Tasman Resource Management Plan

Efficiency and Effectiveness Evaluation

Chapter 27:

Activities in the Beds and on the Surface of Rivers and Lakes

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Lead author: Greg Mason (Inform Planning Ltd)

Co-author: Lisa McGlinchey

Reviewed by: Barry Johnson

Note: *This report does not include consideration of the latest requirements in the National Policy Statement for Freshwater Management, National Environmental Standard for Freshwater, or National Regulations for Stock Exclusion gazetted in August 2020.*

Acronyms

ARM	Avoid-Remedy-Mitigate
DOC	Department of Conservation
GIS	Geographic Information System
LiDAR	Light Detection and Ranging - technology that provides detailed contour data
MagiQ-BI/NCS	Two related Council information systems - used to manage data, including for resource consents and service requests, including complaints.
NES	National Environmental Standards
NES-FM	National Environmental Standards for Freshwater
NES-PF	National Environmental Standards for Plantation Forestry
NPS	National Policy Statement
NPS-FM	National Policy Statement for Freshwater Management
NPStds	National Planning Standards
NZCPS	New Zealand Coastal Policy Statement
RMA	Resource Management Act
TDC	Tasman District Council
TEP	Tasman Environment Plan
TRMP	Tasman Resource Management Plan
TRPS	Tasman Regional Policy Statement
WCO	Water Conservation Order

Contents

Executive Summary

This report reviews the efficiency and effectiveness of the provisions in Chapter 27 – Activities in the Beds and on the Surface of Rivers and Lakes - in the Tasman Resource Management Plan (TRMP). It concludes that the provisions in Chapter 27 and their implementation through rules and non-regulatory methods largely require full review or update as part of the Tasman Environmental Plan (TEP) review process. The key reasons for this are to fully implement the National Policy Statement for Freshwater Management and to improve integrated management of waterbodies and their margins, including alignment across the district and regional plans.

Intent of Chapter 27

The chapter addresses seven broad issues as follows:

1. Adverse effects on ecosystems and habitats
2. Recognition of the significance of water and water bodies to tangata whenua
3. Effects of activities on river bed stability and channel efficiency
4. Impacts on water quality from stock and vehicle access to waterways
5. Risks from hazards on human life, property or other aspects of the environment
6. Impacts of activities on natural character, landscape, cultural, recreational and amenity values
7. Identification and protection of key uses and values of rivers and lakes

Achievement of Objectives

Chapter 27 provisions are largely concerned with *minimising* the impacts of activities on river and lake beds and surfaces. In this regard, the TRMP provisions have been relatively successful in avoiding, remedying or mitigating adverse effects of activities.

However, objectives seeking environmental enhancement for streams, rivers and lakes have proven difficult to achieve through the implementation of rules. The TRMP could be strengthened in order to require or incentivise restoration and enhancement activities.

Adverse Effects on Ecosystems

The objective relating to ecosystem health has been partially achieved. There has been an improvement in the provision of fish passage for Council-owned river and stream structures, and changes in Council's asset management planning have led to less reliance on hard flood and erosion protection works, such as rock revetments, to more natural options, including riparian planting and structures that maintain natural river characteristics.

Additionally, methods such as catchment management planning, development of best practice guidelines (e.g. on natural stream management), funding for riparian restoration and fencing of waterways have led to enhanced outcomes for aquatic habitats in specific locations.

Monitoring data does show there has been a deterioration in the health of water quality and associated habitats and native fish stock, particularly for small streams less than 3m in width. However, this is largely due to the effects of land use activities addressed through other chapters of the TRMP, particularly in relation to activities that increase sedimentation, nutrient runoff and contamination of waterways.

Maori Relationships with Rivers and Lakes

Te Tau Ihu iwi participate in implementation of the TRMP through comment on resource consent applications and cultural impact assessments for Council's engineering activities. Iwi views are also sought on site specific management plans and Council's annual works programme.

Assessment matters taken into account during the resource consent process include effects on Māori cultural and spiritual values, and the TRMP identifies uses and values of importance to iwi for specific waterways (as set out in Schedule 30A).

However, weak internal consistency within Chapter 27 provisions means there is limited scope for achieving this objective through the resource consent process. Schedule 30A is incomplete and may not capture the full range of uses and values of importance to tangata whenua. Key provisions within national policy statements, iwi management and environmental plans, and statutory acknowledgements within Treaty settlement legislation have yet to be incorporated fully into the TRMP. There is also a lack of information about environmental outcomes relevant to Māori interests in freshwater management.

River Bed Stability and Channel Efficiency

Chapter 27 regulates activities that can impact on river bed stability and efficiency, including river and flood protection, the damming and placing of structures in river beds, and gravel extraction. The two related objectives are considered 'on track to achieve', in large part through the activities of Council in carrying out its functions under the Soil Conservation and Rivers Control Act 1941.

The main concern has been conflict between the use of river and flood control measures that confine natural channels and modify river morphology (such as stopbanks and hard protection structures), and the maintenance and enhancement of river ecosystems and habitats. TDC engineering staff have been encouraged to move away from these methods of river control to more natural approaches and this is occurring.

There is also some concern that large scale commercial gravel extraction may be taking unsustainable amounts from land adjacent to rivers due to the high demand for gravel and aggregate for roads and construction materials.

Impacts on Water Quality

Activities consented under Chapter 27 provisions have had limited impact on water quality and this objective is considered partially achieved. Water conservation orders on the Buller and Motueka Rivers have helped influence outcomes for water quality in those two catchments.

One area that can be tightened is restricting access by stock to waterways, although this may be addressed through national regulations proposed for 2020. Monitoring of stream health has indicated that cattle are entering small streams and causing bacterial contamination. Even if there is not an effect on the water quality, there is often an adverse effect on amenity value of the swimming experience when there is manure from stock on the gravel beaches around swimming areas. Another shortcoming is the challenge of achieving water quality enhancement through rules, which are typically designed to minimise adverse effects.

Climate change will continue to exacerbate pressures on waterways, e.g. increased frequency and severity of storms will lead to increased runoff and bank erosion, resulting in higher sediment and nutrient input from land.

Hazards

The hazard objective is considered 'on track to achieve'. Dam structures (over a specified size) are required to be built to appropriate standards under the Building Act and regular monitoring of dam integrity and safety are undertaken, including assessments by qualified engineers. Under Chapter 27 provisions, resource consent is required for both the construction of new dams and the renewal of existing dams. This provides a further opportunity to check dam performance and safety.

The aspect of the objective concerning hazard risks created by dam failure is more appropriately dealt with in the District Plan (Part 2) of the TRMP, as it concerns all existing dams (including off-stream dams) and is not directly relevant to effects on river and lake beds.

Natural Character, Landscape, Cultural, Recreational and Amenity Values

This objective has been partially achieved. Schedule 30A identifies a number of relevant uses and values, including contact and non-contact recreation and landscape values. Assessment of resource consent applications require these uses and values to be taken into account in decisions. The Schedule needs updating to identify relevant uses and values for all waterways in the District.

Monitoring information suggests that the natural character of District's waterways has not been maintained over time. The degradation is often due to historic vegetation losses and physical changes, for example channel straightening or erosion protection structures (see Chapter 8 Evaluation Report for more details).

As well, the TRMP rule framework does not actively encourage *enhancement* of natural character, amenity, recreational and cultural values. Instead it is through non-regulatory actions by Council, iwi, community interest groups and individual landowners that enable enhancements, e.g. through pest management and planting of native vegetation. Public access to the District's waterways is also often reliant on the goodwill of landowners.

Uses and Values of Rivers and Lakes

This objective seeks to improve public knowledge about the uses and values of rivers and lakes, but it is not possible to be determined how well this has been achieved. The use of Schedule 30A in the TRMP will have alerted resource consent applicants to the uses and values of waterways relevant to proposed activities. Beyond this, any change in public awareness may be limited.

Implementation of National Instruments

Chapter 27 provisions need to be updated to give effect to two key national planning instruments. The NPS-FM sets clear directives for Council to maintain and improve freshwater quality and in particular to control land uses, including urban development, vegetation removal, and plantation forestry to reduce sediment loads and discharge of contaminants.

In support, the NZCPS requires council to "Provide for the integrated management of natural and physical resources in the coastal environment, and activities that affect the coastal environment". This includes impacts of activities that degrade freshwater quality 'upstream' of the coast, such as point and non-point discharges (e.g. sediment, nutrients and contaminant discharges).

Recommendations

General

Overall, the policy framework in Chapter 27 would be significantly strengthened by giving effect to national directives and to improve integrated management of waterbodies and their margins, including alignment across the district and regional plans.

Key Recommendations for the TRMP's Overall Freshwater Framework

- Give full effect to the national guidance, particularly the National Policy Statement for Freshwater Management and the NZ Coastal Policy Statement.
- Review the TRMP chapters dealing with freshwater so that water quality (Chapter 33) and quantity (Chapter 30) issues, and effects on instream, ecological and other values (Chapters 27 and 8), can be managed in a more integrated way. In doing so, simplify and rationalise the freshwater policies.
- Provide stronger integration between Regional and District Plan chapters to enable more effective management of land use activities that impact upon freshwater bodies, the coast and their margins.
- Ensure the effects of climate change are taken into account in the TRMP's water management provisions, including waterbody resilience to drought and flooding.
- Strengthen the provisions relating to the relationship of Māori with waterbodies (including scope beyond RMA s13, including aquifers and wetlands) and reflect mātauranga Māori in TRMP provisions; include relevant provisions from iwi management and environmental plans, statutory acknowledgments in Treaty settlement legislation, and objectives and policies in the NPS-FM and NZCPS.
- Strengthen the TRMP rules so that they require or incentivise restoration and enhancement of waterbodies through the resource consent process.
- Review and relocate Schedules 30A and 30B to include a full set of uses and values for the District's waterbodies, including wetlands.

Key Recommendations for Chapter 27

- Ensure there is consistency between Chapter 27 issue statements and objectives, and the policies that are intended to implement them.
- Review suitability of section 27.2 objective and policies in collaboration with Te Tau Ihu iwi ('Relationship of Maori with Rivers and Lakes').
- Consider adding an objective that river control activities will seek to maintain or enhance natural river morphology, including the health of aquatic ecosystems and habitats.
- Review the gravel extraction limits set out in Chapter 28 to ensure they avoid over extraction and further bed degradation in these river systems.
- Ensure better integration between Regional and District Plan chapters with respect to dam structural safety, effects of dams on rivers, the benefits of dams for water storage, and provisions relating to water take from dams.
- Clarify the rules for on-stream and off-stream damming of water and water takes from such storage, including linkage between water permits and land use consents.

- Ensure integrated management across the TRMP and especially Chapter 8 for activities that also affect natural character and public access in riparian margins.
- Review the policy-rule framework to ensure the TRMP supports the values protected by water conservation orders.

Specific Objective and Policy Recommendations

The recommendations in Table 1 to Table 77 provide a summarised assessment of the effectiveness and efficiency of the specific Chapter 27 provisions. It considers if there is a need for change in the objective and policy framework and is intended to inform the review of the TRMP. The recommendations are categorised into:

- **Review:** includes partial or whole-scale review of the intent, scope and language used in the provision.
- **Retain (with updates)**: retention of the intent of the provision, but update of the scope and/or language used in the provision.
- **Retain (unchanged)**: retention of the provision largely as is. May include some minor update to language as needed.
- **Remove**: provision is considered unnecessary and should be removed from the policy set. (Note provisions that should be removed from the chapter, but relocated elsewhere in the plan are assigned to the 'review' category).

Figure 1 provides a visual summary of the recommended changes for Chapter 27.

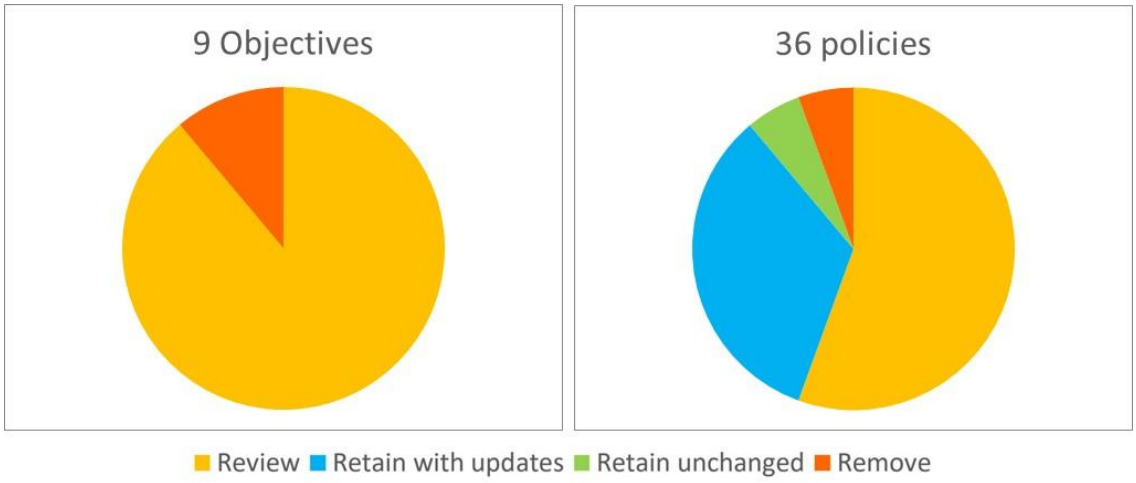

Figure 1: Visual summary of recommended change to provisions in Chapter 27

Table 1: Summary of Provision Specific Recommendations – Adverse Effects on Ecosystems

No.	Objective/Policy	Recommendations
Obj. 27.1.2.1	***The maintenance, restoration and enhancement, where appropriate, of aquatic habitats in the beds of rivers and lakes that is sufficient to:*** ***(a) preserve their life-supporting capacity (including the mauri of the water);*** ***(b) protect their values for native fisheries (including inanga and eels), trout fisheries and wildlife (including indigenous bird species);***	**Review** - amend objective to provide stronger direction, e.g. by removing 'where appropriate'. **Improve** internal consistency to ensure restoration and enhancement can be achieved through the rule framework.

No.	Objective/Policy	Recommendations
	(c) protect or enhance indigenous biodiversity values.	
Obj. 27.1.2.2	***Activities in, on, under, or over the beds of rivers and lakes are carried out in a way that avoids, remedies, or mitigates adverse effects on aquatic ecosystems, including in particular:*** ***(a) aquatic habitats of:*** ***(i) indigenous freshwater fish;*** ***(ii) indigenous birds and other wild life, including river bed nesting habitats;*** ***(iii) trout;*** ***(b) braided and lowland river ecosystems;*** ***(c) fish passage.***	**Review -** amend objective to provide stronger direction, e.g. by removing reference to ARM.
Policy 27.1.3.1	*To avoid, remedy or mitigate adverse effects on aquatic ecosystems of structures and activities in, on, under or over river and lake beds, including adverse effects on:* *(a) fish passage;* *(b) fish habitat, especially that of indigenous species including giant kokopu, whitebait species, eels and including trout;* *(c) fish spawning areas;* *(d) bird habitat, especially indigenous species and during nesting and rearing;* *(e) fish entrainment or stranding;* *(f) invertebrate habitat and spawning areas due to smothering by sedimentation;* *(g) shelter, shade and detrital food source for aquatic life;* *(h) habitat of indigenous aquatic and terrestrial flora and fauna,* *(i) riverbed substrate composition, hydraulics and channel morphology.*	**Review** - retain intent but expand to address ecosystems more widely, e.g. through better integration between activities in the bed of the river and the river margins. **Amend** to provide stronger direction by removing reference to ARM, and rationalize effects list where possible, but retain in policy to show what is trying to be achieved/avoided. **Ensure** consistency with land use rules for structures, e.g. the need to gain consent for bridges.
Policy 27.1.3.2	*To promote and encourage best practice drainage maintenance and development activities on productive land that maintain or enhance the health of aquatic ecosystems while providing for efficient land drainage networks.*	**Review**– retain intent, but reword to make intention clearer. Consider splitting policy (if necessary under NPStds) to cover drainage maintenance occurring within the bed, versus activities on productive land that is not in the bed.
Policy 27.1.3.3	*To maintain fish passage by requiring provision for the passage of fish at any new structure in or on the bed of any lake or river, where appropriate, taking into account criteria (a) to (c) in Policy 27.1.3.4.*	**Retain with updates** – retain intent, but review this policy and consolidate with other policies relating to fish passage. Ensure it captures the need to maintain on-going fish passage over time, taking into account ongoing impacts from storm events that may adversely affect fish passage.

No.	Objective/Policy	Recommendations
Policy 27.1.3.4	*To assess the need to provide for the passage of fish at existing structures when renewing consents or when setting priorities for remedial or enforcement action, by taking into account:* *(a) quantity of habitat upstream of the barrier;* *(b) whether the stream is continuously flowing or ephemeral, and the extent to which the barrier affects fish passage at a range of stream flows;* *(c) significance and quality of the habitat, including presence of threatened species or effects of predator species on indigenous species;* *(d) proximity of barrier to the sea;* *(e) costs associated with any works required to provide fish passage at a site or several sites on the same river and including any likely adverse effects of the retrofit on adjacent landowners and any adverse effects on hydraulic efficiency;* *(f) proximity and effects of other fish barriers, including natural barriers in the same stream;* *(g) whether the structure is still used or the time until any programmed replacement;* *(h) whether there are alternative methods of providing for the passage of fish.*	**Retain with updates** - retain intent, but review this policy and consolidate with other policies relating to fish passage. Ensure it captures the need to maintain on-going fish passage over time, taking into account ongoing impacts from storm events that may adversely affect fish passage.
Policy 27.1.3.5	*To delay the legal effect of the rules regulating culverts, fords and tidal flood gates existing as at 27 February 2010 until five years from the operative date of Part IV and to:* *(a) require resource consents or* *(b) take enforcement action* *for structures that do not provide for fish passage at that time unless:* *(c) the structure has been assessed against Policy 27.1.3.4 as not requiring provision of fish passage or* *(d) a plan is prepared which includes:* *(i) a description of the works required to provide for fish passage;* *(ii) a target completion date for the required work.* *(e) the works have been completed by the specified date.*	**Remove** - or amend as now out of date (Part IV became operative in March 2014).
Policy 27.1.3.6	*To promote and encourage the establishment and management of appropriate vegetation in riparian margins and river and lake beds to:* *(a) protect the bed (including the banks) from erosion and adverse effects of flooding;* *(b) enhance the aquatic ecosystems and habitat for flora and fauna;* *(c) enhance indigenous biodiversity;*	**Retain with updates** – retain and reword to provide stronger direction, e.g. by replacing 'promote and encourage' with 'require'. **Ensure** integrated management of riparian margins across the TRMP and especially Chapter 8. Consider relocating to the section on 'River Bed Stability and Channel Efficiency'.

No.	Objective/Policy	Recommendations
	(d) maintain hydrological regime of the river, including its hydraulic power and energy regime; *(e) maintain efficiency of river channels;* *(f) protect structures in the beds;* *while avoiding, remedying, or mitigating adverse effects of planting and self-sown vegetation in river and lake beds, including effects on:* *(i) the hydrological regime of the river, including its morphology, hydraulic power and energy regime;* *(ii) bed and bank stability;* *(iii) efficiency of river channels;* *(iv) indigenous biodiversity;* *(v) ecosystem health and functioning.*	
Policy 27.1.3.7	*To protect river stability, floodway capacity, morphology and ecosystem functioning from the adverse effects of pests, crack willow and grey willow by:* *(a) replacing willow species in some locations along rivers with more appropriate species;* *(b) adopting measures to manage pests in and along rivers and lakes in river and pest management strategies and plans;* *(c) providing for activities in the beds of rivers and lakes to manage adverse effects of pest species.*	**Retain with updates** – retain and consider including a caveat that removal of vegetation must seek to minimise adverse effects on stream and river habitats and wildlife and/or achieve a net- benefit to ecosystem function. Consider relocating to the section on 'River Bed Stability and Channel Efficiency'.
Policy 27.1.3.8	*To maintain spawning habitat for trout, whitebait species and other native fish.*	**Retain with updates** – retain and consider expanding to provide more information about the types and location of habitat and native fish. Consider adding a requirement to restore and enhance habitat for spawning of indigenous species. Consider rewording so that references to whitebait and native fish come before trout (to emphasise the importance of indigenous species as per RMA s6).
Policy 27.1.3.9	*When considering applications to carry out activities in the beds of rivers and lakes, to have regard to the provisions of plans such as the Eel Management Plan, Nelson Marlborough Conservation Management Strategy, Nelson Marlborough Fish and Game Council Management Plan, and Iwi Environmental Management Plans that promote the sustainable use of water and associated resources.*	**Review** – this is a process policy and ideally the key intent of these plans should be incorporated within the objective and policy framework of the TRMP, providing clear direction to those assessing applications that is consistent with these plans. However, consent staff have said they find external reference to these documents of assistance at times - if retained, update to ensure all relevant plans are included.
Policy 27.1.3.10	*To provide for the use, maintenance and repair of lawfully existing structures in, on or under the beds*	**Retain with updates** - reword to make intent clearer and provide stronger direction, e.g.

