tuna (eel) habitat and other mahinga kai.
5. Actively encourage restoration of wetland areas, with indigenous vegetation and endemic plants.
6. Buffer zones of at least 20 m must be maintained around wetlands to protect ecosystem health. Significant wetland and spring areas should be fenced off to prevent damage by stock.
7. Wetland creation and restoration should be a component of any sewage discharge scheme, in order to utilise the natural capacity of these systems.
8. Te Taumutu Rūnanga will actively encourage the use of wetland plantings and restoration to offset the adverse affects of any contaminant discharges.

Case Study: Te Repo Orariki

Orariki is the name of a pā tawhito situated near Taumutu. The pā was occupied by Te Ruahikihiki and his people in the 18th century. Today, the pā tawhito connects Ngāi Te Ruahikihiki ki Taumutu to the landscape and their history.

As with many areas of the Canterbury Plains, the area around Orariki has become degraded due to changing land use, drainage, indigenous habitat destruction, the reduction of biodiversity, the introduction of exotic species and the restrictions imposed on tāngata whenua in terms of participating in land use and management decisions.

A process has now begun to enhance Orariki and restore the mauri of the landscape and uphold the mana of a site that was once the centre of life for the hapū. The idea is to create Te Repo Orariki, a wetland area for cultural, environment, and educational use and benefit.

The project began in August 2002, and will continue until 2005.
The main features of the project are:

1. **Indigenous riparian planting, fencing and pathways along the waterways from Ngāti Moki Marae to Te Repo Orariki area.**
2. **A bridge over te Waikekewai stream near the Marae.**
3. **A waipuna (spring) for ceremonial purposes and a source of water for the wetland area.**
4. **The wetland including any earthworks, planting, paths, fences and shelters.**
5. **A wāhi whenua, pā harakeke, and rongoa garden.**
6. **A carpark for the wetland and the Hone Wetere Church and Urupā.**

3.4.9 Groundwater

Groundwater systems nourish the land and waterways from below the surface. They provide the continuous flow of rivers that may retreat beneath the surface and appear again in valued waipuna.

Ngā Take/ Issues:

- Effects of effluent on groundwater
- Which aquifers should be tapped and for what purposes
- Protection of mauri – no mixing of waters
- Extent of groundwater extraction for spray irrigation of pasture
- Efficient use of water
- Quality of groundwater
- Proximity of offal pits to groundwater
- Decline in the quantity of groundwater aquifers
- Effect on springs from groundwater abstractions
- Cumulative effects of groundwater abstractions
- Leaching of pollutants and contaminants into groundwater
- Breaching of confining layers by drainage works

KAUPAPA - POLICY

1. The effects of effluent discharge on groundwater will be minimised through the use of treatment and purification systems, including wetland systems.
2. When existing rights to discharge come up for renewal, they will be considered in terms of alternative discharge methods.
3. Groundwater abstractions shall not be considered separately from bore drilling.
4. Te Taumutu Rūnanga will oppose any connected wells for irrigation that may affect groundwater and the flow levels of streams and springs.
5. All water abstractions involving groundwater require a full resource consent, and are to be considered in terms of all other existing consents in the catchment, and the cumulative effects of those abstractions.
6. In the case of abstractions, more efficient use of water is required.
7. No discharge of effluent or contaminants directly into groundwater.
8. That the groundwater quantity be such that it improves and enhances water quality, spring flows, wetlands and mahinga kai.

9. That a minimum 20 m buffer from any bore be maintained when spraying or discharging, to prevent contamination of groundwater.
10. Water takes for irrigation should be taken from groundwater bores as opposed to surface takes. Streams in the Taumutu takiwā are already in distress, so ongoing or new takes should be discouraged.
11. All shallower aquifers will be protected, due to potential impact on surface water, surface fed streams and gravity fed springs.
12. Drainage works must not breach confining layers. No drainage works shall result in the draining of surface flows into what was once a confined layer.

Water is all connected, and our policies and management must reflect this. From the mountains to the sea, water is there. The protection of waterways is our responsibility as tangata whenua.

3.5 Taonga o te Taiao - *Flora and fauna*

The Canterbury plains landscape is very different today than it was in the past. In many areas, indigenous bush, tussock grasslands and extensive wetland areas have been replaced by high producing pasture species for pastoral farming and agriculture. Exotic weed species such as gorse, broom and willow have invaded many of the riverbeds and riparian areas.