No.	Objective/Policy	Recommendations
	of rivers and lakes, except where such structures are causing more than minor adverse effects on the environment that cannot be avoided, remedied or mitigated.	what are the implications of an existing structure causing more than minor effects? Ensure integrated management across the TRMP and especially Chapter 8 for activities that also cross riparian margins.
Policy 27.1.3.11	*To assist and work with landowners and asset managers to assess the need for providing fish passage at culverts, fords and tide-gates and prepare plans that describe the work required and specify an agreed target date for completion of required works that takes into account:* *(a) where the significance, quality and quantity of the fish habitat upstream of the barrier make the work a priority, and including barriers within 10 kilometres of the coast as an initial priority,* *(b) the costs of the retrofit, including adverse effects of removal of the barrier, adverse effects on the hydraulic efficiency of the structure and financial costs for the owner of the structure.*	**Review** - retain intent, but review this policy and consolidate with other policies relating to fish passage. Ensure it captures the need to maintain on-going fish passage over time, taking into account ongoing impacts from storm events that may adversely affect fish passage.
Related District Plan Provision		
Policy 6.1.3.3	*To ensure the establishment of riparian planting along urban waterways to maintain and enhance water quality and natural habitats, improve indigenous biodiversity of the catchment, and reduce stream bank erosion while providing access for channel maintenance.*	**Retain with updates** - retain and review alongside other chapters addressing riparian management, to ensure integrated management across the TRMP, especially Chapter 8. Incorporate consideration of hydro-geomorphology improvement for bank and bed management. This policy is likely to increase in importance with the requirements under the proposed NPS for Indigenous Biodiversity.

Table 2: Summary of Provision Specific Recommendations – Relationship of Maori with Rivers and Lakes

No.	Objective/Policy	Recommendations
Obj. 27.2.2	***Retention or enhancement of the traditional values held by Māori under tikanga for rivers and lakes and their margins, including the mauri (or life-supporting capacity) and the wairua (or spiritual value) of rivers and lakes.***	**Review** suitability of objective and policies in collaboration with Te Tau Ihu iwi. **Ensure** values such as wairua and mauri are encapsulated in rules, and provide opportunities to implement matauranga Māori. **Expand** scope to include all waterbody types and consider relocation if needed under the NPStds.
Policy 27.2.3.1	*To avoid, remedy or mitigate adverse effects on the mauri and the wairua of the river or lake arising from the effects of structures and other activities in, on, under or over river and lake beds.*	

No.	Objective/Policy	Recommendations
Policy 27.2.3.2	*To ensure activities and structures in, on, under or over the beds of rivers and lakes avoid, remedy or mitigate adverse effects on cultural heritage sites, including wāhi tapu and wāhi taonga.*	**Ensure** integrated management across the TRMP and especially Chapter 8 for activities that also affect riparian margins. **Provide** greater direction on activities or effects to be avoided and remove the use of ARM. **Update** Schedule 30A and 30B (or alternative values provision) to encapsulate all uses and values of importance to Te Tau Ihu iwi.

Table 3: Summary of Provision Specific Recommendations – River Bed Stability and Channel Efficiency

No.	Objective/Policy	Recommendations
Obj. 27.3.2.1	***The stability of river beds and the efficiency of rivers to carry floodwaters and sediment are maintained.***	**Review** - review wording to ensure the objective encapsulates the important goals of river management with respect to activities in the beds of rivers, i.e. is it solely about stability and transport of flood waters? **Ensure** consistency with Te Mana o te Wai, particularly the need to maintain the natural form and character of waterbodies and their resilience to change, including consideration of potential climate change effects on flow extremes.
Obj. 27.3.2.2	***Activities in river beds, including construction of structures, are carried out in a way that avoids, remedies, or mitigates adverse effects on the stability of river beds and efficiency of rivers to carry flood waters and sediment.***	**Review** - retain intent, but reword to provide greater direction, e.g. by removing reference to ARM. Reword to incorporate protection of natural processes, as well as stability. Consider adding an objective that river control activities will seek to maintain or enhance natural river morphology, including the health of aquatic ecosystems and habitats.
Policy 27.3.3.1	*To avoid, remedy, or mitigate adverse effects on riverbed and bank stability and flood-carrying capacity of activities in, on, under, or over river and lake beds and including:* *(a) effects on existing structures and lawfully authorised activities;* *(b) reduced effectiveness of structures, particularly flood mitigation works;* *(c) impacts on groundwater recharge patterns and connected spring and wetland systems;* *(d) reduced ability of the river system to transport gravel;* *(e) increased risk of flooding and coastal erosion.*	**Review** – retain intent, but reword to provide greater direction, e.g. by removing reference to ARM.

No.	Objective/Policy	Recommendations
Policy 27.3.3.2	*To provide for the carrying out of activities which enhance river bed and bank stability and flood-carrying efficiency of river channels while avoiding, remedying or mitigating adverse effects, including from noise and dust, on river uses and values, and including those identified in Schedule 30A.*	**Review -** retain intent, but reword to provide greater direction, e.g. by removing reference to ARM.
Policy 27.3.3.3	*To establish sustainable gravel extraction limits for specified reaches or networks of rivers by taking into account:* *(a) gravel entering and leaving the reach or network;* *(b) rate of movement of gravel through the system and pattern of gravel storage;* *(c) the need to avoid destabilisation of beds and banks;* *(d) the need to avoid adverse effects on channel morphology;* *(e) the need to avoid exacerbation of natural hazards, including the requirement to maintain flood carrying capacity;* *(f) the natural flow regime of the river;* *(g) linkages to groundwater recharge, and the need to maintain and enhance groundwater supplies, including aquifers and connected spring and wetland systems;* *(h) linkages to coastal processes, and the need to avoid coastal erosion.*	**Review** – retain and consider rewording to provide stronger direction, e.g. by replacing 'sustainable gravel extraction limits' with 'avoid over extraction of gravel". **Ensure** consistency with Te Mana O Te Wai. Add reference to the need to avoid or minimise significant adverse effects on river ecology, particularly areas with high ecological values. **Review** the gravel extraction limits set out in Chapter 28 to ensure they avoid over extraction. Consider removal of process aspects and amalgamation with policy 27.3.3.4.
Policy 27.3.3.4	*To take into account the variability in river gravel movement from year to year so that the total extraction over time does not exceed a stated long term running mean calculated over 10 years, while allowing for extraction:* *(a) to avoid or mitigate adverse effects arising from extreme events, including landslips or erosion into a river;* *(b) where gravel from a tributary is unlikely to reach the main river;* *(c) where a barrier prevents gravel from moving down the main river.*	**Retain with updates** - review to ensure the policy wording is appropriate for avoiding over extraction of gravel, e.g. the long term running mean calculated over 10 years. Clarify the linkage between this policy and policy 27.3.3.3 – ie is the sustainable gravel extract limit to be expressed as the 10 year running mean?
Policy 27.3.3.5	*When considering an application to extract gravel from a river or reach where there are no sustainable gravel extraction limits, to take into account matters (a) to (h) in Policy 27.3.3.3 and to issue resource consents with a duration that is consistent with the Annual Operation and Maintenance Programme for the Rivers Activity Management Plan.*	**Retain with updates** - amend in accordance with any changes to Policy 27.3.3.3 and 27.3.3.4. Amend to provide direction on appropriate activity status when there is no sustainable limit (eg To assess applications to extract gravel where there is no sustainable gravel extraction limits as discretionary activities, taking into account (a-h) and to issue […]). Review linkage with Rivers Activity Management Plan.

No.	Objective/Policy	Recommendations
Policy 27.3.3.6	*To ensure that priority for the extraction of gravel is given to:* *(a) protection of the channel from erosion or instability;* *(b) maintaining efficient movement of flood waters and sediment down the channel;* *(c) preventing or mitigating adverse effects of flooding;* *as determined in any river works programme prepared under the Soil Conservation and Rivers Control Act.* *Note: Any river works programme prepared under the Soil Conservation and Rivers Control Act is specified in the Council's Rivers Activity Management Plan and the Annual Operation and Maintenance Programme.*	**Review** clarify intent of prioritisation (i.e. priority of river management over other gravel extraction purposes) and ensure consistency with Te Mana O Te Wai. Consider amalgamation with policy 27.3.3.4 and review linkage with Rivers Activity Management Plan.
Policy 27.3.3.7	*Recognising that the Waimea, Motueka, and Takaka river systems are showing a long-term bed degradation trend, to avoid aggravating bed degradation in these catchments when:* *(a) establishing gravel extraction limits;* *(b) regulating the extraction of gravel;* *(c) maintaining channel capacity at a reach level.*	**Review** - reword for clarity and consider removing or amending the process-oriented wording in (a) – (c). Review the gravel extraction limits set out in Chapter 28 to ensure they avoid over extraction and further bed degradation in these river systems. (Note river specific policies and limits will likely be relocated to their respective Freshwater Management Unit chapters under the NPStds.)
Policy 27.3.3.8	*To investigate and monitor river bed topography and morphology, including the volume of gravel stored within and moving through the river bed system, particularly in rivers known to have degrading beds.*	**Retain with updates** - reword so that it reads as a policy rather than a method; the policy is used by consent staff to enable a condition of consent requiring monitoring. Consider amalgamating with Policy 27.3.3.9.
Policy 27.3.3.9	*To investigate and monitor the impact of changes in river bed levels and substrate composition on:* *(a) levels, volumes and flows of water in rivers, aquifers and springs;* *(b) other uses and values.*	**Retain with updates** - reword so that it reads as a policy rather than a method; the policy is used by consent staff to enable a condition of consent requiring monitoring. Consider amalgamating with Policy 27.3.3.8.
Policy 27.3.3.10	*To allow for disturbances in the beds of rivers and lakes following extreme events to:* *(a) prevent or remedy damage caused by erosion or undermining existing structures or beds or banks of rivers caused by floods or extreme events;* *(b) to remove or relocate debris and bed material that is likely to cause damage to existing structures or undermine bank stability or cause an increased risk of significant flooding;* *(c) to repair existing bank protection or erosion control works.*	**Retain**, as useful for undertaking restorative activities following extreme events. Consider including a requirement to reinstate the bed and margins to a similar (or improved) state as that prior to the event, to ensure protection or enhancement of ecological values.

No.	Objective/Policy	Recommendations
Policy 27.3.3.11	*To promote, encourage or require activities in and alongside rivers, that are carried out to enhance riverbed and bank stability and flood-carrying efficiency of river channels, to be performed in accordance with best management practice which takes into account the:* *(a) risks of not carrying out the work, and* *(b) costs of the proposed works, and* *(c) nature, extent and duration of potential adverse effects and measures to avoid, remedy or mitigate them.*	**Retain with updates** - retain as supports Policy 27.3.3.10 above. **Ensure** integrated management across the TRMP and especially Chapter 8 for activities that occur in riparian margins. **Incorporate** reference to protection or enhancement of ecological values and ensure consistency with Te Mana O Te Wai.
Policy 27.3.3.12	*When reviewing or renewing resource consents or where making decisions about the need for enforcement action, to require the removal of redundant structures in the beds of rivers or lakes where they cause or are likely to cause significant adverse effects on:* *(a) passage of fish* *(b) flood flows,* *(c) bed or bank stability,* *(d) the movement of gravel,* *(e) safe navigation,* *(f) amenity* *taking into account costs of the required works and alternatives to remedy or mitigate the adverse effects.*	**Retain**, as especially useful for compliance.

Table 4: Summary of Provision Specific Recommendations – Impacts on Water Quality

No.	Objective/Policy	Recommendations
Obj. 27.4.2	***Maintenance of water quality and enhancement of water quality where existing quality is degraded for natural and human uses and values, including iwi wairua values, through the carrying out of activities in the beds of rivers and lakes.***	**Review** in accordance with the NPS-FM and freshwater package.
Policy 27.4.3.1	*To avoid, remedy or mitigate adverse effects on river uses and values from degraded water quality resulting from sediment, disease-causing organisms and nutrients, including ammonia from activities in, on, under or over river and lake beds including:* *(a) vehicle and stock crossings;* *(b) gravel extraction or relocation;* *(c) alluvial mining or prospecting;* *(d) river maintenance works.*	**Review** – retain intent, but reword to provide greater direction, e.g. by removing reference to ARM. Include reference to lake uses and values and review list of activities to be considered. **Ensure** the permitted activity rules relating to these activities enable achievement of this policy, and do not lead to adverse effects on water quality, including cumulative effects.
Policy 27.4.3.2	*To require and promote sustainable stock management practices that avoid, remedy or*	**Review** - amend to provide a clearer statement about avoiding / preventing stock

No.	Objective/Policy	Recommendations
	mitigate adverse effects on water quality from stock access to water bodies, including through the use of farm quality programmes, industry accords and other industry sector-based quality assurance programmes.	access to water bodies, as monitoring shows this is causing water quality issues particularly in smaller streams. Consider relocating to a more relevant TRMP chapter, e.g. contaminant discharges.
Policy 27.4.3.3	*To encourage and support industry, landowner and other initiatives that promote sustainable use of water and land.*	**Retain with updates** – retain intent, but reword to provide greater direction and relevance to Chapter 27 issues, and to enable enhancement and restoration through the resource consent process.

Table 5: Summary of Provision Specific Recommendations – Hazards

No.	Objective/Policy	Recommendations
Obj. 27.5.2	***The adverse effects of dam structures on river functioning are avoided, remedied or mitigated and the hazards created by risks of dam failure on communities and ecosystems are avoided or mitigated.***	**Review** - relocate this section to a more relevant part of the TRMP, as dam failure is not solely related to beds of rivers. Review the dam policies to ensure the hazard risk and ecological effects of dams stacked up on a river system is adequately addressed. Separate into two objectives – one on dam/damming effects on river function, and the other on dam failure (and separate associated policies). Ensure better integration between Regional and District Plan chapters with respect to dam structural safety, effects of dams on rivers, the benefits of dams for water storage, and provisions relating to water take from dams.
Policy 27.5.3.1	*To identify, manage and reduce the risk of hazards from failure or overtopping of dams in river beds.*	**Review** - relocate (as above) and remove reference to 'in river beds'.
Policy 27.5.3.2	*To avoid, remedy or mitigate adverse effects of dam structures on the uses and values of rivers, including those identified in Schedule 30A.*	**Review** - retain and relocate to another section in Chapter 27, as this is the only dam policy dealing with effects on rivers. **Reword** to provide greater direction, e.g. by removing reference to ARM.
Policy 27.5.3.3	*To ensure that potential adverse effects such as structural safety risks of existing dams are effectively managed by:* *(a) enforcing applicable conditions on relevant water permits to dam water; and* *(b) requiring land use consent for the ongoing presence of the structure on expiry of the relevant water permit; or* *(c) requiring a land use consent to authorise the structure where there are no conditions on any*	**Review -** relocate (as above) and reword to clarify the intent of this policy. **Ensure** better integration between Regional and District Plan chapters (as above). **Clarify** the linkage between water permits and land use consents needed for on-stream and off-stream dams.

No.	Objective/Policy	Recommendations
	relevant water permit that manage structural safety risk.	
Policy 27.5.3.4	*To take into account risks of dam failure or overtopping on potential buildings and structures when considering applications for subdivision.*	**Review** - relocate (as above) and reword to clarify the intent of this policy.

Table 6: Summary of Provision Specific Recommendations – Natural Character, Landscape, Cultural, Recreation and Amenity Values

No.	Objective/Policy	Recommendations
Obj. 27.6.2	***The maintenance and, where appropriate, the enhancement of:*** ***(a) the natural character, amenity, recreational and cultural values and*** ***(b) public access to rivers and lakes;*** ***as a result of activities in the beds and on the surface of rivers and lakes.***	**Review -** consider separating this objective into multiple objectives, as it covers a number of significant matters, and ensure policies (below) clearly relate to specific objectives Ensure integrated management across the TRMP and especially Chapter 8 for activities that also affect natural character and public access in riparian margins.
Policy 27.6.3.1	*To avoid, remedy or mitigate adverse effects of structures and activities in, on, under or over river and lake beds or on the surface of rivers and lakes on:* *(a) natural character;* *(b) landscape values;* *(c) amenity, cultural and social values, including recreational values such as whitebait fishing, trout fishing, game bird hunting, swimming, and other surface water activities, including canoeing and kayaking;* *and including adverse effects arising from noise and congestion in or on rivers or at access points arising from commercial (motorised) activities, and to maintain or enhance, where appropriate, public access to rivers and lakes.*	**Review** – retain intent and review alongside other chapters addressing the natural character and landscape values of waterways, especially Chapter 8. Consider splitting the policy into multiple policies in order to more fully address the matters raised, e.g. (c) could be broken down into more discrete actions relating to amenity, cultural and social values, as could the last paragraph addressing noise, congestion, and public access. **Reword** the polic(ies) to provide clarity over what is intended and to give stronger direction, e.g. by removing reference to ARM. Consider relocating the polic(ies) to the following section on Uses and Values of Rivers and Lakes. **Review** the references to specific values and uses in the context of the NPS-FM.
Policy 27.6.3.2	*To recognise and protect the cultural, amenity and aquatic habitat values of Te Waikoropupu Springs in a way that is consistent with the management plan prepared for the Springs under the Reserves Act 1977.*	**Review** – retain intent and update to include Outstanding Freshwater Body status under the NPS-FM. Consider expanding this policy or developing separate policies to cover all water conservation orders. **Review** the policy-rule framework to ensure the TRMP supports the values protected by water conservation orders.

Table 7: Summary of Provision Specific Recommendations – Uses and Values of Rivers and Lakes

No.	Objective/Policy	Recommendations
Obj. 27.7.2	***Increased and improved public knowledge of all uses and values of rivers and lakes and their margins through the development of Council systems to collect, store, evaluate and make available such information.***	**Remove** as this is a method not a policy; more suited for inclusion in 27.1.20.2 'Education and Advocacy'.
Policy 27.7.3.1	*When assessing applications to carry out activities in the beds of rivers and lakes to:* *(a) take into account the uses and values of a river or lake stated in Schedule 30A;* *(b) take into account other likely uses and values of the water body and their potential significance that have not been stated in the Schedule;* *(c) adopt a precautionary approach in avoiding, remedying, or mitigating potential adverse effects if there is no significance assessment of stated values, and in particular, any natural character values and the significant habitat value of indigenous fauna.*	**Review** – retain intent and clarify the relationship of this policy with revised content in Schedule 30A and B (or its replacement). **Relocate** to a more appropriate objective-policy set, including consideration of a new objective focused on values of water within the context of the NPS-FM.
Policy 27.7.3.2	*To continue to collect information about actual and potential uses and values of rivers and lakes and their significance and use this information to develop Schedule 30A and to support appropriate management objectives and methods for rivers and lakes and their margins, especially for water bodies that:* *(a) have regional or national significance;* *(b) may have competing uses and values.*	**Remove** as this is a method not a policy; more suited for inclusion in 27.1.20.3 'Monitoring and Investigations'. It is anticipated that the TEP review process will include further development of the values of water in the plan.

1. Purpose Statement

The purpose of this evaluation of the TRMP is to determine the effectiveness and efficiency of the provisions contained within it. It helps us understand if the TRMP provisions are doing what they're meant to do.

This evaluation process is a fundamental step in the policy review cycle and a requirement of the Resource Management Act. It informs good quality plan-making and helps maintain confidence and integrity in the process.

The results of this evaluation will inform the review of the Tasman Resource Management Plan.

What do the terms mean?

Effectiveness: "*assess the contribution ... provisions make towards achieving the objectives and how sucessful they are likely to be in solving the problem they were designed to address"*

Efficiency: *"measures whether the provisions will be likely to achieve the objectives at the lowest total cost to all members of society, or achieves the highest net benefit to all of the society"*

(Ministry for the Environment s.32 Guidance)

Key Evaluation Questions

What we need to keep in mind:

- ✓ Are we focused on the right issues?
- ✓ Have we done what we said we'd do?
- ✓ Have we achieved what we said we'd achieve?
- ✓ How do we know our actions led to the outcome observed?
- ✓ Have we achieved that outcome at reasonable cost (could we have achieved it more cheaply)? (Enfocus, 2008)

2. Scope

2.1 Regional Plan Provisions Reviewed

Part 4 of the TRMP applies to all activities carried out in the beds of rivers and lakes and on the surface of the water. It is comprised of two chapters:

- Chapter 27 deals with the issues surrounding the use of river and lake beds and the surface of the waters, and contains the objectives, policies and methods for managing the adverse effects of activities.
- Chapter 28 states the land use rules applying to activities carried out in the bed and on the surface of rivers and lakes.

Control of activities in the beds of waterbodies is a regional authority function (RMA Sec 30). Control of activities on the surface of lakes and river beds is a district authority function (RMA Sec 31).

The bed of a river includes the banks and is described in the Resource Management Act as the space of land which the waters of the river cover at its fullest flow without overtopping its banks. A lake bed means the space of land which the waters of the lake cover at its highest level without exceeding its margin.

Chapter 27 addresses seven broad issues:

- **Adverse Effects on Ecosystems:** Activities that can impact upon a range of aquatic and terrestrial habitats, breeding and spawning areas, fish passage, bird nesting and rearing, mauri and wairua.
- **The Relationship of Māori and their Culture and Traditions with Rivers and Lakes:** Recognition of the significance of water and water bodies to tangata whenua, and control of activities that can cause damage to rivers or lakes and loss of customary take.
- **River Bed Stability and Channel Efficiency**: Activities in the beds of rivers can aggravate erosion or degradation of the bed or banks, undermine river protection work, alter river or flood flows or destabilise the river.
- **Impacts on Water Quality:** Stock and vehicle access to beds of rivers and lakes can discharge fine sediment from bed disturbance, damage or destroy aquatic habitat in or along the river, or adversely affect bank or bed stability, depending on the frequency and intensity of the activity. Stock effluent can also enter waterways from crossings and general access.
- **Hazards:** Risks from hazards on human life, property or other aspects of the environment with regard to lake and river beds, including earthquake, erosion, subsidence (of banks), sedimentation and flooding, and more extreme events and sea level rise due to climate change.
- **Natural Character, Landscape, Cultural, Recreational and Amenity Values:** Activities carried out in, on, under or over the beds of rivers and lakes, including on the surface that can impact on the natural character of rivers and lakes, landscape, amenity, recreational and cultural values, including heritage and wairua values.
- **Uses and Values of Rivers and Lakes:** Schedule 30A 'Uses and Values of Rivers, Lakes, Wetlands, Aquifers and Coastal Waters' is incomplete and limited to identifying the

significant values that may be affected by water quantity (flow or level of water). It needs more transparent criteria to help in establishing the significance of the various water body uses and values. Schedule 30B (water quality) is also incomplete and not referenced within Chapter 27.

Nine objectives and 36 policies have been adopted in addressing the chapter issues, as shown in Table 8 below. There is also a related policy in Chapter 6 of the TRMP, which is shown red in the table. This provision has been assessed alongside the Chapter 27 regional plan provisions.

Table 8: Scope of the Evaluation

Chapter 27	Objective	Policies
27.1 Adverse Effects on Ecosystems	27.1.2.1 & 27.1.2.2	27.1.3.1 – 27.1.3.11 6.1.3.3
27.2 The Relationship of Māori and their Culture and Traditions with Rivers and Lakes	27.2.2	27.2.3.1 – 27.2.3.2
27.3 River Bed Stability and Channel Efficiency	27.3.2.1 – 27.3.2.2	27.3.3.1 - 27.3.3.12
27.4 Impacts on Water Quality	27.4.2	27.4.3.1 – 27.4.3.3
27.5 Hazards	27.5.2	27.5.3.1 – 27.5.3.4
27.6 Natural Character, Landscape, Cultural, Recreational and Amenity Values	27.6.2	27.6.3.1 & 27.6.3.2
27.7 Uses and Values of Rivers and Lakes	27.7.2	27.7.3.1 – 27.7.3.2

Each issue topic has one objective, except 'Adverse Effects on Ecosystems' and 'River Bed Stability and Channel Efficiency', which have two, and from two to 12 related policies. The majority of the policies in the chapter apply to 'Adverse Effects on Ecosystems' and 'River Bed Stability and Channel Efficiency' (23 in total).

Regulatory methods adopted to implement the policies include:

- **TRMP rules** that: (a) establish thresholds for activities that may be permitted or regulated, and to establish limits on the nature and scale of adverse effects; (b) control the impacts of activities on Māori values, including cultural heritage sites adjacent to river and lake beds; (c) relate to the management of gravel and activities in the beds of rivers and lakes; (d) relate to the construction of dams and development below existing dams; and (e) address the need to take into account the adverse effects of activities on identified water body uses and values.

In support, a number of **non-regulatory methods** are provided for:

- **Education and advocacy**, including provision of information about ecosystem values and methods to avoid, remedy or mitigate impacts of activities on ecosystems, promoting good stream management practices that help avoid or mitigate damage from bed and bank erosion, and developing best practice guides to help resource users make sustainable decisions.
- **Works and services**, including co-ordinated and sustainable management of the District's rivers through the Rivers Activity Management Plan.
- **Monitoring and investigation** of bed levels, pattern of river protection works over time and the movement of gravel within river systems, the connection between river bed levels and adjacent groundwater levels and spring flows, the effects of stock on river and lake beds, the values and uses of rivers and lakes, and measures adopted to improve aquatic habitat and provide fish passage.

- Investigation, in collaboration with iwi, to identify all significant cultural heritage sites, including wāhi tapu, wāhi tapu areas, and wāhi taonga within or close to river and lake beds

The **environmental outcomes** sought from implementation of the chapter rules and methods are:

1. The habitat of indigenous aquatic fauna and flora is protected and indigenous biodiversity of aquatic habitats is maintained or enhanced.
2. The habitat of trout and whitebait is protected.
3. Fish passage in lakes and rivers is not inhibited by existing or new structures.
4. Physical changes to aquatic habitat in the beds of rivers and lakes caused by bed disturbance are minimised.
5. Activities which alter the existing nature of natural physical processes do not exacerbate natural hazard risks or threaten the integrity of structures or efficient floodway management.
6. Gravel extraction occurs within a sustainable yield.
7. People and communities are protected from the adverse effects of flooding.
8. The stability of the bed and banks and the water quality of rivers and lakes is not adversely affected by the disturbance of the bed or banks, including by vehicles or stock.
9. The unavoidable adverse effects of inundation resulting from the damming of water are remedied or mitigated.
10. Potential adverse effects arising from overtopping or failure of a dam structure are avoided or remedied.
11. Conflicts between users of the beds or surface of rivers and lakes are minimised.
12. The mauri and wairua of rivers and lakes are not adversely affected by structures and activities on the beds or margins of lakes or rivers.

2.2 Timeframe of Evaluation

The evaluation was conducted from July 2019 to June 2020.

2.3 Summary of Methodology

Broadly, the methodology of this evaluation follows the Plan Outcomes Evaluation process. Plan Outcome Evaluation involves:

1. An examination of the outcomes being sought – what are the objectives trying to achieve?
2. Tracking how the plan has been designed to affect the outcomes – do the intentions in the objectives get carried through to the rules and methods? Are the provisions efficient?
3. Assessing if the provisions have been implemented – what evidence is there that the provisions are being applied to relevant activities?
4. Assessing relevant environmental trends and 'on the ground' data to conclude if the Plan has been successful in achieving its intentions. This includes consideration of the external factor

influences such as legislative changes, national policy statements, case law, significant economic changes, demographics etc.

Throughout the evaluation, there is an emphasis on attributing the activities enabled or controlled by the TRMP to observed outcomes. However, attributing outcomes to the TRMP must always be viewed in the wider context of changes. These are noted where known, but it is beyond the scope of this evaluation to capture all of the changes and influences that affect outcomes in our communities and environment.

Limitations with the Plan Outcome Evaluation approach also arise where environmental outcome data is poor, or where there are multiple factors driving outcomes. Time, resourcing and quality of data also affects the comprehensiveness of the evaluation.

To address some of these limitations, the evaluation process has included a 'rapid assessment' technique. The technique draws on the combined knowledge and expertise of local TDC staff, residents, community leaders, and topic experts to create an understanding of plan implementation, efficiency and outcomes. The rapid assessment outputs are supplemented with:

- environmental data or expert reports where available
- Council data (e.g. water quality information, flow monitoring data, consenting and compliance database information, models, monitoring reports required by consent condition)
- mapping and imagery (e.g. GIS, aerial imagery, LiDAR)
- information or reports prepared during plan change processes (e.g. section 32 Reports, Issues and Options papers, technical reports, submissions, community meetings)

The data sources that have been used for evaluating Chapter 27 are shown in Table 9 below:

Table 9: Information Sources Used in Evaluation

Data source/s	Details and Notes
Rapid Assessment	• Meeting with policy staff on 22nd November 2019 • Meeting with monitoring staff on 6th December 2019 • Workshop with council staff on 13th December 2019 • Meeting with consent staff on 18th February 2020
Councillor input	• Workshop was undertaken on the 8th July 2020
External reports	• Legal report for s35 review, Tasman Law, June 2019 • Iwi management plans • Gibbs & Woodward. 2018. *Waimea and Moutere Sediment Sources by Land Use* • Ministry for the Environment & Stats NZ (2020). *New Zealand's Environmental Reporting Series: Our freshwater 2020* • Ministry for the Environment. 2017. *A Guide to the National Policy Statement for Freshwater Management 2014 (as amended 2017)* • Ministry for Primary Industries. 2018. *Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017: User Guide* • MfE & MPI. 2017. *National Environmental Standards for Plantation Forestry: Overview of the Regulations* • Newcombe *et al*. 2015. *Assessing the State of the Marine Environment in Tasman Bay and Golden Bay* • Schallenberg, M. 2011. *Ecological Values and Condition of the Kaihoka Lakes and Lake Otuhie, Northwest Nelson*
Council reports	• TRMP Policy Mapping (Leusink-Sladen, 2019)

	• James, T. & McCallum, J. 2015. *State of the Environment Report: River Water Quality in Tasman District 2015* • Leathwick, J. (2019) *Indigenous Biodiversity Rankings for the Tasman Region Report* • McCallum, J. & James, T. 2018. *The Health of Freshwater Fish Communities in Tasman District 2018* • Tasman District Council. 2019. *Tasman Regional Policy Statement and Resource Management Plan biodiversity provisions in context of the upcoming plan reviews* • Stage 2 of TRPS Efficiency and Effectiveness Review: Statutory Obligations (Mason, 2019)
Council records (MagicBR/NCS/databases)	MagiQ BI – Resource consents data

2.4 Summary of Consultation

The following consultation has been undertaken during the preparation of this evaluation.

2.4.1 Tasman District Councillors

A workshop with elected Councillors was held on 8th July 2020 discussing key issues and recommendations identified for this chapter and other related freshwater chapters.

No additional issues were raised by Councillors at this workshop. However, Councillor feedback noted that for issues where there were environmental concerns, there is typically a community need driving the activity creating the concern, and that these drivers should also be identified (for example, the need for quality aggregate and the concerns over sustainable gravel extraction limits). The report has been reviewed to reflect this feedback.

2.4.2 Tasman Environmental Policy Iwi Working Group

The iwi of Te Tau Ihu, as tāngata whenua, have a unique relationship with Tasman District Council. There are a number of legislative requirements which oblige us to engage more collaboratively with iwi and Māori - including provisions in the Resource Management Act, Local Government Act and Treaty of Waitangi settlement legislation. To support this a separate section 35 report with a focus on iwi/Māori provisions has been prepared. Please refer to that report for a record of consultation undertaken.

3. Effectiveness and Efficiency Evaluation

3.1 Context

The primary legislation affecting Chapter 27 is the Resource Management Act (RMA). The purpose of this Act is to promote the sustainable management of natural and physical resources (s5, RMA). Several matters of national importance under the RMA (set out in s6), which all councils must 'recognise and provide for', relate directly to the issues addressed in the chapter:

- *s6(a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development.*
- *s6(c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.*
- *s6(d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers.*
- *s6(e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga.*
- *(f) the protection of historic heritage from inappropriate subdivision, use, and development.*
- *(g) the protection of protected customary rights.*

In support, the council must 'have particular regard to' several relevant matters in s7 of the RMA:

- *s7(a) kaitiakitanga.*
- *s7(c) the maintenance and enhancement of amenity values.*
- *s7(d) intrinsic values of ecosystems.*
- *s7(f) maintenance and enhancement of the quality of the environment.*
- *s7(h) the protection of the habitat of trout and salmon.*
- *s7(i) the effects of climate change.*
- *s7(j) the benefits to be derived from the use and development of renewable energy.*

3.1.1 Legislation Changes

RMA Amendment 2003: Indigenous Biodiversity

New s30(1)(c)(iiia) added a function for regional councils to control the use of land for the purpose of: "the maintenance and enhancement of ecosystems in water bodies and coastal water".

New s31(1)(ga) added a further function for regional councils regarding "the establishment, implementation, and review of objectives, policies, and methods for maintaining indigenous biological diversity".

A definition for biological diversity was added: "the variability among living organisms, and the ecological complexes of which they are a part, including diversity within species, between species, and of ecosystems".

A recent TDC report on biodiversity provides a stocktake of the TRMP provisions for biodiversity.[1] It concludes that TRMP umbrella provisions for biodiversity are no longer fit for purpose and need to be re-developed in response to the proposed changes in national context:

> *It is recommended that the TRMP is amended to provide for biodiversity as a core function in its own right with linking objectives and policies across the terrestrial, freshwater and coastal marine domains. More specifically:*
>
> - *The TRMP is restructured to comply with the National Planning Standards by including a distinct section or chapter on "ecosystems and indigenous biodiversity".*
> - *Systematic 'connector' biodiversity objectives or policies are inserted in other sections or chapters of the Plans that contain provisions relevant to biodiversity.*

RMA Amendment 2003: Historic Heritage Protection

The Resource Management Amendment Act 2003 elevated the status of historic heritage protection to a matter of national importance; new s6(f) requires councils to 'recognise and provide for' "*the protection of historic heritage from inappropriate subdivision, use, and development*" (as opposed to the previous s7 requirement to "have particular regard").

A comprehensive definition for historic heritage was also added, which includes heritage qualities (e.g. architectural, cultural), as well as specific types of heritage (e.g. archaeological sites, wāhi tapu). The inclusion of 'surroundings' means that TDC needs to consider the broader environment within which historic heritage resources are located.

Given the concentration of historic heritage along or near rivers, lakes and other water bodies (especially sites of significance to Māori and archaeological sites), this RMA amendment is likely to require identification of a greater number and range of heritage resources and stronger provisions to secure their protection.

3.1.2 National Directives

National Policy Statements (NPS) are instruments issued under the RMA. They state objectives and policies for matters of national significance, which the TRMP is required to 'give effect to' (i.e. implement).

National Environment Standards (NES) are regulations issued under the RMA. They prescribe standards for environmental matters, which must be enforced by councils, although in some circumstances councils can impose stricter or more lenient standards where specified by an NES.

National Policy Statement on Freshwater Management 2014 (amended 2017) and the Proposed National Environmental Standard for Freshwater Management

The NPS-FM prioritises the health and well-being of water bodies as the ultimate goal in freshwater management ('Te Mana o Te Wai'). It recognises that the ability of water to provide for human needs (health, economic development) is dependent upon it being healthy. This requires consideration of water quality, water flows/levels and habitat elements.

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[1] Tasman District Council. 2019. *Tasman Regional Policy Statement and Resource Management Plan biodiversity provisions in context of the upcoming plan reviews*.

The NPS-FM requires TDC to manage freshwater through identified 'freshwater management units' (currently called Water Management Areas in the TRMP that are split further into Water Management Zones) and establish freshwater objectives and set water quality and quantity limits for all freshwater management units in the District. In doing so, the Council must have regard to (amongst other relevant matters): the reasonably foreseeable impacts of climate change; the connection between water bodies; and the connections between freshwater bodies and coastal water. Methods (including rules) to avoid over-allocation (of both quantity and quality) must be established to ensure the objectives are achieved.

The NPS-FM also seeks to improve integrated management of fresh water and the use and development of land in whole catchments, including the interactions between fresh water, land, associated ecosystems and the coastal environment. Every regional council is required to recognise the interactions between fresh water, land, associated ecosystems and the coastal environment ki uta ki tai (from the mountains to the sea). The NPS-FM also directs regional councils to manage fresh water and land use development in whole catchments in an integrated way.

The NPS-FM 2014 (updated 2017) requires provisions in the TRMP that:[2]

- 'Consider and recognise'[3] Te Mana o Te Wai, including the connection between the health of water, the broader environment, and people.
- Engage with iwi and hapū, and the wider community to consider and recognise Te Mana o te Wai in decision making for freshwater.
- Safeguard freshwater's life-supporting capacity, ecosystem processes and indigenous species, and protect the significant values of wetlands and outstanding freshwater bodies.
- Safeguard the health of people who come into contact with the water and improve water quality so it is suitable for primary contact more often.
- Establish freshwater management units (FMU) covering all waterbodies in the District; establish freshwater objectives and set freshwater quantity and quality limits for all FMUs, and maintain or improve the overall quality of fresh water within a FMU.
- Follow a specific process (the national objectives framework) for identifying the values that tangata whenua and communities have for water.
- Set limits on resource use (e.g. how much water can be taken or how much of a contaminant can be discharged) to meet limits over time and ensure they continue to be met.
- Establish and operate a freshwater accounting system to improve information on freshwater takes and sources of freshwater contaminants.

Proposed 2020 amendments to the NPS-FM are likely to strengthen requirements further, with policies that require freshwater management to give effect to Te Mana O Te Wai.

NZ Coastal Policy Statement 2010 (NZCPS)

The NZCPS sets out general objectives and policies for the sustainable management of New Zealand's coastal environment. The TRMP was notified prior to the current NZCPS and for that reason only partially gives effect to its objectives and policies.

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2 For the full text of the NPS-FM see https://www.mfe.govt.nz/publications/fresh-water/national-policy-statement-freshwater-management-2014-amended-2017

3 This may be elevated to 'give effect to' in the revised NPS-FM in 2020.

There are a number of corresponding objectives and policies in the NZCPS that are relevant to the matters addressed in Chapter 27. In particular, the NZCPS requires councils to recognise the importance of the coastal environment for communities' economic, social and cultural wellbeing, while at the same time preserving and restoring natural character, enhancing coastal water quality, and reducing the impacts of contaminant discharges and sedimentation. Upholding the principles of The Treaty of Waitangi and ensuring Māori are able to fulfil their kaitiaki and customary roles is also an important requirement. In implementing the NZCPS, Council needs to be cognisant of the fact the coast is the receiving environment for the District's rivers and streams, and that activities on the surface and beds of rivers and streams can have a direct impact on the coastal environment.

Relevant objectives and policies in the NZCPS 2010 that must be given effect to are shown in Table 10 below:[4]

Table 10: NZCPS Provisions Relevant to Chapter 27

NZCPS Objectives	
1.	To safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems, including marine and intertidal areas, estuaries, dunes and land, including maintaining and enhancing coastal water quality.
2.	To preserve the natural character of the coastal environment through recognising the characteristics and qualities that contribute to natural character.
3.	To take account of the principles of the Treaty of Waitangi, recognise the role of tangata whenua as kaitiaki and provide for tangata whenua involvement in management of the coastal environment.
NZCPS Policies	
2.	*The Treaty of Waitangi, tangata whenua and Māori heritage,* in taking account of the principles of the Treaty of Waitangi (Te Tiriti o Waitangi), and kaitiakitanga, in relation to the coastal environment.
4.	*Integration*, which requires integrated management of activities and their effects across the line of mean high water springs (i.e. between land and the coastal marine area).
15.	*Preservation of Natural Character*, which requires avoiding adverse effects of activities on the natural character of the coast.
21.	*Enhancement of Water Quality*, which involves improving coastal water quality in areas where it has deteriorated to the extent it is having a significant adverse impact.
22.	*Sedimentation*, which seeks to reduce sedimentation levels and impacts on the coast through controls on subdivision, use and development and vegetation removal (including harvesting plantation forestry).
23.	*Discharge of Contaminants*, which seeks to manage effects of discharges to water in the coastal environment, including sewage, stormwater, and discharges from ports and other marine facilities.

[4] NZCPS provisions are paraphrased here; for the full text see https://www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/coastal-management/nz-coastal-policy-statement-2010.pdf

National Environmental Standard for Plantation Forestry 2018[5]

The Plantation Forestry NES (NES-PF) came into effect 1 May 2018. Its objectives are to: 1) maintain or improve the environmental outcomes associated with plantation forestry activities nationally; and 2) increase certainty and efficiency in the management of plantation forestry activities.

The regulations apply to any forest larger than one hectare that has been planted specifically for commercial purposes and harvest. They cover 8 core plantation forestry activities (afforestation; selective felling; earthworks; river crossings; forestry quarrying; harvesting; mechanical land preparation; replanting), allowing these to be carried out as permitted activities, subject to conditions to manage potential effects on the environment.

Most forestry activities are permitted by the NES-PF as long as forestry companies meet specific conditions to prevent significant adverse environmental effects. If the permitted activity conditions cannot be met an application for resource consent to undertake the activity is required. Relevant conditions in the NES-PF are:

For afforestation: provision of setbacks for tree planting from rivers, lakes, wetlands, coastal areas and significant natural areas, to provide a buffer between forestry activity and these areas, to provide shading and habitat for aquatic species, and to help avoid erosion of stream banks.

For harvesting: provision of a harvest plan to council if requested identifying environmental risks, including erosion susceptibility and mitigation measures to be used.

For earthworks: installation and maintenance of stormwater and sediment control measures.