However, a wide range of indigenous flora and fauna do remain in the waterways and lands of the Plains region, including many freshwater fish and waterfowl. Many of these are considered taonga species, and important mahinga kai for Ngāi Te Ruahikihiki ki Taumutu, particularly those associated with Te Waihora and its tributaries. The protection and restoration of indigenous flora and fauna is a key component of the Te Taumutu Rūnanga natural resource management plan.

3.5.1 Pest control and pest management strategies

Ngā Take/ Issues:

- Pest management strategies and pest control on the plains
- Use of 1080 and other poisons for pest control
- Impact on waterways from the use of poisons for pest control
- Role of tāngata whenua in developing pest management strategies
- Spread of weeds such as gorse and willow
- Exotic forestry and spread of wilding trees
- Introduction of exotic species on waterways (willows, trout)
- Impact of exotic species such as purple loosestrife
- Removal of indigenous species for enhancement of exotic species (i.e. removing eels from trout streams)
- Impact of genetically modified organisms

KAUPAPA - POLICY

1. Te Taumutu Rūnanga shall have input into the definition of "pest species" and to pest management strategies.
2. All pest management strategies should be conducted in such a way as to minimise impact on non target species.
3. Pest management strategies shall focus on running a good process, including science and knowledge transfer.
4. Monitoring of all pest management activity for adverse effects on indigenous species shall be a component of all pest management strategies.
5. Large scale spraying or removal of weeds such as gorse and willow should be done in stages, in order to minimise impacts on non target species.
6. Advocate for the control and long term removal of weed species such as willow and gorse in the beds and riparian margins of waterways.
7. Exotic weed control strategies should include provisions for staged replacement of exotic species with indigenous species.
8. The management of waterways for trout and salmon habitat shall not override the need to protect indigenous species.
9. There shall be no use of poisons near waterways, regardless of the size of the waterway.
10. Te Taumutu Rūnanga shall receive notification of any spraying or other pest management, at least two weeks in advance.

3.5.2 Indigenous flora and fauna

Ngā Take/ Issues:

- Protection of mahinga kai and taonga species
- Habitat protection and enhancement
- Involvement of tāngata whenua in developing restoration programmes
- Ability to access indigenous plants for customary use
- Decline in indigenous fish populations
- Habitat degradation of indigenous fish species
- Impact on mahinga kai species by agricultural runoff and other discharge into water
- Loss of habitat and diversity of indigenous species
- Impacts of spraying on plants that are collected for food and medicinal use (i.e. watercress)
- Ownership/access of mahinga kai and taonga species for customary gifting
- Flora and fauna collection and research permits
- Indigenous fish being given less priority than exotic species
- Restoration and reintroduction of taonga species such as the buff weka to the takiwā
- Salmon and trout releases or translocations

KAUPAPA - POLICY

1. Advocate for habitat enhancement and the restoration and reintroduction of indigenous species programs.
2. There shall be continued customary access for tāngata whenua to use indigenous flora and fauna.
3. There shall be no release of trout or other exotic species, in areas where they do not currently exist, without approval of Te Taumutu Rūnanga. This is to prevent adverse effects on indigenous species.
4. All taonga species must be protected.
5. There shall be adequate notification to Te Taumutu Rūnanga by councils and/or consent holders or landowners, if spraying is to occur that might affect plants that are collected for food and medicinal uses.
6. Any impact on or removal of indigenous vegetation on a mahinga kai site is limited to that undertaken by tāngata whenua, for mahinga kai purposes.
7. Te Taumutu Rūnanga opposes any needless destruction of culturally significant plants.
8. All kōhanga (breeding and spawning sites) must be protected.

9. All management decisions must take into account the protection and survival of all indigenous species of flora and fauna (rare and common) in their natural habitats/ecosystems.

10. All research on, about or within the takiwā, that relates to culturally significant flora, fauna, places or other resources, shall include provisions for consultation with Te Taumutu Rūnanga (see Part IV, 4.10 and 4.11).

Te Rūnanga o Ngāi Tahu has developed a tribal policy on Genetically Modified Organisms (GMO). Key concerns in relation to genetic modification are founded on whakapapa, kaitiakitanga and rangatiratanga. The essence of the policy is that:

1. **Te Rūnanga o Ngāi Tahu opposes the release of any genetically modified organisms into the environment.**

2. **Te Rūnanga o Ngāi Tahu opposes the granting of any application for the development of genetically modified organisms. This opposition will continue until Te Rūnanga has concluded the impact such genetic modifications will have upon critical social and cultural concerns related to Whakapapa, Kaitiakitanga and Rangatiratanga are addressed to its satisfaction.**