Regulation 6(1) of the NES-PF allows Council to implement more stringent rules where these give effect to:

(a) an objective developed to give effect to the National Policy Statement for Freshwater Management:

(b) any of policies 11[indigenous biodiversity], 13 [natural character], 15 [natural features and landscapes], and 22 [sediment] of the New Zealand Coastal Policy Statement 2010.

Specifically for Tasman, regulation 6(3)(a) of the NES-PF also allows council to implement more stringent rules for Separation Point Granite soils. These soils are approximately classified within the TRMP as Land Disturbance 2. Currently LD2 rules are more stringent than the NES-PF regulations for earthworks and prevail over the NES-PF.

3.1.3 Water Conservation Orders

Water conservation orders (WCOs) may be applied over any waterbody, including aquifers. A water conservation order may provide for protection of the habitat of terrestrial and aquatic organisms, scientific and ecological values, natural characteristics of that water body or recreational, historical and cultural purposes (among other things).

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[5] For further details see MfE & MPI (2017). *National Environmental Standards for Plantation Forestry: Ov*erview of the Regulations; https://www.mfe.govt.nz/publications/rma/national-environmental-standards-plantation-forestry-overview-of-regulations; **and** MPI (2018). *Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017: User Guide*; https://www.mpi.govt.nz/growing-and-harvesting/forestry/national-environmental- standards-for-plantation-forestry/nes-pf-guidance/

A WCO can prohibit or restrict a regional council issuing new water and discharge permits, although it cannot affect existing permits or land uses directly. Regional policy statements, regional plans and district plans cannot be inconsistent with the provisions of a WCO.

There are two WCOs in Tasman District and the outstanding wild and scenic characteristics, as well as water quality, quantity and flow rates of both of these water bodies are recognised in the WCOs:

- Buller River[6] and listed tributaries.
- Motueka River[7] and listed tributaries.

A third WCO is in progress for Te Waikoropupu Springs and the Arthur Marble Aquifer.[8]

3.1.4 Soil Conservation and Rivers Control

The Council has duties and functions under the Soil Conservation and Rivers Control Act 1941. The objects of this Act are the:

(a) promotion of soil conservation;
(b) prevention of soil erosion;
(c) prevention of damage by floods; and
(d) utilisation of lands in such a manner as will tend towards the attainment of these objectives.

The Soil Conservation and Rivers Control Act provides the Council with the ability to provide works and services in a river in order to meet these objectives, although the activities are subject to the requirements of the RMA, the NPS-FM, and the regulatory framework provided by Part IV (including Chapter 27).

The day-to-day river works and services required under the Act are carried out in accordance with TDC's Rivers Activity Management Plan[9].

3.1.5 Treaty Settlement Legislation

Four pieces of Treaty settlement legislation relate to the nine iwi within Tasman District:

- Ngāti Kōata, Ngāti Rārua, Ngāti Tama ki Te Tau Ihu, and Te Ātiawa o Te Waka-a-Māui Claims Settlement Act 2014
- Ngāti Apa ki te Rā Tō, Ngāti Kuia, and Rangitāne o Wairau Claims Settlement Act 2014
- Ngāti Toa Rangatira Claims Settlement Act 2014
- Ngāi Tahu Claims Settlement Act 1998

Treaty settlement legislation includes statutory acknowledgements by the Crown of statements of association by relevant iwi of their particular cultural, spiritual, historical and traditional associations with statutory areas; statements of coastal values made by relevant iwi and their particular values relating to coastal statutory areas; and Deeds of Recognition which acknowledge sites with which iwi have a special relationship (for example, Ngāti Tama's relationship with Waikoropupū Springs).

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6 Water Conservation (Buller River) Order 2001, http://www.legislation.govt.nz/regulation/public
7 Water Conservation (Motueka River) Order 2004, ibid.
8 Currently in Environment Court inquiry process

9 Available on Council's website

The statutory acknowledgement associations include reference to iwi beliefs around water and its valued place in the Māori world view, historic relationships with specific areas in Tasman (e.g. ara/ancient trails, urupa, kainga, mahinga kai, mahinga harakeke and cultivation sites) and treasured fish, bird and plant species that where important to their tūpuna (ancestors).

3.1.6 Relevant Plan Changes

The TRMP has had a constant programme of rolling reviews (variations and plan changes) since it was first notified. The changes have been introduced to address unintended outcomes, new issues, new priorities and legislative requirements. The plan changes relevant to this topic are outlined in the table below.

Where a plan change has been recently introduced (i.e. <3 years) its impact will be difficult to determine with any accuracy as:

- there may have been limited uptake of the plan provisions (i.e. not many activities undertaken that trigger the new rule set) and/or
- the impact of existing use rights and previously consented activities continue
- the impacts may not be highly visible until there is a cumulative uptake of the provision (e.g water permit renewals to include new provisions).

For those reasons, the implementation of plan changes less than 3 years old (from operative date) have not been fully assessed for effectiveness or efficiency.

Note: Several other TRMP Variations and Plan Changes relating to surface and ground water availability and abstraction are detailed in a separate report on Part V 'Water', covering Chapters 30 and 31.

Table 11: Plan changes or variations relevant to Chapter 27

Plan Change or Variation	Description of change and key matters
Variation 68, **Plan Change 17, & Variations 69 & 70** Part IV: Rivers and Lakes (and Consequential Amendments to Parts I & II, V and VI) Notified 27 Feb 2010; Operative 27 April 2013 (V70 & PC 17) and 8 Mar 2014 (Vs 68-69)	The Variations and Plan Change introduced the final part of the TRMP – Part IV - dealing with the management of activities in the beds and on the surfaces of rivers and lakes. Part IV constitutes the Council's regional planning provisions to manage ecosystems in water bodies, avoid natural hazards, maintain water quality, and to manage adverse effects of activities that require resource consent under Section 13 of the Act (in relation to restrictions on certain uses of beds of lakes and rivers). Variation 68 introduced Part IV, comprising Chapter 27 (Issues, Objectives Policies, Methods and Anticipated Outcomes). Chapter 28 (Rules), and Chapter 29 (Information Requirements). Consequential changes were also made to other parts of the TRMP as follows: • Plan Change 17 amended Parts I & II ('Introduction' & 'Land'), including additional definitions and provisions to manage effects of development on existing dam structures when considering applications for subdivision; • Variation 69 amended Part V ('Water') and Variation 70 amended Part VI ('Discharges'). These amendments introduced additional policies and rules to manage water quality effects of activities, to provide guidance to management of rivers where water quality is degraded, as well as amendments to water diversion and damming provisions to ensure consistency within the TRMP.
Plan Change 16 Cultural Heritage Sites Management Notified 29 Sept 2009; Operative 18 Aug 2012	The plan change amended cultural heritage provisions in the TRMP. The new provisions provide protection or management of cultural heritage sites in the Tasman District, including European and pre-European sites of archaeological significance, and sites of importance to manawhenua iwi such as wāhi tapu and wāhi tapu areas. The plan change included a new schedule 16.13C which records all of the known cultural heritage sites which will be afforded protection through TRMP provisions. The change was intended to ensure TDC meets its obligations to certain matters of national importance under Section 6 (e) & (f) and Section 8 of the RMA. The change also enhanced integration with the Historic Places Act requirements.

3.1.7 Relevant Case Law[10]

The Tasman Law report (2019) sets out some of the key legal themes and cases involving Tasman District Council since the TRMP was notified. Of particular relevance to Chapter 27 are the following:

Ngāti Tama ki Te Waipounamu Trust v Tasman District Council [2018] NZHC 2166 (Cooke J)

The High Court granted a strike out application by the TDC as the issue (a challenge by Ngāti Tama to resource consent extension (under RMA section 125) granted by the TDC to the applicant, Kahurangi Virgin Waters Ltd (KVW) was no longer "live" because the consent and extensions had now lapsed. The case is important because Justice Cooke made comments regarding the significant changes in the iwi planning context since the water bottling consent was first granted. In particular, Ngāti Tama's interests had now been formally recognised in the Treaty settlement process and there is formal recognition of the significant importance of resources to Ngāti Tama, including Waikoropupu Springs. Justice Cooke noted that the objective of involving iwi in water management decisions may

[10] Information in this section has come from a TDC commissioned report: Tasman Law (June 2019). *Legal Report for Section 35 TRMP Review*.

now be seen as being compromised by the consented activity, and that he was surprised this had not been addressed by TDC.

Ngāti Tama ki Te Waipounamu Trust v Tasman District Council [2017] NZHC 1081 (Thomas J)

Again in the High Court, an application by Ngāti Tama was granted for judicial review of the TDC decision allowing an Extension Application to KVW for its water bottling consent. Justice Thomas set the decision aside and required that the Extension Application be reconsidered by TDC. This was on the basis that TDC was required to take into account the matters listed in RMA section 125(1A)(b)(i), (ii) and (iii). Although (i) was a particular concern (whether substantial progress had been made toward implementing the consent), Justice Thomas also considered that (ii) applied in terms of whether the applicant had obtained approval from persons who might be adversely affected by the granting of an extension. He noted that the Ngāti Koata, Ngāti Rārua, Ngāti i Tama ki Te Tau Ihu and Te Atiawa o Te Waka a Māui Claims Settlement Act 2014 settles historical claims and includes Takaka River and its tributaries as a statutory area, including Te Waikoropupu Springs. His Honour noted that there are specific provisions in that Settlement Act that are required to be taken into account by TDC.

Wakatu Inc v Tasman District Council [2014] NZEnvC69; [2012] NZEnvC 75 (Newhook J)

This Environment Court decision addressed two appeals by Wakatu and tangata whenua of TDC decisions granting consent to the TDC's engineering dept to take groundwater from an aquifer connected to the Motueka River, to provide for the Motueka Coastal Community Water Scheme and Plan Change 24 (taking, using, damming and diverting of water), which had the effect of bringing the water abstraction under the water scheme within the limits of a controlled activity. The appellants' case was that the proposal to use water outside the catchment would have significant impacts on the mauri of the water and relationship of tangata whenua with their taonga. The effects were characterised as spiritual or metaphysical rather than physical.

The Court considered that RMA sections 6(e), 7(a) and 8 were "strong directions to be borne in mind at every stage of the planning process". In looking at the TRMP changes the Court noted that it had not yet been revised to ensure it gave effect to the NPS-FM, so the Court gave separate consideration to that. Acknowledging the historical context against which the application was viewed and the fact that TDC's initial attempts to consult with iwi had fallen short, the Court considered there should be provision for tangata whenua to be involved in the administering and monitoring of the water scheme. Overall, the Court concluded that any spiritual effects of the proposal could be rendered insignificant by appropriate conditions of consent and consent was granted. The Court concluded that the appropriate activity status for the water takes should be restricted discretionary.

3.1.8 Relevant Iwi Management Plan Provisions

The RMA (s66(2A)) requires TDC to "take into account" any relevant iwi planning document recognised by the appropriate iwi authority and lodged with the council, to the extent that its content has a bearing on resource management issues in the district.

Three Iwi Management Plans (IMPs) have been lodged with TDC by Iwi having interests in the Tasman District:[11]

1. Ngāti Koata No Rangitoto Ki Te Tonga Trust Iwi Management Plan (2002)
2. Te Rūnanga O Ngāti Kuia, Pakohe Management Plan (2015)
3. Ngāti Tama ki Te Waipounamu Trust Environmental Management Plan (2018)

Two other IMPs prepared by Iwi with an interest in Tasman have been lodged with Nelson City Council:[12]

4. Nga Taonga Tuku Iho Ki Whakatu Management Plan (2004)
5. Te Ātiawa Ki Te Tau Ihu Iwi Environmental Management Plan (2014)

Relevant provisions in the IMPs will need to be taken into account when the TRMP is updated following the present review. Examples of IMP provisions relating to Chapter 27 matters are shown in Appendix 1.

3.1.9 TDC Rivers Activity Management Plan 2018

The Rivers AMP sets out Council's strategic and long-term management approach for the provision and maintenance of its river systems and assets. Approximately 285 kilometres of the District's rivers have been classified for the purpose of carrying out TDC's statutory roles to promote soil conservation and mitigate damage caused by floods and riverbank erosion. These classified rivers are funded by a differential river rating system based on land value. The rivers works in the classified rivers, such as stopbanks, are predominantly owned, maintained and improved by Council.

Unclassified rivers and streams also have associated river protection works, such as rock walls, groynes and river training works that form part of the river system. These are typically owned and maintained by private property owners and may be partly funded by Council.

Council's approach to river management in the AMP places emphasis on channel management through gravel relocation/repositioning, and vegetation and land buffers on the river's edge. The aim is to manage the river channel and catchment so that there is less need to use hard engineering methods to prevent erosion.

In considering the effects on the environment from river control activities, it is noted in the AMP that "Water courses are not static and are constantly moving and changing. The temptation is to constrain the river to provide security to land owners. Wherever possible, Council will use natural processes and bank stabilisation techniques to mitigate the effects of high flow periods rather than constrain the flow" (p.51).

The Council's activities carried out through the Rivers Activity Management Plan are subject to the provisions of Part IV, including Chapter 27.

[11] https://www.tasman.govt.nz/my-region/iwi/iwi-management-plans/

[12] http://www.nelson.govt.nz/council/plans-strategies-policies/strategies-plans-policies-reports-and-studies-a-z/iwi-management-plans

3.1.10 Other Factors

Natural Influences on River and Stream Health[13]

The influence of land cover

Tasman District is fortunate to have relatively few water quality issues compared to other parts of New Zealand. This is assisted due to the District's large rivers having a significant proportion of native forest in their headwaters. Therefore, any inputs of pollutants from developed land in the middle and lower reaches are substantially diluted by the large volume of high quality water from upstream.

Almost two-thirds of the district is protected in conservation estate. Indigenous forest is the main land cover in the region (60%), while pasture (17%) and exotic forest (9%) are also important.

The influence of climate

Over 90% of Tasman's rivers drain areas that can be considered 'cool' (mean annual temp <12 °C) and 'wet' (annual precipitation >500 mm) (Snelder et al. 2004b). Small coastal streams between Richmond and Motueka are the only waterways in the district influenced by a 'warm dry' climate (2.5% of all streams). Moutere Hill country streams are described as being 'cool and dry' (about 3% of all streams), while several small coastal streams in Golden Bay are influenced by a 'warm wet' climate (3% of all streams).

The influence of 'source of flow'

Just over half the streams in the district have their source of flow in hill country, a quarter of the streams are fed by mountainous areas (>1000 m in altitude), and most of the remainder (24%) are lowland-fed, with a few spring-fed streams. Hill-fed streams in the Moutere area tend to have intermittent or ephemeral flow. Flood peaks on the Buller (Kawatiri) River from Lake Rotoiti to Murchison are much more subdued than most rivers in the district, due to its lake-fed source of flow.

The influence of geology

Geology plays an important role in shaping aquatic communities, particularly in the upper Motueka catchment, where there are high concentrations of naturally occurring heavy metals such as iron, nickel and chromium in stream sediment.

Rivers draining marble geology of the Mt Arthur Range have substantial flow during low rainfall periods (due to water storage within the fractured marble) compared to Moutere Gravel hill country where a large proportion of streams dry up in summer. However, many of the deeper parts of Moutere streams where there is shade will continue to hold water through the summer.

Catchments in Separation Point Granite geology (much of Abel Tasman through the Motueka Valley to Mt Murchison) are highly erodible and stream beds have a large component of mobile sand.

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[13] From p.13, James, T and McCallum, J 2015. *State of the Environment Report: River Water Quality in Tasman District 2015*. Prepared for Tasman District Council https://www.tasman.govt.nz/my-region/environment/environmental-management/water/river-water-quality/water-quality/

Economic and Population Drivers

In 2019, agriculture, forestry and fishing accounted for 13.7% of Tasman District's GDP and 20.7% of filled jobs (see Figs 2 and 3). Other significant industries in the District's economy include manufacturing (12.5% and 11.3% respectively), construction (7.9% and 9.4%), and retail trade (7% and 10.8%).

Table 12 shows that over the 11 year period from 2009 to 2019, retail trade contributed $74m to the District's economy. This was followed by agriculture, forestry and fishing ($56m), property services ($55m), construction ($54m), and manufacturing ($52m).

Given its importance in the local economy, it is not surprising that agriculture, horticulture and forestry activities occupy a comparatively large proportion of the District's land area. These activities are also a major user of freshwater and can have impacts of stream and river health.

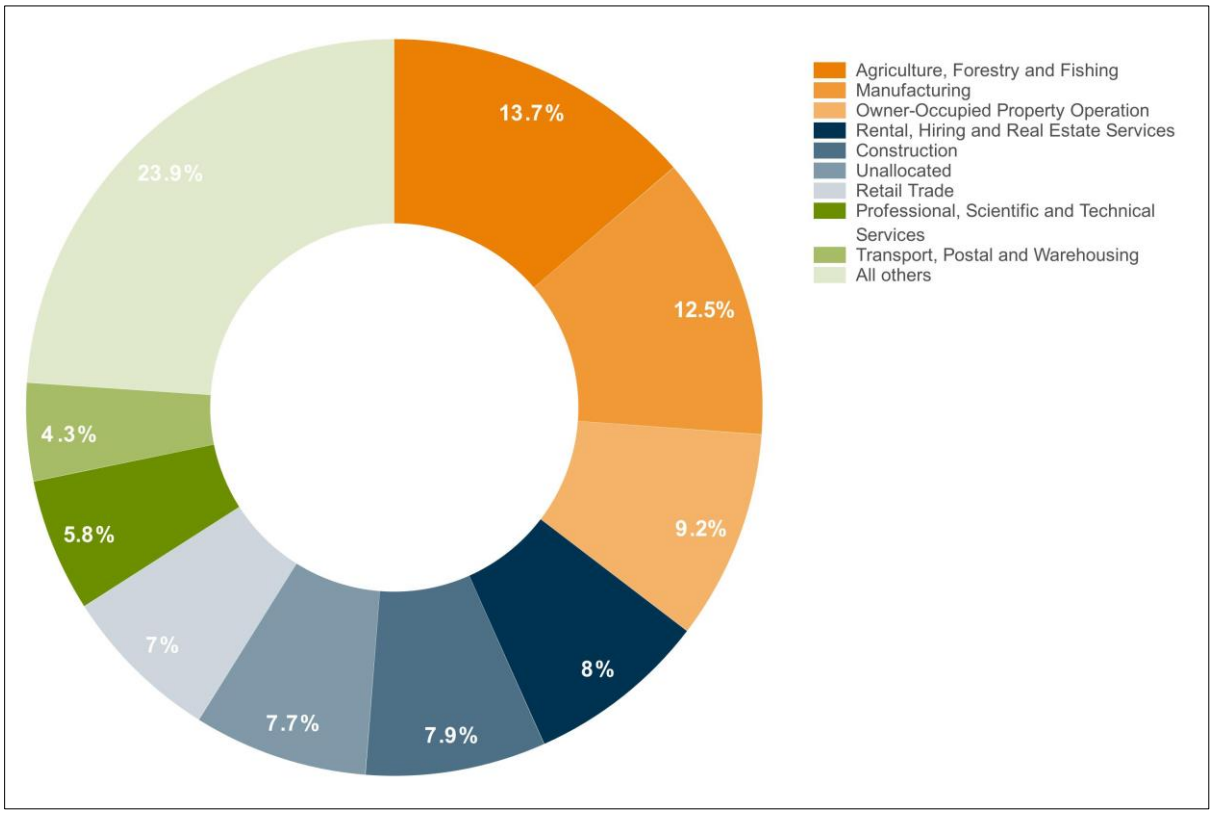

Figure 2: Proportion of GDP in Tasman District (by ANZSIC 1-digit industries), 2019[14]

[14] https://ecoprofile.infometrics.co.nz/Tasman%2bDistrict/Gdp

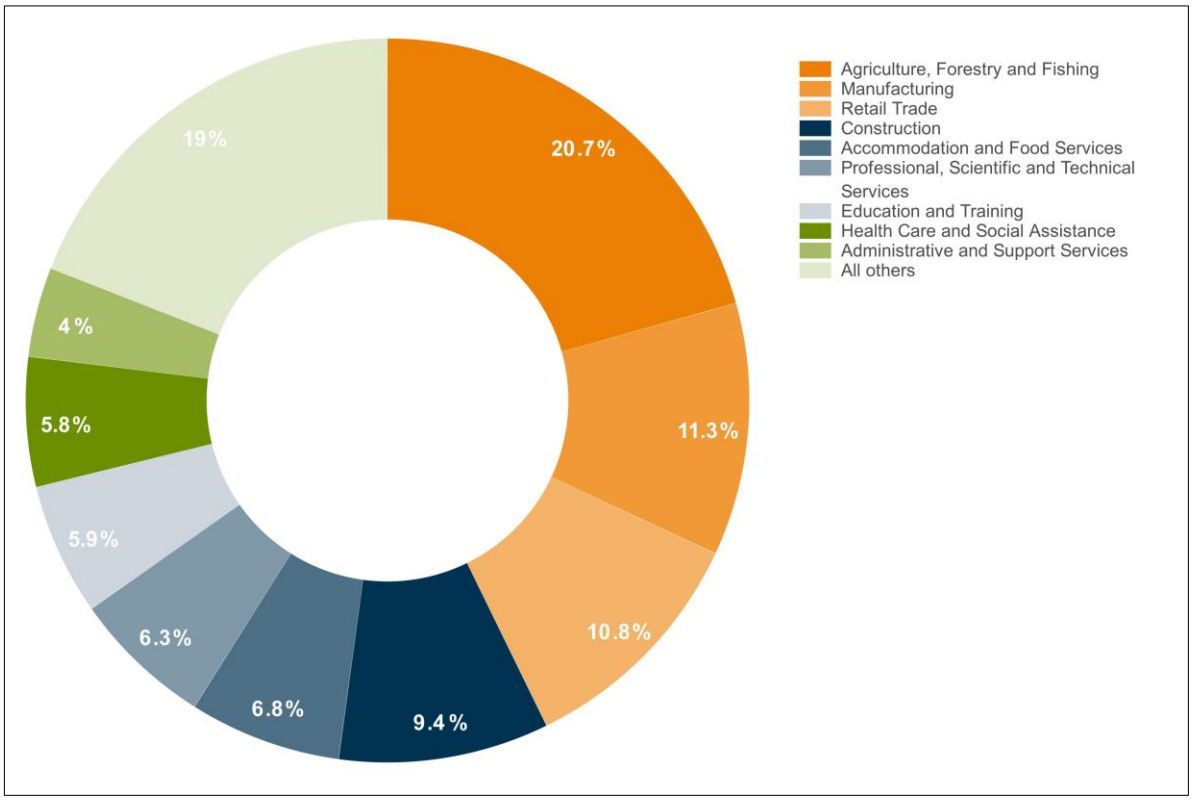

Figure 3: Proportion of filled jobs in Tasman District (by ANZSIC 1-digit industries), 2019[15]

Table 12: Biggest contributors to economic growth in the Tasman District, 2009-2019[16]

Retail Trade	$74m
Agriculture, Forestry and Fishing	$56m
Rental, Hiring and Real Estate Services	$55m
Construction	$54m
Manufacturing	$52m
All other industries	$362m
Total increase in GDP	**$654m**

15 https://ecoprofile.infometrics.co.nz/Tasman%2bDistrict/Employment

16 https://ecoprofile.infometrics.co.nz/Tasman%2bDistrict/Gdp

Tasman District has experienced significant population growth over the past ten years, from an estimated 47,400 in 2010 to 54,800 in 2019 (see Fig 4).[17] This represents an increase of 15% over that period. As a consequence, there has been considerable pressure for residential development, including infill, expansion of existing settlement boundaries, and rural residential living opportunities.

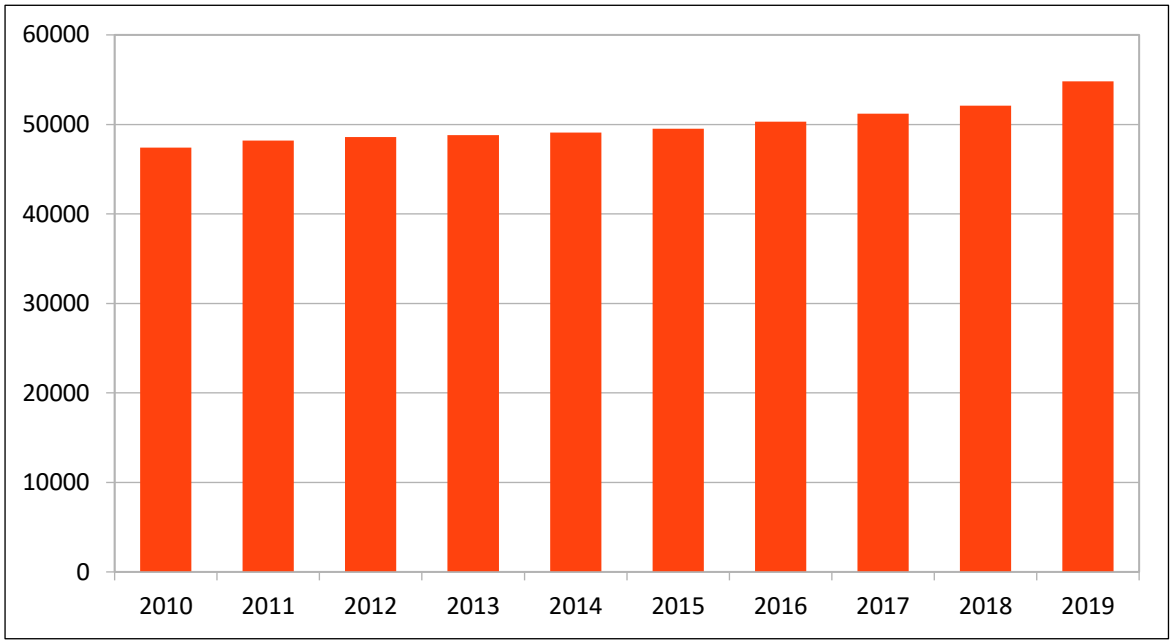

Figure 4: Estimated Population Growth in Tasman District (2010-2019)

3.2 Internal Consistency of Provisions

The internal consistency scores for Chapter 27 provisions varied widely from ***strong – weak*** as shown in Table 2 below.[18] The chapter deals with activities affecting rivers and lakes and values associated with them, but does not cover water takes and diversions of the water within those rivers and lakes (which is addressed in Chapter 30). The chapter is characterised by a style of policy drafting involving multiple, specific issue statements, and more than one objective in each set.

Table 2: Chapter 27 Summary of Internal Consistency

Objective	Internal Consistency	Comment
27.1.2.1 The maintenance, restoration and enhancement, where appropriate, of aquatic habitats in the beds of rivers and lakes that is sufficient to:	**Varied**	This set is characterised by an extensive set of issue statements (8) that boil down into the two given objectives, 'protection and enhancement of habitats' and 'management of activities that may have adverse effects on habitats'

[17] Population data extracted on 17 Sep 2019 21:12 UTC (GMT) from NZ.Stat; 2019 data is from https://ecoprofile.infometrics.co.nz/Tasman%2bDistrict/Population.

[18] Information in this section has come from a TDC commissioned report: Leusink Sladen, S. (Dec 2019). *Tasman Resource Management Plan Policy Mapping - Review of the Internal Consistency and Integrity of Plan Objectives, Policies and Rules Parts III – VI*.

(a) preserve their life-supporting capacity (including the mauri of the water); (b) protect their values for native fisheries (including inanga and eels), trout fisheries and wildlife (including indigenous bird species); (c) protect or enhance indigenous biodiversity values. **27.1.2.2** Activities in, on, under, or over the beds of rivers and lakes are carried out in a way that avoids, remedies, or mitigates adverse effects on aquatic ecosystems, including in particular: (a) Aquatic habitats of (i) indigenous freshwater fish (ii) indigenous birds and other wild life, including river bed nesting habitats (iii) trout (b) Braided and lowland river ecosystems: (c) Fish passage		Eleven (11) policies implement the two objectives and they give rise to a regulatory framework that implements some issues better than others, hence the 'varied' response. Generally speaking across all policies, more strongly provided for values include 'fish passage' and 'spawning habitat' and weakly provided for matters include 'bird habitats during nesting' and indigenous biodiversity values'. Policy 27.1.3.2 is one that is considered to be weakly provided for within rules and is inappropriately located given the scope of Part 4. It attempts to address drainage which is a land-based activity and is poorly regulated in other (Land) sections of the Plan. Other 'less strong' policies attempt to bring other management plans such as the 'Eel Management Plan' into consideration, but are not then referenced within any regulatory frameworks. Strong policies are those with specific reference to fish passage and fisheries management, and they have regulatory meaning in the form of rules that address threats or regulate activities known to have an adverse effect.
27.2.2 Retention or enhancement of the traditional values held by Māori under tikanga for rivers and lakes and their margins, including the mauri (or life-supporting capacity) and the wairua (or spiritual value) of rivers and lakes	**Weak**	This objective directs Council to manage water with regards to iwi management and iwi management values. Whilst there are some references in rules to iwi values, these are limited to cultural heritage sites and a single reference to Te Waikoropupū Springs. No other values such as wairua and mauri, are referred to within rules.
27.3.2.1 The stability of river beds and the efficiency of rivers to carry floodwaters and sediment are maintained. **27.3.2.2** Activities in river beds, including construction of structures, are carried out in a way that avoids, remedies, or mitigates adverse effects on the stability of river beds and efficiency of rivers to carry flood waters and sediment.	**Strong**	Eight (8) issues underpin these two objectives which focus on the 'stability of river beds and banks' and 'activities in beds and banks'. The two objectives give rise to twelve (12) policies which address a range of policy matters from riparian management through to gravel extraction. Generally speaking the set is a well provided for one, with strong connections to rules that govern gravel extraction limits, river values, and river morphology management. A less strongly regulated issue is considered to be riparian management, there being a poorer connection to land use activities that may affect riparian margins. This highlights a tension in the TRMP between managing activities in the beds (Part 4) versus those in the margin or on adjacent land - discussed further in the evaluation report for Chapter 8 (margins of waterbodies).

27.4.2 Maintenance of water quality and enhancement of water quality where existing quality is degraded for natural and human uses and values, including iwi wairua values, through the carrying out of activities in the beds of rivers and lakes.	**Weak**	Even though there are seven (7) issues listed in this set, the single objective gives rise to just three (3) policies. Two of these are education and advocacy focussed. The 'weak' response relates to the very limited scope for water quality effects to be achieved through 'beds of rivers and lakes' rule set, and absence of iwi wairua values matters, which curiously are not actually explicitly addressed within any of the policies under this objective (although could be said to be covered by 'life-supporting capacity'), much less any rules.
27.5.2 The adverse effects of dam structures on river functioning are avoided, remedied or mitigated and the hazards created by risks of dam failure on communities and ecosystems are avoided or mitigated.	**Strong**	Three (3) policies follow from this objective, addressing 'breach risk', 'river values', and 'structural safety'. All three appear strongly connected to rules, with rule sets specifically providing for matters relating to safety and risk, as well as river values, with particular reference to Schedule 30A. However the structural safety and breach risk aspects for land based dams (not in river beds) is not similarly addressed in Part 2 and this presents a gap in the TRMP.
27.6.2 The maintenance and where appropriate, the enhancements of: (a) The natural character, amenity, recreational and cultural values and; (b) Public access to rivers and lakes As a result of activities in the beds and on the surface of rivers and lakes	**Moderate**	This set is characterised by multiple issue statements, giving rise to a single objective and two policies. The matters covered in the first policy are wide ranging, with variable connection to specific rules implementing them. They should be considered in conjunction with review of the policy sets in Chapter 8 on natural character and public access with greater integration and consistency between these sections. Policy 27.6.3.2 is narrowly focussed on protection of Te Waikoropupū Springs, and this does appear to be provided for within rules throughout. It is noted that a process is underway to create a water conservation order of Te Waikoropupū springs and this will need to be considered in the TEP review process.
27.7.2 Increased and improved public knowledge of all uses and values of rivers and lakes and their margins through the development of Council systems to collect, store, evaluate and make available such information.	**Moderate**	At first read, this objective appears directed at public knowledge of river uses and values (not regulation). However, Policy 27.7.3.1 focuses on the assessment of applications relating to activities in the beds of rivers and lakes, with a focus on the importance of river values. Rules do appear to implement where values are captured by Schedule 30A. However, concepts such as 'taking a precautionary approach' are less easily identifiable in rules, except to assume that the hierarchy itself takes a precautionary approach in setting conservative limits of PA, CA and RDA activities.

In strengthening the internal consistency of Chapter 27 provisions, the following actions are recommended:

- Review variable alignment between issue statements and objectives, and the policies that are intended to implement them.
- Review provisions in relation to iwi values.

- Review set in relation to 'freshwater quality', 'land use management', 'riparian management' and 'water abstraction, including augmentation' for a more seamless management of river and water values. Include discussion around 'improvements' to water quality, i.e. how they might be achieved.
- Consider 'cross-boundary' resource management issues such as riparian management, dam safety, and land-based drainage in relation to land use (Part II), water takes and abstraction (Part V), discharges to water or to land where they may enter water (Part VI), and this chapter.

3.3 Evidence of Implementation

3.3.1 Resource Consent Data

The Chapter 27 objectives and policies are largely implemented via rules in Chapter 28 of the TRMP. The rule sets for activities in the beds and on the surface of rivers and lakes are set out in Appendix 2.

They include permitted, controlled, restricted discretionary, discretionary and non-complying activities and apply to a range of activities that may disturb the beds of rivers and lakes, including the building of structures such as dams, bridges, culverts and water intakes, the laying of pipes and cables, the extraction of gravel, and the planting of vegetation. The entering or crossing of rivers and streams by machinery, vehicles or livestock, and the use of craft on rivers and lakes, also require consent when permitted activity standards are not met.

Over the previous ten years (2010–2019) 282 resource consent applications were received by TDC, as well as 37 applications to vary the conditions of existing consents, giving a total of 319 applications under the relevant TRMP rule-sets.[19]

Figure 5 shows, a large majority of consent applications (185, or 66%) related to the disturbance of a stream or river bed for the construction of a dam or weir. These applications involved new dams as well as the renewal of consents for existing dams that were due to expire. There were also an additional 32 applications to vary the consent conditions for existing dams or weirs.

The purpose of the dams and weirs were for irrigation (agricultural and horticultural), stormwater detention (e.g. developments by Richmond Pohara Holdings Limited, Sustainable Villages Limited); public water supply (TDC, Waimea Holdings), and hydro power generation (Electric Waters, Pioneer, Brooklyn Electricity and private schemes).

[19] Resource consent information was extracted from TDC's MagiQ-BI consents database using keyword searches (it is not possible to search by TRMP rule number). As a consequence, there may be relevant resource consent data that was not captured by the key words used, although this is anticipated to be a small number.

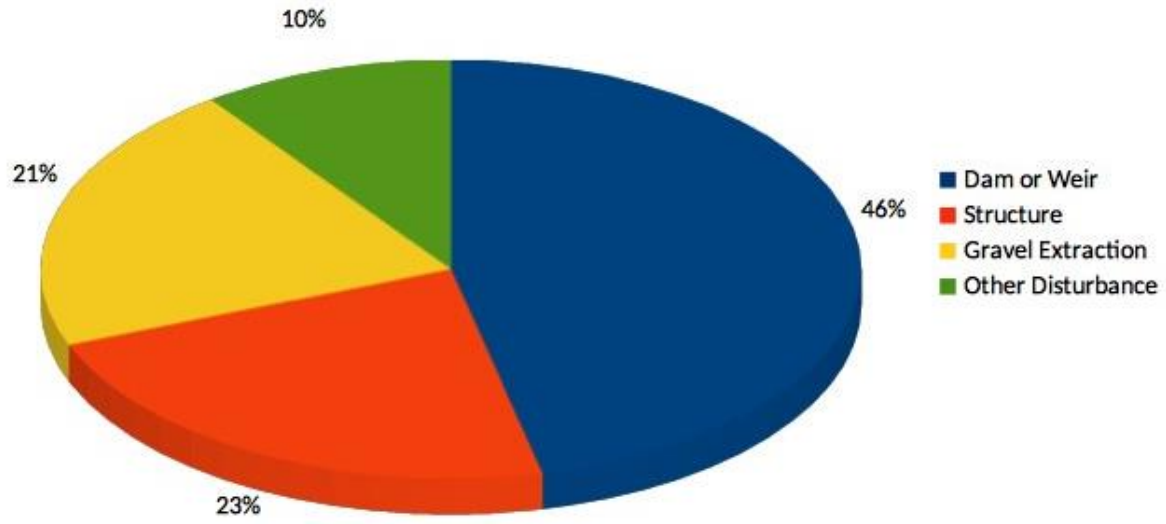

Figure 5: Proportion of Consent Applications by Activity (2010-2019)

Forty applications (15%) were received for the placement of structures in or over a stream or river bed. These applications involved a range of structures, including bridges and culverts (TDC and private land owners), flood protection structures (TDC), water intake structures (TDC and private), and hydro power generation (as above).

A further 38 applications (13%) involved the extraction of gravel from stream and river beds. Ten of these applications were made by TDC, largely for river control purposes. Contracting companies including CJ Industries, Coles Contracting, and Fultan Hogan accounted for 15 consents to extract gravel. One application was made by a charitable trust for the creation of a fish-out pond adjacent to the Waimea River. The remaining applications were from private land owners for a range of purposes, including maintaining farm tracks and laneways, maintaining irrigation pumping intakes, and the re-creation of a swimming hole at a popular camping ground (Quinneys Bush).

Eighteen consent applications (6%) were made for a range of activities involving the disturbance of stream and river beds. These include applications for the removal or vegetation, mechanical mulching and replanting of natives on river margins (TDC), river and flood control, including the creation of stop banks (TDC, NZTA Marahau Estates Ltd), gold mining operations (e.g. REB Mining Ltd, Captains Creek Mining Ltd); land development (e.g. Ligar Bay Developments Ltd), the placement of a sewer main (TDC), and the infilling of a wetland and creation of a new wetland (private landowner).

The applicant that applied for the most consents under Chapter 27 provisions was TDC with a total of 49 applications (including six variations). As noted above, these were for a variety of activities, including dams for public water supply and retention of flood waters, construction of bridges, culverts and flood protection structures, gravel extraction for river management, and removal/replanting of riparian vegetation.

Figure 6 shows the number of consent applications received by TDC each year between 2010 and 2019. Applications received vary from a low of 13 in 2018 to a peak of 74 the following year. There is a general downward trend in the number of consents applied for; 2010 and 2011 had 37 and 40 applications respectively whereas 2017 and 2018 had 15 and 13 applications respectively. For six out of the ten years, less than 30 applications were received by TDC. The spike in 2019 was due to a suite of applications seeking the renewal of existing consents for dams.

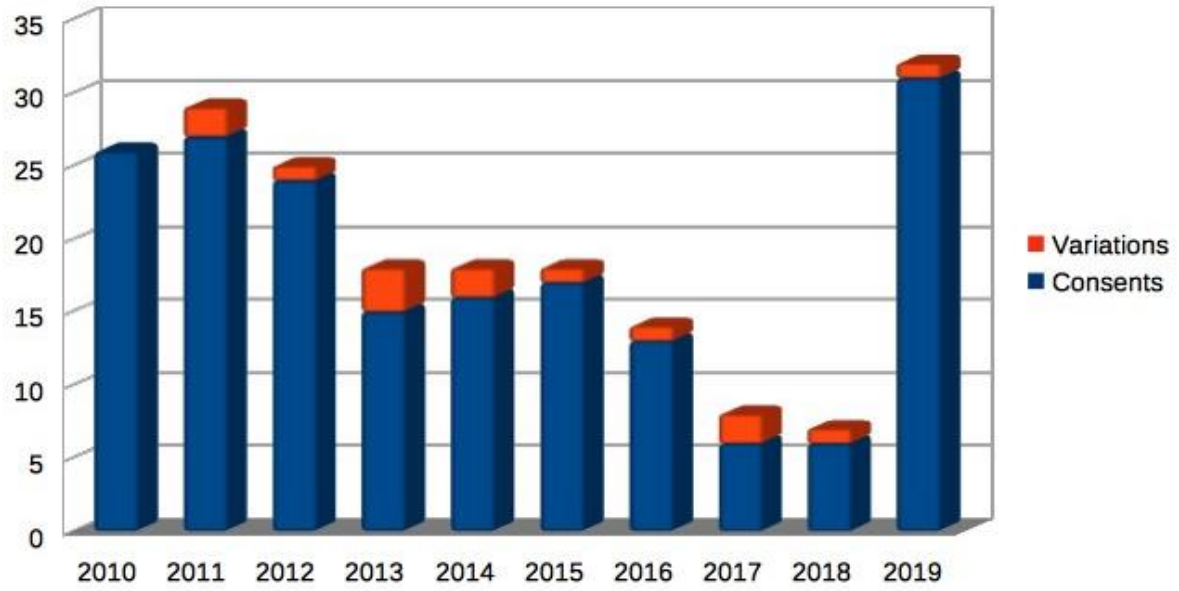

Figure 6: No. of Consent Applications Year (2010-2019)

Figure 7 shows that the majority of the consents (210, or 69%) are 'consent effective', which means that the activities granted are currently being carried out by the applicants. Fifty-two applications (16%), which are part of a suite of dam renewals required in 2019, have had the timeframe for a decision extended under s37 of the RMA. Twenty-eight consents (19%) have expired, which tend to be for activities that were given a limited timeframe for completion, most notably relating to gravel extraction (which accounts for 19 of the expired consents). Ten applications were withdrawn.

A further 19 applications (6%) have a range of activity status – 12 are on hold, two have been cancelled, two have been surrendered, applicants have objected to the conditions placed on two consents, and one consent has lapsed.

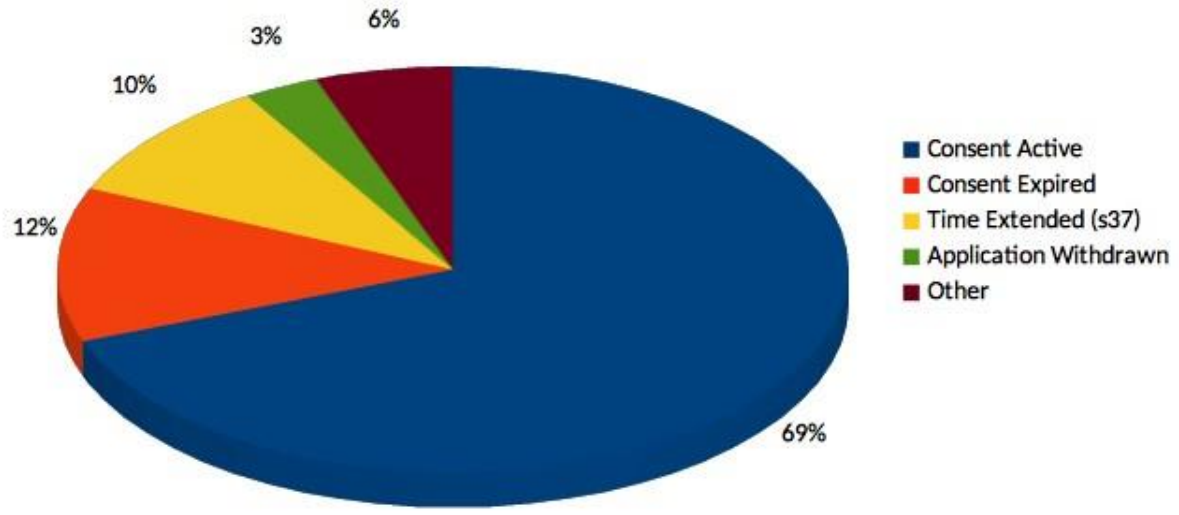

Figure 7: Status of Consent Applications (2010-2019)

A total of 228 consent applications (89%) were decided upon without notification, whereas 17 consents (7%) were fully (i.e. publicly) notified and 11 consents (4%) were processed under limited notification (where specifically identified people or groups are affected by the proposal and given an opportunity to make a submission). Decisions on 63 consent applications were yet to be made.

Only two consent applications involved the disturbance of a lake, both relating to the construction of a dam and associated structures in Lake Matiri for power generation (Pioneer Energy Ltd). All other consent applications involved the disturbance of streams and rivers.

There have been no consent applications over the ten-year period for the entering or passing across any bed of a river or lake by a vehicle or livestock, nor for the entering or passing across the surface of the water in a river or lake by craft. This suggests that such activities are either being carried out in accordance with the permitted activity rule conditions, or non-compliant activities are not being identified through TRMP monitoring and enforcement.

Assessment Matters Taken into Account in Resource Consents

A review of a sample of resource consent decisions revealed the range of matters that consent staff take into account when assessing resource consent applications under Chapters 27 and 28. The issues that were typically considered for the different activities requiring consent are listed in Table 3below. There is considerable overlap between the relevant matters taken into account across the different activities.

Table 3: Principal Issues Typically Addressed in Consent Applications

Dams/Weirs	• Structural integrity and safety of dams, including any risk to downstream persons and property. • Effects of taking from storage or damming on instream values including fish / eel passage. • Effects on downstream water use, especially summer water availability. • Effects on aquatic and riparian habitats at the dam site, as well as upstream and downstream. • Management of pest plant and animal species in stored water. • Ability to comply with the requirements of a water conservation order (where relevant). • Effects on uses and values identified in Schedule 30A.
Structures (e.g. bridges, culverts, water intakes, hydro power plants)	• Potential for erosion and sedimentation of the waterway during construction works. • Effects on instream values, including the habitats of indigenous fish, trout and salmon. • Effects on terrestrial values, including the habitat of birds. • Potential barriers to passage of fish. • Potential increased food hazard, including from obstruction and diversion of flood flows. • Disturbance of heritage sites. • Effects on Māori cultural and spiritual values. • Effects on public access and recreational values. • Ability to comply with the requirements of a water conservation order (where relevant). • Effects on uses and values identified in Schedule 30A.
Gravel Extraction	• Effects on the flood levels and flood control of the river. • Effects on the natural character and morphology of rivers and streams, e.g. natural diversity of substrate, channel cross-section, fish cover, meander pattern and bed levels. • Effects on Māori cultural and spiritual values. • Effects on water quality, including sedimentation and potential groundwater contamination. • Potential erosion effects and effects on flood paths. • Visual and noise effects; • Ability to comply with the requirements of a water conservation order (where relevant). • Restoration of the site after extraction. • Amenity effects, including noise, visual appearance and dust. • Contamination risk associated with using and refuelling machinery in or near water. • Ability to comply with the requirements of a water conservation order (where relevant).

	• Effects on uses and values identified in Schedule 30A.
Other Disturbance	• Effects on the natural character and morphology of rivers and streams, e.g. natural diversity of substrate, channel cross-section, fish cover, meander pattern and bed levels. • Whether physical disturbance of the banks and beds of rivers will adversely affect water. Quality. • Loss of habitat, nutrients and shading from removal of riparian vegetation (e.g. willow). • Effects on instream values, including the habitats of indigenous fish, trout and salmon. • Effects on terrestrial values, including the habitat of birds. • Effects on Māori cultural and spiritual values. • Effects on public access and recreational values. • Effects of stormwater runoff and flooding. • Management of pest plants. • Ability to comply with the requirements of a water conservation order (where relevant). • Effects on uses and values identified in Schedule 30A.

3.3.2 State of the Environment Monitoring Data

A number of monitoring reports and studies shed light on the health of rivers and streams (and to a lesser extent lakes) in the Tasman District. They also help identify the factors that enhance or degrade the condition of waterbodies over time, including direct impacts of human activities. This information is invaluable for evaluating the effectiveness of TRMP policies and methods, and determining the extent to which TRMP objectives have been achieved.

Appendix 3 summarises the key findings from the monitoring data by identifying the key issues relevant to river and lake management, the main causes, and high level implications for the TRMP review.

Overall, the monitoring data shows that Tasman District has relatively few water quality issues compared to other parts of New Zealand, due to the District's large rivers having a significant proportion of native forest in their headwaters. Therefore, any inputs of pollutants from developed land in the middle and lower reaches are substantially diluted by the large volume of high quality water from upstream.

Nevertheless, there has been a deterioration in the health of water quality and associated habitats and native fish stock, particularly for small streams. This is linked to intensive land uses, including agriculture, horticulture and residential development, and related activities that lead to an increase in sedimentation, nutrient runoff and contamination of waterways. A loss of natural character associated with the margins of rivers has also occurred, due to historic vegetation losses and physical changes, such as channel straightening or erosion protection structures.

The close connection between land use activities and effects on fresh and coastal water quality and natural character therefore requires stronger integration between regional and district provisions in the TRMP.

River Water Quality SOE Report 2015[20]

As part of its obligations under the RMA, TDC monitors the state of surface water quality and river health at more than 57 sites throughout the Tasman District. The state of river water quality in the 2015 monitoring report is determined by data collected from a set of core sites between 2010 and 2015. River water quality trends, by comparison, are examined using data from the entire record (since 1987 for three sites but the majority of sites since 2000).

The following summarises the main findings of the 2015 monitoring report (pp.2-4):

> *Threats to Water Quality*
> *The main threats to water quality and stream health in the Tasman District relate to the intensification of agriculture in the district and, to a lesser extent, the expansion of residential development. The main problems with water quality are currently found in small streams whose catchments contain a large proportion (>50%) of intensively developed land.*
>
> *Sites with pastoral and urban land cover had higher concentrations of disease-causing organisms, greater quantities of deposited fine sediment and lower water clarity than sites with indigenous forest or exotic forest land cover. Focussing on the monitoring sites in pastoral catchments, 40% posed a high risk to people and animals from disease-causing organisms... while 21% had excessive amounts of deposited fine sediment in the bed.*
>
> *Key recommendations:*
>
> *To achieve the greatest immediate benefits restoration efforts should focus on the following:*
>
> - *Reducing faecal bacteria and fine sediment inputs to small streams (stock access and riparian buffers for earthworks and land cultivation).*
> - *Increasing the amount of bank-side vegetation along these streams to provide shading and to keep water temperatures below the critical levels required for protecting ecosystem health.*
> - *Restoring wetlands in key locations where runoff enters streams.*

The actions required by these recommendations are not well supported in the current TRMP provisions, particularly rules that enable wetland enhancement/restoration, stream bank planting, and riparian margin setbacks for cultivation/earthwork (Chapter 8).

Health of Freshwater Fish Communities Monitoring Report 2018[21]

TDC has established a Freshwater Fish monitoring programme as part of its functions under the RMA to monitor and manage the life-supporting capacity and natural character of waterways. The latest monitoring report brings together the results of fish surveys completed from 2011 to March 2018. The surveys were primarily carried out on lowland streams as these are areas most at risk of degradation by various human activities. Additional reference sites on nearby streams with limited or no risk of degradation were also surveyed for comparison, where possible. The streams sampled

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[20] James, T and McCallum, J 2015. *State of the Environment Report: River Water Quality in Tasman District 2015*. Prepared for Tasman District Council https://www.tasman.govt.nz/my-region/environment/environmental-management/water/river-water-quality/water-quality/

[21] McCallum, J. & James, T. 2018. *The Health of Freshwater Fish Communities in Tasman District 2018*. Tasman District Council, Richmond, New Zealand

were generally small (less than three metres wide) with varying types and degrees of habitat modification.

The following is a summary of the key findings (pp.1-3):

- There are 20 species of indigenous freshwater fish identified within Tasman and three sport-fish (all salmonids), the most abundant of which is brown trout.
- Of the native fish species in Tasman, more than half (currently 12) are listed as At Risk or Nationally Vulnerable by the Department of Conservation. This high proportion of species with declining populations is largely due to broad-scale land use changes which has led to the degradation of fish habitat in waterways.
- Longfin eels, shortfin eels and inanga were the most frequently observed species. Between 2011 and 2018, longfin eels were observed at 72% of the sites surveyed. Shortfin eels and inanga were observed at 33% and 31% of sites (respectively) and, along with common bully, show high tolerance to poor stream habitat.
- Despite the high prevalence of longfin eels, there is a general absence of larger eels (greater than 600mm). Due to the absence of larger, older individuals, the conservation status of longfin eels remains 'At Risk – Declining' across New Zealand.
- At a national scale, the occurrence of all native fish is declining, with particularly severe reductions in pasture and urban catchments. The longest-running quantitative fish surveys in Tasman are on the Onekaka River, Golden Bay. Here there appears to be a statistically significant decline in longfin eel and total fish numbers.
- Native fish species that are particularly sensitive to habitat degradation are typically absent from streams with high loads of fine sediment or little riparian vegetation.
- Sampling efforts targeting specific rare species such as giant kōkopu and lamprey failed to find any of these fish species at all. However lamprey are very difficult to find using traditional methods and reasonable amounts of pheromone are being found particularly in the Aorere catchment and coastal streams north of the Takaka River.
- This indicates that these species may now be extinct in parts of our region. High water temperatures lead to fish stress and reduced feeding rates as well as reduce the capacity of water to hold oxygen, while promoting the growth of aquatic plants.
- Surveys at Onekaka River at Shambala Road found the highest native fish diversity of any site in Tasman (12 species) and may also be the highest native fish diversity of any site in New Zealand.
- There is some evidence that in the lower Parawhakaoho River (Golden Bay) trout may be impacting on native fish. However, in general there are few examples of significant predation on native fish by exotic fish in Tasman.

There is also concern about the frequency of vehicle use over riffles in the Waimea River and the potential effect on species such as torrent fish.

Waimea and Moutere Sediment Sources Study 2018[22]

Sediment input into the coastal marine area is a significant issue in Tasman. A 2018 report prepared for TDC by the National Institute of Water and Atmospheric Research Ltd (NIWA) has helped to identify the sources of sediment being deposited in the Waimea and Moutere estuaries.

The study found that sediment in the Waimea Catchment could be attributed to soil erosion following harvesting of pine forests and 'legacy sediment' from bank and hillside erosion.

In the Moutere Catchment, sediment was found to be caused by river bank erosion, possibly attributable to hill-slope erosion following the removal of tree root boles and recontouring for conversion from pine to pasture. Further down the catchment sediment was linked to harvested pine forest, with only a small amount of pasture contribution. Almost 90 % of the sediment at the Moutere River mouth was identified as being of pine forest origin.

The key findings of the report were:

- Native forest and mature pine forest plantations were found to produce very little sediment.
- A substantial proportion of fine sediment was found to originate from forest harvesting and bank erosion.
- The Waimea Estuary is receiving a high proportion of legacy sediment from bank erosion but is also receiving sediment from harvested pine forest at various locations down the river, particularly the Wairoa, Lee and Roding catchments.
- Moutere Estuary is receiving a high proportion of sediment directly attributable to pine forest harvesting. This sediment may be travelling through the Moutere River system rapidly and being flocculated out at the river mouth when it contacts the more saline sea water. Some of this sediment may be derived from recent harvesting in the Central Road tributary.

While not part of this study, the dam burst in the upper Moutere caused a large amount of sediment release to this river.

Ecological Values and Condition of Kaihoka Lakes and Lake Otuhie, Northwest Nelson 2011[23]

A study in 2011 assessed the ecological values of the Kaihoka Lakes (both East and West) and Lake Otuhie near the west coast of Golden Bay/Mohua. The study used a comprehensive dataset collected from 46 shallow coastal lakes around New Zealand from 2004-08, which included the three lakes. Prior to this study, little scientific data was available. The values examined included water quality, phytoplankton, aquatic plants, zooplankton, macroinvertebrates, fish and ecological integrity. Other published and unpublished information on the lakes was also assessed.

The following are the main findings from the study (p.3):

- All three lakes are relatively unmodified, compared to other shallow coastal lakes in New Zealand.
- The Kaihoka Lakes have a number of special and unique features including: i) landlocked populations of banded kokopu, ii) unusually large freshwater mussels, iii) a lack of exotic

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22 Gibbs, M. & Woodward, B. 2018. *Waimea and Moutere Sediment Sources by Land Use*. Prepared for Tasman District Council.

23 Schallenberg, M. 2011. Ecological Values and Condition of the Kaihoka Lakes and Lake Otuhie, Northwest Nelson, preared for the Tasman District Council, June 2011

zooplankton, macrophytes and fish and iv) a macroinvertebrate community made up of species common to both freshwater and brackish conditions. The presence of freshwater mussels and banded kokopu is culturally important.

- The Kaihoka lakes have unusual fish, zooplankton and invertebrate communities, reflecting interesting biogeographic histories and the present isolation of these lakes from the ocean.
- Lake Otuhie is a good example of a humic-stained, relatively unmodified shallow, coastal lake. The strong humic staining and relatively low mineral content result in the lake having a restricted distribution of aquatic plants. Its fish and invertebrate communities resemble those of unmodified shallow coastal lakes on the west coast of the South Island.
- Ecological integrity was assessed in relation to nativeness, pristineness, biodiversity and resilience to human induced pressures. Kaihoka 1 (East) was identified as having an overall ecological integrity in the top 10% of shallow coastal lakes sampled, while Otuhie and Kaihoka 2 (West) were in the top 25%, respectively.
- Of potential concern is the possibility that mercury from historical gold works in the Lake Otuhie catchment could be contaminating eels, shags and other organisms high up in the lake food chain.
- The main threats to these lakes is increased external nutrient loading from land use activities in the catchments[24] and the potential for invasion of the lakes by exotic zooplankton, macrophytes and fish. If nutrient loading to these lakes were to increase or if invasive macrophytes and/or fish colonised the lakes, a rapid degradation of the ecological values of these lakes would likely occur.

Environmental Outcomes for Natural Character[25]

Recent research looking at indigenous biodiversity in Tasman assessed the 'naturalness' condition of rivers and lakes[26] using a scale from one (indicating a very high level of naturalness) to zero (indicating a complete loss of naturalness). The outcome for rivers and streams in Tasman ranged from 0.986 to 0.163, with an average of 0.527. For lakes, the range was 0.99 to 0.2, with a mean of 0.83.

The condition assessment in this body of work provides an indication of the retention of natural character, particularly retention of riparian vegetation. For rivers, the average condition rating suggests that TRMP objectives for retention of natural character are not being met and in some cases are severely degraded (i.e. for those values approaching zero). The outcome for the District's lakes is more encouraging with a considerably higher mean score. The location of the largest lakes within the Nelson Lakes National Park is an obvious factor.

Work is currently underway[27] investigating generation of region wide data on stream sinuosity and riparian cover as measures of water body health, which could also be proxy measures for retention

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[24] The causes of external nutrient loading are not understood, but are possibly due to farming activities in the catchment and/or to greater numbers of water fowl visiting the lakes. This does not apply to Lake Otuhie as native bush fully surrounds it.

[25] Refer to the Chapter 8 Evaluation Report for an in-depth assessment of natural character and public access in relation to the margins of rivers and lakes.

[26] Leathwick, J. (2019) Indigenous Biodiversity Rankings for the Tasman Region Report, prepared for the Tasman District Council, July 2019

[27] Undertaken by Morphum Ltd - contract managed by Council's Environmental Information staff.

of natural character and natural values. This information could be used to inform new measures for effectiveness of the natural character objectives and policy set as part of the TEP review.

The degradation of the natural character of waterbody margins is often due to historic vegetation losses and physical changes, for example channel straightening or erosion protection structures. Improvement of this aspect is dependent largely on non-regulatory approaches to promote and support the restoration of indigenous vegetation and both riparian form and function. There are no rules requiring enhancement, and it is unclear if the rule framework sufficiently supports these activities to actively encourage enhancement of natural character in waterbody margins.

3.3.3 Issues with Implementation of Chapter 27 Provisions

During rapid assessment workshops, Council staff from policy, consents, compliance, engineering, and environmental monitoring identified a number of issues with implementation of the Chapter 27 provisions. These are discussed below.

General

Provisions do not give full effect to national guidance

Chapter 27 provisions need to be updated to give effect to the NPS-FM and the NZCPS. The NPS-FM sets clear directives for Council to maintain and improve freshwater quality and in particular to control land uses, including urban development, vegetation removal, and plantation forestry to reduce sediment loads and discharge of contaminants in runoff and stormwater.

In support, the NZ Coastal Policy Statement requires council to "Provide for the integrated management of natural and physical resources in the coastal environment, and activities that affect the coastal environment". This includes impacts of activities that degrade freshwater quality 'upstream' of the coast, such point and non-point discharges (e.g. sediment, nutrients and contaminant discharges).

Regional councils will need to recognise the effects on receiving coastal waters when making decisions about fresh water in freshwater management units. Coastal water quality will be affected by the quality of fresh water that flows into it and, amongst other matters, the NPS-FM places obligations on councils to:

- Improve the integrated management of land use and fresh water, particularly the interactions of fresh water and the coastal environment.
- Recognise the interactions, ki uta ki tai (from the mountains to the sea) between fresh water, land, associated ecosystems, and the coastal environment.
- Have regard to the connections between freshwater bodies and coastal water when setting freshwater objectives and limits.

Climate Change

When addressing both water quality and quantity under the NPS-FM, Councils are required to have regard to "the reasonably foreseeable impacts of climate change". In this regard, the NPS-FM notes that "NZ faces challenges in managing our fresh water to provide for all of the values that are important to New Zealanders. The quality, health, availability and economic value of our fresh waters are under threat. These challenges are likely to increase over time due to the impacts of climate change" (p.4).

In implementing the NPS-FM, TDC needs to consider the ways in which climate change may affect management of waterbodies, including matters such as:[28]

- Changes in frequency and severity of droughts.
- Changes in frequency and severity of heavy rainfall and flushing or flooding events.
- Changes in temperatures which may influence algal blooms, increased pressure from invasive aquatic species, or changes to water quality.
- Exacerbation of existing anthropogenic effects (eg, land-use impacts, flooding, or nutrient runoff).
- The presence or absence of natural features to mitigate the effects of climate change, including:
  – shading (and cooling) effects provided by riparian vegetation;
  – wetlands providing water retention in catchments.
- Deterioration of water quality in some areas as a result of lower flows in freshwater bodies.

Consideration of the impacts of climate change needs to be based on the best information available. TDC's region-specific information for climate effects on hydrology (eg, rainfall models), should have regard for this information in establishing objectives and limits under the NPS-FM.

Lack of integration with other TRMP chapters

There are a number of areas where the provisions in Chapter 27 do not link or integrate well with relevant chapters in the District Plan:

- The close connection between land use activities and effects on river, lake and coastal water quality requires stronger integration between the Regional and District Plan chapters. This includes impacts such as sedimentation of rivers and streams from land development, which ends up being transported into the District's coastal bays, and runoff from sewage, stock effluent, fertilisers and land disturbance, which can increase the amount of nutrients in waterways and estuaries.
- The management of the natural character of the margins of rivers and lakes and public access to and along rivers and lake margins is largely dealt with in Chapter 8 of the TRMP 'Margins of Rivers, Lakes, Wetlands and the Coast'. The evaluation report for Chapter 8 concluded that the policy framework has significant overlap with other policy chapters in the TRMP and a variety of associated rules are spread throughout the District and Regional Plans. Overall, the TRMP does not provide integrated management of water bodies and their margins, or provide comprehensive protection and enhancement of natural character of water body margins for its intrinsic value and importance in waterbody health and function.
- Under Chapter 28 a bridge can be constructed as a permitted activity when it complies with the relevant rule conditions. In the District Plan part of the TRMP however, any structure within 8m of waterway requires land use consent - there are no exclusions for bridges. This means that bridges are permitted under Part IV of the TRMP, but not under Part II. This requires consent staff to exercise discretion when deciding whether a resource consent is necessary.

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[28] See pp.40-41 in Ministry for the Environment. 2017. *A Guide to the National Policy Statement for Freshwater Management 2014 (as amended 2017)*. Wellington: Ministry for the Environment.

- While the effects of the construction of new dams on river and lake beds is a relevant matter for Chapter 27, the hazard risk posed by the potential failure of an existing dam is not related to beds of rivers or lakes, but is rather a land use issue. This aspect of dam use should therefore be taken out of Chapter 27 and included in an appropriate District Plan chapter to enable consideration of this issue for all dams (ie on and off stream).

Integration of Water Conservation Orders

At present two established WCOs for the Buller and Motueka Rivers have been appended to the TRMP with an explicit qualifier that they are not part of the Plan. Arguably these should be more formally integrated into TRMP provisions to ensure consistency with the requirements of the WCOs.

Achieving enhancements through rules

While seeking environmental enhancement for streams, rivers and lakes is an appropriate objective, it has proven difficult to achieve through the implementation of rules. The TRMP could provide more leverage in rule conditions in order to require or incentivise restoration and enhancement activities.

Status of Dams on Land

There is a need to clarify the rules around off-stream damming of water and water takes from such storage. There appears to be a gap in the TRMP rules regarding the construction of dams on land (as opposed to dams on streams or rivers), which means they can be constructed as a permitted activity in the absence of specific rules, and with no further consideration to dam safety or failure risk. Once constructed the taking of water from the dam for any use (e.g. irrigation, stock) requires consent under Chapter 31 rules as a restricted discretionary activity. In the case of a fire, an exception applies under RMA s14(3e) which enables Fire and Emergency NZ to take water for emergency purposes. There is therefore a need for clarity around the enabling of off-stream storage for water use under the TRMP, including the potential for the stored water to be used for fire-fighting.

Adverse Effects on Ecosystems

Schedule 30A Incomplete

Schedule 30A lists values for water bodies within the Tasman District. It identifies 'instream uses and values', such as aquatic ecosystems, wildlife and aquatic plant habitat, contact and non-contact recreation activities, cultural and spiritual values, and landscape values. It also identifies a range of 'other uses and values', such as irrigation, community water supply, stock and farm water supply, industrial supply, and hydro-electric power generation. Most of the rule conditions in Chapter 28 (including for permitted activities) require the avoidance of effects on the uses and values identified for specific water bodies.

It is noted in the TRMP that the list of values is not yet complete for all water bodies or for all values, and that *"Further work is also underway to develop consistent protocols and determine the evidential requirements for inclusion of values into the Schedule".* However, the Schedule has not been updated since the TRMP was made operative and staff report that this has made it difficult to implement.

Further consideration is required on the scope of values information needed to inform consent assessments and whether this is suitable in an updated schedule or of a size and format (ie spatial) that it should be managed outside of the TRMP as a cross-referenced document or system.

Fish Passage

While fish passage restoration is well advanced on Council-owned in-stream structures, and monitoring for fish passage provision looks like it might be imbedded in Council roading contracts, it is unclear if contractors have sufficient fish passage training to ensure ongoing fish passage is maintained over time.

Council is not keeping up with the number of in-stream structures being installed on private land. This is a very big job and there is a lot to do and at current staff resourcing rates this could take another 25-30 years to address. At present, landowners do not need to notify Council of the installation of such structures.

Effects of activities on bird nesting sites

Staff report that there is a need to monitor the effects of activities on bird nesting sites, particularly in relation to river control activities. There have been instances when the construction of rock revetments for river bank protection have disturbed bird nesting sites. Weed maintenance, which is necessary to protect bird habitats, is also required.

Staff rely on Schedule 30A to identify values such as important bird nesting sites and habitat, but because the schedule is incomplete it possible to miss important areas.

Relationship of Māori and their Culture and Traditions with Rivers and Lakes

A general observation made about the TRMP is the need for a more consistent approach to addressing matters of significance to Māori.[29] An overall assessment of internal consistency of the regional provisions concluded that iwi issues were weakly implemented, particularly in relation to freshwater management and coastal values, and sites of significance both in relation to freshwater resources and coastal marine area locations.[30]

With specific regard to Chapter 27 provisions, the assessment found that there is currently "very limited scope" for achieving the objective of retaining or enhancing the traditional values held by Māori under tikanga for rivers and lakes and their margins through the relevant Chapter 28 rule sets. Whilst there are some references to iwi values in rules, these are limited to cultural heritage sites and a single reference to Te Waikoropupū Springs. No other values such as wairua and mauri are referred to within rules, and opportunities to practice mātauranga Māori in regard to waterbody management are lacking.

River Bed Stability and Channel Efficiency

Conflict between river control and ecological objectives

The Rivers Activity Management Plan 2018 identifies an increasing need for flood control measures in the District. It states that "Many settlements in the District have established near rivers and are exposed to risk in high rainfall events. This risk is not new, but changing weather patterns is also changing the risk profile which includes a higher likelihood of flooding.... Rainfall events over the last few years have tended to affect smaller catchments and waterways with short high intensity events becoming more prevalent" (pp.19-20).

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[29] Mason (2019) *Stage 1 of Tasman Regional Policy Statement Efficiency and Effectiveness Review: Integrated Management*. Prepared for Tasman District Council.

[30] Leusink-Sladen (2019) *Policy Mapping - Review of the Internal Consistency and Integrity of Plan Objectives, Policies and Rules: Parts III – VI*. Prepared for Tasman District Council.

In carrying out river and erosion control functions, a tension has emerged between achievement of positive ecological outcomes for rivers and achievement of flood protection objectives. Staff noted that the TRMP objectives can be in conflict, particularly where river and erosion control methods have the potential to disturb natural river characteristics, impact upon instream and riparian habitats, and increase in water temperature. Methods of particular concern are the use of rock rip-rap over 10-20% of the river banks and the extent that heavy machinery has been driven up and down waterways. In places rock rip-rap has been successfully replaced with rock groynes with shrub willow plantings in between.

For instance, Council's global resource consent for river control is concerned with flood management, as required under the Soil Conservation and Rivers Control Act 1941. The consent application went through hearings and was challenged by Fish & Game in the Environment Court due to its effect on river ecology. Other TDC global consents (for gravel extraction and management of riparian vegetation) have a similar focus on river control. Two external peer review reports are available on the current use of rip-rap and alternatives, one from a river engineer and one from a fluvial geomorphologist.

Staff pointed out that good ecological outcomes have been achieved with compromise and that the newer consent applications lodged by Council considered the effects of erosion and flood control on waterways to a greater extent. It was even noted that some of the mitigation measures included in the consents to protect river health could be incorporated into the Chapter 27 policies as a means of promoting good ecological outcomes.

Gravel extraction on land

There is a high demand for gravel and aggregate in Tasman, as is the case around NZ. Gravel provides a low cost quality material to build roads and buildings, and has the added benefit of increasing the flood carrying capacity of river channels.

Staff noted that extraction of gravel from land-based pits (as opposed to gravel extracted from the beds of rivers) is not well regulated by rules in Chapter 16 of the TRMP. In particular, rule-set 16.10.2, which deals with effects of earthworks on flood hazards, does not include consideration of gravel extraction adjacent to waterbodies, such as the need for appropriate setbacks from river margins or the potential impacts on groundwater.

There is also a need to assess the impact of large land-based commercial gravel takes and whether the amount being taken is sustainable.

The extraction limits for gravel, sand and other materials set out in Chapter 28 (Figures 28.5A and B) should be reviewed and amended as necessary.

Impacts on Water Quality

Managing effects of land use on water quality

Monitoring[31] has shown that threats to water quality and stream health in the Tasman District relate to the intensification of agriculture and horticulture and the expansion of residential development. Effects of land use activities on water quality include increased sedimentation from land clearance and land use change, and contamination from stock and human effluent, fertilisers and stormwater

[31] River Water Quality State of the Environment Report (2015)

runoff. The main impacts on water quality as identified in Council monitoring are therefore not associated with the activities covered in Chapters 27 and 28.

As already discussed, lack of integrated management between land use activities and their effects on waterbodies needs to be addressed in the TRMP review.

Stock access to waterways

Prevention of stock access to waterways has improved and incentives such as TDC's fencing fund have assisted in rivers and streams being fenced off. Staff report that there is still an issue with cattle accessing small streams and that further work is needed to prevent this.

Hazards

As noted above, the hazard risk posed by the potential failure of an existing dam is not strictly related to beds of rivers or lakes, and this aspect of dam use could be moved to an appropriate District Plan chapter to enable this risk to be addressed for all dams.

Natural Character, Landscape, Cultural, Recreational and Amenity Values

Effects on natural character

As previously discussed, there is considerable overlap between the provisions of Chapter 27 and those in Chapter 8 (and other chapters). In general the TRMP does not provide comprehensive protection and enhancement of natural character of water body margins and this needs to be addressed in the TRMP, including stronger integrated management across District and Regional Plan provisions.

Of specific relevance to Chapter 27, staff note that elaborate pump houses beside rivers can impact on natural character. The TRMP does not require assessment of effects on natural character for consent applications to take water. This reflects weak linkages from the rules back to policy sets for natural character. Clearance of native bush to ensure space for power lines also detracts from the natural character of river margins, e.g. along the Buller River.

Lack of public access

Staff also note that there is very little public access to waterways in the District and that access often relies on the goodwill of landowners. For example, the Matakitaki River is popular for kayaking and fishing, but relies largely on landowners for enabling access.

Uses and Values of Rivers and Lakes

As already noted, Schedule 30A is incomplete and needs to be updated as part of the TRMP review.

3.4 Effectiveness and Efficiency

This section provides an analysis of the efficiency and effectiveness of Chapter 27 of the TRMP. It focuses on the achievement of objectives contained within the chapter. The analysis draws on the information from earlier sections, including environmental data, council records, and the opinion of experienced plan users.

3.4.1 Adverse Effects on Ecosystems

Table 4: Assessment of Efficiency and Effectiveness – Adverse Effects on Ecosystems

Objective	Analysis	Rating of Achievement
Objective 27.1.2.1 *The maintenance, restoration and enhancement, where appropriate, of aquatic habitats in the beds of rivers and lakes that is sufficient to:* *(a) preserve their life-supporting capacity (including the mauri of the water);* *(b) protect their values for native fisheries (including inanga and eels), trout fisheries and wildlife (including indigenous bird species);* *(c) protect or enhance indigenous biodiversity values.* Policy set 27.1.3.1 – 27.1.3.11 **Objective 27.1.2.2** *Activities in, on, under, or over the beds of rivers and lakes are carried out in a way that avoids, remedies, or mitigates adverse effects on aquatic ecosystems, including in particular:* *(a) aquatic habitats of:* *(i) indigenous freshwater fish;* *(ii) indigenous birds and other wild life, including river bed nesting habitats;* *(iii) trout;* *(b) braided and lowland river ecosystems;* *(c) fish passage.* Policy set 27.1.3.1 – 27.1.3.11	Implementation of Chapter 27 provisions are largely concerned with *minimising* the impacts of activities on aquatic habitats, rather than achieving restoration or enhancement. In this regard, the TRMP provisions have been relatively successful in avoiding, remedying or mitigating adverse effects of activities. Rules cover the range of activities that occur in the beds and on the surface of rivers and lakes, and assessment matters enable a broad assessment of effects and imposition of conditions. There has been an improvement in the provision of fish passage for TDC river structures, such as culverts, and a budget exists to help cover this cost. Non-regulatory methods such as catchment management planning, development of best practice guidelines (e.g. on natural stream management), funding for riparian restoration and fencing of waterways have led to enhanced outcomes for aquatic habitats in specific locations. Additionally, changes in Council's asset management planning have led to less reliance on hard flood and erosion protection works, such as rock revetments, to more natural options, including riparian planting and structures that maintain river characteristics such as pools, riffles, and channel sinuosity. Levels of service have also changed over time and Council now undertakes more advocacy work and consultation through user groups meetings. Despite these positive outcomes, monitoring data shows that there has been a deterioration in the health of water quality and associated habitats and native fish stock, particularly for small streams less than 3m in width. This is due to the effects of land use activities addressed through other parts of the TRMP, particularly activities that increase sedimentation, nutrient runoff and contamination of waterways. In addition, the ability to achieve the restoration and enhancement aspects of Objective 27.1.2.1 has proven difficult. Stronger provisions in rules requiring or incentivising restoration and enhancement would assist. There has also been less progress made for provision of fish passage on private land, largely due to the fact that landowners are not required to alert council when erecting permitted structures in streams and rivers.	Partial achievement

3.4.2 The Relationship of Māori and their Culture and Traditions with Rivers and Lakes

Table 5: Assessment of Efficiency and Effectiveness – Māori Relationships with Rivers and Lakes

Objective	Analysis	Rating of Achievement
Objective 27.2.2 *Retention or enhancement of the traditional values held by Māori under tikanga for rivers and lakes and their margins, including the mauri (or life-supporting capacity) and the wairua (or spiritual value) of rivers and lakes.* Policies 27.2.3.1 – 27.2.3.2	There are opportunities for Te Tau Ihu iwi to participate in implementation of the TRMP. For instance, every consent application is provided to all iwi to comment on. Cultural Impact Assessments are also undertaken for Council's engineering activities, and iwi are consulted on site specific management plans and Council's annual works programme so any concerns can be signalled. Assessment matters taken into account during the resource consent process include effects on **Māori** cultural and spiritual values, and Schedule 30A identifies uses and values of importance to iwi for specific waterways. However, weak internal consistency within Chapter 27 provisions means there is "very limited scope" for achieving Objective 27.2.2 through the resource consent process. Schedule 30A is incomplete and may not capture the full range of uses and values of importance to tangata whenua. Additionally, key provisions within national policy statements (NPS-FM and NZCPS), iwi management and environmental plans, and statutory acknowledgements within Treaty settlement legislation have yet to be incorporated fully into the TRMP. There is also a lack of information about environmental outcomes relevant to **Māori** interests in freshwater management; iwi have asked for broader and ongoing cultural health indicator assessments, but this is yet to happen. The 'unable to determine progress' rating has been given for Objective 27.2.2 because it is up to iwi to determine the extent to which this objective has been achieved. Based on the above assessment however, it is unlikely that the objective can be achieved through the current TRMP provisions, both in Chapter 27 and elsewhere in the Plan.	Unable to determine progress

3.4.3 River Bed Stability and Channel Efficiency

Table 6: Assessment of Efficiency and Effectiveness – Riverbed Stability and Channel Efficiency

Objective	Analysis	Rating of Achievement
Objective 27.3.2.1 *The stability of river beds and the efficiency of rivers to carry floodwaters and sediment are maintained.*	In many respects it is the activities of Council that have the greatest impact on the stability of river beds and control of flood water given the scale of the work across all of the District's waterways.	On track to achieve

Objective	Analysis	Rating of Achievement
Policy set 27.3.3.1 – 27.3.3.12 **Objective 27.3.2.2** *Activities in river beds, including construction of structures, are carried out in a way that avoids, remedies, or mitigates adverse effects on the stability of river beds and efficiency of rivers to carry flood waters and sediment.* Policy set 27.3.3.1 – 27.3.3.12	TDC has continued to carry out its functions under the Soil Conservation and Rivers Control Act 1941. Given this is subject to the RMA and TRMP, TDC has applied for multiple resource consents to enable it to carry out its functions, including construction of river control structures, gravel extraction, and management of riparian margins. In addition, Chapter 27 regulates activities that can impact on river bed stability and efficiency, including the damming and places of structures in river beds, gravel extraction, and other forms of disturbance (such as suction dredging for gold mining). The main concern with this section has been conflict with the objectives relating to maintenance and enhancement of river function and ecosystem health. Flood control measures such as stopbanks and hard protection structures (e.g. rock revetments) confine natural channels and modify river morphology, ecosystems and habitats. TDC engineering staff have been encouraged to move away from these methods of river control to more natural approaches, and this is occurring. There is some concern that large scale commercial gravel extraction may be taking unsustainable levels of gravel from land adjacent to rivers due to the high demand for gravel and aggregate, and there needs to be greater integration between rules in Chapter 28 and Part II of the TRMP to address this. An additional and important consideration is the need to plan for the impacts of climate change on river flows and function. The implications of more frequent and intense rain events on river bed stability and management of floodwaters needs to be reflected in the updated TRMP. Looking back, however, Objectives 27.3.2.1 & 2 are considered 'on track to achieve'. The issues identified above can be addressed through the TRMP review to ensure these river control objectives continue to be met.	

3.4.4 Impacts on Water Quality

Table 7: Assessment of Efficiency and Effectiveness –Impacts on Water Quality

Objective	Analysis	Rating of Achievement
Objective 27.4.2 *Maintenance of water quality and enhancement of water quality where existing quality is degraded for natural and human uses and values, including iwi wairua values, through the carrying out of*	By and large, the activities consented under Chapter 27 provisions have had limited impact on water quality. Many of the uses and values identified in Schedule 30A are relevant to the achievement of this objective. Assessment of resource consent applications under Chapter 28 rules require these uses and values to be taken into account in decisions. Water conservation orders on the Buller and Motueka Rivers have also influenced outcomes for water quality. One area that can be tightened is restricting access by stock to waterways although this may be addressed through national regulations proposed for 2020. Monitoring of stream health has	Partial achievement

Objective	Analysis	Rating of Achievement
activities in the beds of rivers and lakes. Policy set 27.4.3.1 – 27.4.3.3	indicated that cattle are entering small streams and causing bacterial contamination. Another shortcoming is the challenge of achieving water quality enhancement through rules, which are typically designed to minimise adverse effects. As already noted, monitoring data shows that the most significant impacts on water quality stem from a range of land use activities that are addressed through other TRMP chapters. Looking forward, climate change will exacerbate pressures on waterways, e.g. increased frequency and severity of storm events will lead to increased runoff and bank erosion, resulting in higher sediment and nutrient input from land. These effects require a greater degree of integration between TRMP chapters.	

3.4.5 Hazards

Table 8: Assessment of Efficiency and Effectiveness – Hazards

Objective	Analysis	Rating of Achievement
Objective 21.5.2 *The adverse effects of dam structures on river functioning are avoided, remedied or mitigated and the hazards created by risks of dam failure on communities and ecosystems are avoided or mitigated.* Policy set 27.5.3.1 – 27.5.3.4	Dam structures (over a specified size) are required to be built to appropriate standards under the Building Act and regular monitoring of dam integrity and safety are undertaken, including assessments by qualified engineers. Resource consent is required for both the construction of new dams, and the renewal of existing dams under Chapter 27 provisions. This provides a further opportunity to check dam performance and safety. As these assessments are required on an ongoing basis during the life of a dam, the TRMP objective can never be considered 'fully achieved'. The aspect of the objective concerning hazard risks created by dam failure is more appropriately dealt with in the District Plan (Part II) of the TRMP, as it concerns all existing dams (including off-stream dams) and is not directly relevant to effects on river and lake beds.	On track to achieve

3.4.6 Natural Character, Landscape, Cultural, Recreational and Amenity Values

Table 9: Assessment of Efficiency and Effectiveness – Natural Character and Other Values

Objective	Analysis	Rating of Achievement
Objective 27.6.2 *The maintenance and, where appropriate, the enhancement of:*	Monitoring information suggests that the natural character of waterways in the District has not been maintained over time. The degradation is often due to historic vegetation losses and physical changes, for example channel straightening or erosion protection structures (see Chapter 8 Evaluation Report for more details).	Partial achievement

Objective	Analysis	Rating of Achievement
(a) the natural character, amenity, recreational and cultural values and *(b) public access to rivers and lakes;* *as a result of activities in the beds and on the surface of rivers and lakes.* Policies 27.6.3.1 – 27.6.3.2	As previously noted, Council practice has changed over time so that increasingly more 'natural' river control methods that maintain healthy river form and function are being used. In addition, Schedule 30A identifies a number of uses and values that are relevant to this objective, e.g. contact and non-contact recreation including swimming, canoeing, angling, jet boating and picnicking, and landscape values. Assessment of resource consent applications under Chapter 28 rules require these uses and values to be taken into account in decisions. Schedule 30A is outdated, however, and should be amended as part of the TRMP review to ensure the values identified in this objective apply to all relevant waterways in the District. As well, the TRMP rule framework does not actively encourage enhancement of natural character, amenity, recreational and cultural values. Instead, it is through non-regulatory actions by Council, iwi, community interest groups and individual landowners that enable enhancement of some of these values, e.g. through pest management and planting of native vegetation. Esplanade strips and reserves are taken by Council when possible as part of the subdivision process, but on the whole public access to the District's waterways is limited and often reliant on the goodwill of landowners.	

3.4.7 Uses and Values of Rivers and Lakes

Table 10: Assessment of Efficiency and Effectiveness – Uses and Values of Rivers and Lakes

Objective	Analysis	Rating of Achievement
Objective 27.7.2 *Increased and improved public knowledge of all uses and values of rivers and lakes and their margins through the development of Council systems to collect, store, evaluate and make available such information.* Policies 27.7.3.1 & 27.7.3.2	It is not known what level of knowledge the public have with regard to uses and values of rivers and lakes. The use of Schedule 30A in the TRMP will have alerted resource consent applicants to the uses and values of waterways relevant to proposed activities. Beyond this, any change in public awareness is probably limited. Schedule 30A has never been completed despite assertions in the TRMP that "Further work is also underway to develop consistent protocols and determine the evidential requirements for inclusion of values into the Schedule". This suggests Council has not prioritised the achievement of this objective.	Unable to determine progress

Appendix 1: Iwi Management Plan Provisions Relating to Activities in the Beds and on the Surface of Rivers and Lakes

Examples of provisions from Te Tau Ihu Iwi Management Plans relevant to the matters addressed in Chapter 27 are shown below. These issues are summarised from the following plans:

1. Ngāti Koata No Rangitoto Ki Te Tonga Trust Iwi Management Plan (2002)
2. Te Rūnanga O Ngāti Kuia, Pakohe Management Plan (2015)
3. Ngāti Tama ki Te Waipounamu Trust Environmental Management Plan (2018)
4. Nga Taonga Tuku Iho Ki Whakatu Management Plan (2004) (lodged with Nelson City Council)
5. Te Ātiawa Ki Te Tau Ihu Iwi Environmental Management Plan (2014) (lodged with Nelson City Council)

For the full text please refer to the individual plans.

Key Issues Relating to Rivers and Lakes

- The principle of ki uta ki tai - the flow of water from the source to the sea, recognises the interconnected nature of rivers, lakes, wetlands, wai puna and the coastal environment. Upstream activities have the potential to degrade the mauri of estuarine and seaward areas. For example cumulative effects on coastal water from runoff and discharges into fresh water upstream.
- Activities, which reduce water quality, also reduce the mauri of the water body – the life force, which sustains indigenous life and many associated values. Key concerns include: a) point and non-point discharges to water; b) sedimentation of waterways; c) the removal of indigenous vegetation on riparian margins; d) activities which reduce water quantity to the extent that a water body is unable to flush out contaminants and e) a lack of information regarding the presence and health of indigenous species.
- The over allocation of water, leading to reduced flows and the inability of water bodies to sustain the indigenous communities within them.
- Diminishing mauri (life force) of a water body and the loss of habitats supporting indigenous species.
- Loss of ability for tangata whenua to practise their customs and traditions associated with water, leading to a loss of matauranga (knowledge) associated with those species and habitats.
- Damming waterways can change the nature of a water body, restrict or bar fish migration up and down stream, alter natural sedimentation processes, and provide introduced species with access to water bodies previously not easy to get to.
- Draining of water bodies, such as wetlands has led to the loss of significant habitats for indigenous flora and fauna.
- Mixing waters from one catchment with another contaminates the wairua (spirit) and can also reduce the mauri (life force) of the receiving water body, and may reduce water quality and introduce plant and animal pest species.
- Impacts of river maintenance, engineering of rivers and streams, and in-stream extractive activities (e.g. for sand and gravel) can disrupt the indigenous flora and fauna, change or reduce

the habitats (including indigenous fish habitat), damage or destroy waahi tapu (sacred places) and mahinga kai (food gathering places) associated with those water bodies.

- Introduction of exotic plants and animals into waterways resulting in competition with indigenous species for habitat and food, and degradation of river and stream ecosystems.
- Discharge of contaminants into water, including fertilisers, agrichemical and herbicide spray on stream margins, agricultural run-off, direct stock access to waterways (Linkwater), septic tank overflows (Sounds' housing generally) and stormwater discharges into catchment drainage (particularly the Picton and Waikawa basins).
- The advent of mining in the rohe and the potential implications of that activity on Te wai Māori.
- Repo are culturally significant ecosystems, rich in biodiversity. They are a significant source of mahinga kai, weaving materials and rongoā. The drainage of freshwater wetlands has resulted in the loss of significant ecosystems important as spawning areas for native fish, sediment traps and areas rich in food and nutrients for bird and plant life. Many wetlands in Te Tau Ihu have already been lost through drainage and reclamation.
- Changes to the natural balance of fish habitat and breeding patterns due to reduced shade, increased nutrients, reduced organic matter, channel modification, increased suspended sediments and changes to water flow;
- Restricted or blocked fish passage due to culverts, weirs and dams.

Desired Outcomes

- Recognition of the role of tangata whenua as rangatira and kaitiaki of nga taonga tuku iho.
- Tangata whenua, as kaitiaki, will be effective in ensuring that the mauri or essential life principle of the natural world within the rohe is maintained and enhanced.
- Maintenance and enhancement of freshwater aquatic ecosystems and the management of the effects of activities on water quality in wetlands, lakes, rivers, groundwater and receiving coastal waters that enables: a) contact water recreation; b) food gathering; c) cultural integrity; and d) biological / ecological life supporting capacity.
- Water bodies are healthy and maintained to a level sufficient to:
    - Preserve the mauri (life force) of the water body;
    - Provide for tangata whenua cultural and spiritual values, customs and traditions;
    - Provide sustenance for present and future generations; and
    - Increase opportunities for tangata whenua to practice customs and traditions associated with the uri (descendants) of Tangaroa.
- That the natural functioning and life supporting capacity of ecosystems is not disrupted by discharges into, the taking, use, damming and diversion of fresh surface water or groundwater.
- Water levels and flows are maintained within catchments to protect cultural values.
- Riparian margins of water bodies are restored and enhanced with indigenous vegetation, providing habitat and pathways for indigenous species, and enhancing the ability of taonga species to reproduce (such as inanga).
- Wetlands are recognised and protected for their cultural significance and biodiversity values.
- The relationship between land and water is recognised through integrated catchment planning.

- Activities carried out in the bed or margin of a river or lake do not compromise freshwater fisheries values.
- Hydro developments give effect to the principle ki uta ki tai (flow of water from mountain to sea), and wāhi tapu and wāhi taonga are protected from potential adverse effects resulting from hydro developments.

Appendix 2: Summary of TRMP Rules for Chapter 27 Matters

Table 11: Summary of TRMP Rules for Chapter 27

Chapter 28 Rivers & Lakes Rules	Description
28.1 Structures, Culverts, Fences, Pipes and Cables, Bed Disturbances and Planting	
25.1.2.1 Permitted Activities	• Any activity in, on, or under the bed of a river or lake subject to rule 28.1.3.1, 28.1.4.1, 28.1.5.1, 28.1.6.1 or 28.1.7.1, Provided it complies with the specified rule conditions.
25.1.3.1 – 28.1.5.1 Permitted Activities	• The use, erection, reconstruction, placement, alteration, extension, removal, deposition or demolition of: • A structure that is fixed in, on, or under the bed of a lake or river or any associated bed disturbance. • Any fence, pipe, line, or cable across, under, or over the bed of a lake or river. • Any culvert, ford, or bridge and any associated bed disturbance of a river or lake. Provided it complies with the specified rule conditions.
25.1.5.2 Controlled Activities	• The use, erection, reconstruction, placement, alteration, extension, removal, deposition, or demolition of any culvert, ford, or bridge and any associated bed disturbance of a river or lake bed that does not comply with the conditions of rule 28.1.2.1 or rule 28.1.5.1, Provided it complies with the specified rule conditions.
28.1.6.1 Permitted Activities	• The disturbance of the bed of any river or lake and associated deposition, Provided it complies with the specified rule conditions.
28.1.7.1 Permitted Activity	• The introduction or planting of any plant or any part of any plant in, on, or under the bed, including the banks, of a lake or river and any associated bed disturbance, Provided it complies with the specified rule conditions.
28.1.7.2 Restricted Discretionary Activities	• The introduction or planting of a plant or any part of a plant in, on, or under the bed or bank of any lake or river and any associated bed disturbance that does not comply with the conditions of rule 28.1.2.1 or rule 28.1.7.1.
28.1.8.1 Discretionary Activities	• Any activity associated with a structure, bed disturbance, or planting in, on, under, or over the bed of a river that does not comply with the conditions of rule 28.1.2.1, 28.1.3.1, 28.1.4.1, 28.1.6.1 or 28.1.5.2.
28.2 Dams and Weirs	
28.2.2.1 & 28.2.2.2 Permitted Activities	• The use, erection, reconstruction, placement, alteration, extension, removal, or demolition of any dam structure that is in or on the bed of a lake or river, or any associated deposition or necessary bed disturbance, Provided it complies with the specified rule conditions.
28.2.2.3 Controlled Activities	• The use, reconstruction, alteration or extension of any dam structure for damming water that is fixed in or on the bed of a lake or river, or any associated deposition or necessary bed disturbance that does not comply with the conditions of rule 28.2.2.1 or rule 28.2.2.2, Provided it complies with the specified rule conditions.
28.2.2.4 Discretionary Activities	• The use, erection, reconstruction, placement, alteration, extension, removal or demolition of any structure for the damming of water that is fixed in or on

Chapter 28 Rivers & Lakes Rules	Description
	the bed of a lake or river, or any associated deposition or necessary bed disturbance, that does not comply with the conditions of rule 28.2.2.3.
28.3 Entering or Passing Across Beds	
28.3.2.1 Permitted Activities	• Except as regulated by 28.4.2.1, the entering or passing across any bed of a river or lake by a vehicle or motorised machinery and any associated disturbance of the bed, Provided it complies with the specified rule conditions.
28.3.2.2 Restricted Discretionary Activities	• The entering or passing across any bed of a river or lake by a vehicle or motorised machinery and any associated disturbance of the bed that does not comply with the conditions of rule 28.3.2.1, Provided it complies with the specified rule conditions.
28.3.2.3 Non-Complying Activities	• The entering or passing across any bed of a river or lake by a vehicle or motorised machinery and any associated disturbance of the bed that does not comply with the conditions of rule 28.3.2.2.
28.3.3.1 Permitted Activities	• The entering or passing across any bed of a river or lake by livestock or any associated disturbance of the bed, Provided it complies with the specified rule conditions.
28.3.3.2 Restricted Discretionary Activities	• The entering or passing across any bed of a river or lake by livestock, or any associated disturbance of the bed that does not comply with the conditions of rule 28.3.3.1, Provided it complies with the specified rule conditions.
28.3.3.3 Non-Complying Activities	• The entering or passing across any bed of a river or lake by livestock and the associated disturbance of the bed that does not comply with the conditions of rule 28.3.3.2.
28.4 Activities on the Surface of Rivers and Lakes	
28.4.2.1 Permitted Activities	• The entering or passing across the surface of the water in a river or lake by craft, Provided it complies with the specified rule conditions.
28.4.2.2 Discretionary Activities	• The entering or passing across the surface of the water in a river or lake by craft that does not comply with the conditions of rule 28.4.2.1, Provided it complies with the specified rule conditions.
28.5 Gravel Extraction	
28.5.2.1 Permitted Activities	• The disturbance of the bed of a river for the extraction or removal of sand, gravel or other material from the bed of a river, Provided it complies with the specified rule conditions.
28.5.2.2 Controlled Activities	• The disturbance of the bed of a river for the extraction or removal of sand, gravel or other material from and subsequent deposition in the bed of a river that does not comply with the conditions of rule 28.5.2.1, Provided it complies with the specified rule conditions.
28.5.2.3 Controlled Activities	• The disturbance of the bed of a river for the extraction or removal of sand, gravel or other material from the bed of a river, Provided it complies with the specified rule conditions.
28.5.2.4 Restricted Discretionary Activities	• The disturbance of the bed of a river for the extraction or removal of sand, gravel or other material from the bed of a river that does not comply with the conditions of rule 28.5.2.2 or rule 28.5.2.3, Provided it complies with the specified rule conditions.

Chapter 28 Rivers & Lakes Rules	Description
28.5.2.5 Discretionary Activities	• The disturbance of the bed of a river for the extraction or removal of sand, gravel or other material from the bed of a river that does not comply with the conditions of rule 28.5.2.4, Provided it complies with the specified rule conditions.
28.5.2.6 Non-Complying Activities	• The disturbance of the bed of a river for the extraction or removal of sand, gravel or other material from the bed of a river that does not comply with the conditions of rule 28.5.2.5.
Schedules	
Schedule 28A	Duration of Resource Consents
Schedule 30A	Uses and Values of Rivers, Lakes, Wetlands, Aquifers and Coastal Waters
Schedule 30B	Waimea Water Quality

Appendix 3: Summary of River and Lake Monitoring Data and Implications[32]

Table 12 Summary of river and lake monitoring data and implications

Issue	Cause	Implications
Climate Change[33] • Changes to our climate are already being observed. Climate change is expected to affect when, where, and how much rainfall, snowfall, and drought occur. This may change the amount of water in our soil and in glaciers, lakes, rivers, and groundwater. • The frequency of extreme weather events is expected to increase. The flows, mixing, and temperature of water in lakes, rivers, and groundwater is also projected to change. • The effects of climate change will intensify with time. Many effects are irreversible on a human timescale. Some, like species extinction are permanent. • Many aspects of ecosystem functioning are expected to change with the progress of climate change.	• Increasing concentrations of greenhouse gases in the atmosphere from activities such as industry, agriculture and transportation. • New Zealand's emissions are dominated by animal agriculture, followed by transport, manufacturing and industrial activities.	• Climate change will exacerbate other pressures on waterways, e.g. increased frequency and severity of storm events will lead to increased runoff and bank erosion resulting in higher sediment and nutrient input from land. • Flows, mixing, and temperature of water in lakes, rivers, and groundwater is projected to change, which will impact on aquatic habitats and native species. • More frequent and intense droughts are likely to increase the demand for water to irrigate land and increase competition for this resource. • Increased heavy rainfall will put pressure on Council and landowners for additional flood protection measures. • Controls on a range of land use activities need to be maintained, strengthened or introduced to avoid, remedy or mitigate the worst effects of climate change on the health of rivers and lakes.
Primary Productivity	• Excessive nutrient run-off (especially nitrogen) from land via sewage, stock	• Maintain and where necessary increase controls on nutrient

[32] Information in the table comes from the following sources: **1.** James, T and McCallum, J 2015. *State of the Environment Report: River Water Quality in Tasman District 2015*. Prepared for Tasman District Council https://www.tasman.govt.nz/my-region/environment/environmental-management/water/river-water-quality/water-quality/; **2.** Newcombe E, Clark D, Gillespie P, Morrisey D, MacKenzie L 2015. *Assessing the State of the Marine Environment in Tasman Bay and Golden Bay*. Prepared for Nelson City Council and Tasman District Council. Cawthron Report No. 2716; **3.** McCallum, J. & James, T. 2018. *The Health of Freshwater Fish Communities in Tasman District 2018*. Tasman District Council, Richmond, New Zealand; and **4.** Gibbs, M. & Woodward, B. 2018. *Waimea and Moutere Sediment Sources by Land Use*. Prepared for Tasman District Council.

[33] See Ministry for the Environment & Stats NZ (2020). *New Zealand's Environmental Reporting Series: Our freshwater 2020*. Available from www.mfe.govt.nz and www.stats.govt.nz.

Issue	Cause	Implications
• Increased nitrate concentrations. • Problem growths of microalgae; some microalgae produce toxins that can be harmful to aquatic organisms or humans.	effluent, industrial waste, fertilisers, and land disturbance. • Plantation forestry harvesting large catchments within a short duration. • Lack of riparian planting leading to increased water temperatures (and light) and growth in algal blooms.	inputs to ensure problems do not occur.
Sedimentation Fine sediment discharged to waterways and the coast.	• Harvesting of plantation forestry, with Separation Point granite areas being particularly susceptible. • Earthworks associated with land use change, e.g. from forestry to pasture or forestry to residential. • Earthworks for road / farm track construction. • Stock access to waterways and stream banks. • Farming practices such as break feeding on winter crops or cultivation close to waterways. • Heavy rainfall events causing large sediment discharges to streams and bank erosion.	• Maintain and where necessary strengthen controls to limit sediment input from land and reduce disturbance of river / stream banks and beds.
Habitat Integrity Changes to the features of a habitat, such as the amount or type of sediment, water flow (yield), disturbance of river banks and beds, the presence of barriers in waterways, the extent of riparian planting, or the loss of key plants or animals that create structure, will affect biodiversity and habitat-integrity.	• Reduced water flow in streams due to the high rate of evaporation and transpiration from pine trees. • Stormwater runoff from impervious surfaces in urban catchments causing higher peak stream flows and lower base flows, leading to increased bed and bank disturbance. • Modification of urban streams, e.g. straightening and widening for flood protection, removal of vegetation.	• Protection of habitat integrity by limiting disturbance. • Increasing the amount of bank-side vegetation along rivers and streams to provide shading and to keep water temperatures below the critical levels required for protecting ecosystem health. • Restore wetlands in the District, and create especially where runoff enters streams.
Contamination • Bacterial: can cause problems for human health through contact with the water. • Chemical: Toxic chemicals can kill aquatic species, or reduce their ability to grow	• Sources of bacterial contamination: • Dairy and intensive farming, including through direct stock access to waterways, effluent discharges from dairy sheds, stand-off pads, raceways or laneways, pasture runoff, and break feeding on winter crops close to waterways.	• Reducing faecal bacteria inputs to small streams (stock access and riparian buffers for earthworks and land cultivation). • Restoring or creating wetlands in key locations where runoff enters streams.

Issue	Cause	Implications
and reproduce. Human health can be affected if contaminants accumulate in the bodies of species that we consume. • Sites with pastoral and urban land cover have higher concentrations of disease-causing organisms.	• Discharges from town sewage treatment plants and household septic tanks, particularly Dec-Feb when many holiday-makers are present. • Sources of chemical contamination: • Horticultural discharges of pesticides and other chemicals (e.g. anti-budding). • Discharges down drains on residential and commercial properties in urban areas, including the washings of cement, vehicles, paint, petroleum products, roof cleaning products and pesticides. • Industrial discharges to waterways, including accidental discharges. • Stormwater runoff from roads, particularly in Richmond, containing heavy metals and hydrocarbons. • Contamination from past mining activities in localised areas, e.g. the Lake Otuhie and Maruia River catchments,	• Undertaking catchment management planning. • Using effective low impact urban design methods to manage peak flow and water quality. • Treating stormwater before it is discharged to waterways.
Fisheries • Declining native fish populations due to habitat disturbance. • Sedimentation in waterways which limit the ability of freshwater fish to see food to catch and therefore can restrict feeding. • Increases in water temperature beyond fish tolerance • The presence of fish passage barriers which block access to large areas of catchment for several fish species.	• Land use change which has led to the degradation of fish habitat in waterways. • Land disturbance and run-off, particularly through plantation forestry operations, roading and residential development. • Installation of structures in waterways without provision of fish passage, such as farm track / road crossings and water supply intakes. • A lack of riparian vegetation to shade waterways and provide habitat for fish. • Modification of rivers and streams, e.g. straightening and widening for flood protection.	• Reduce faecal bacteria and fine sediment inputs to small streams, e.g. by avoiding stock access and providing riparian buffers for earthworks and land cultivation. • Increase the amount of bank-side vegetation along these streams to provide shading and to keep water temperatures below the critical levels required for protecting ecosystem health. • Restore or create wetlands in key locations where runoff enters streams. • Ensure structures in streams and rivers maintain river natural morphology and ecosystem health, and allow for passage of fish.

Issue	Cause	Implications
Biosecurity • Invasive species compete with native species leading to negative ecological, recreational, commercial, and cultural effects.	• Pest plants in riparian margins compete with and degrade indigenous flora and habitats for nesting birds. A lack of active pest control in some river catchments enables pest plants to spread and infest other areas. • Pest fish, such as koi carp, perch, rudd and tench, have been found in ponds on private land and control operations appear to have achieved eradication. • Gambusia (mosquitofish) are spreading across coastal streams in the Waimea and Moutere Inlets and proving difficult to control.	• Ensure full implementation of the Nelson Tasman Pest Management Plan 2019-2029. • Ensure landowners have information about invasive species and the means for controlling them.