

CHAPTER 27: ACTIVITIES IN THE BEDS AND ON THE SURFACE OF RIVERS AND LAKES

27.0 INTRODUCTION

The rivers in Tasman District and their tributaries and the small rivers within 10 kilometres of the coast have significant natural and cultural values, including natural character, biodiversity and wildlife values, indigenous species, trout and recreational values.

A range of activities are carried out in the beds of rivers including gravel extraction, construction of structures such as for water augmentation or hydro-electric power generation, river bank protection, installation of culverts or vehicle crossings. These activities enable the community to provide for its social, economic and cultural well-being and its health and safety. The activities may also be carried out in ways that provide environmental benefits including providing bed and bank stability, management of flood flows and improved water quality. However, these activities may adversely affect river values through modification of the bed and aquatic habitat, presence of structures, adverse effects on flow or quality and noise or disturbances. These adverse effects must be avoided, mitigated or remedied.

Activities in and adjacent to the beds of rivers and lakes have already contributed to the decline of native aquatic species such as giant kōkopu, longfin eels and mudfish and birds such as black-fronted terns and black-billed gulls. Measures are needed to restore aquatic habitat in some areas, especially in lowland areas, including restoration of fish passage past some structures in the beds of rivers.

Control of river channels and management of floodplains is necessary if channel stability and efficiency in carrying floodwaters and sediment is to be maintained and flooding of riparian lands is to be mitigated. Communities living near rivers expect that river channels remain in the same place, that margins are protected from erosion, and that effects of flooding on riparian and flood plain land are mitigated.

Activities that might be undertaken to protect and manage the floodway capacity and stability of river channels may also have adverse effects on aquatic habitat and other river values, including cultural values. These activities must be managed appropriately to avoid, remedy or mitigate adverse effects.

Other activities, such as plantings, bridge or culvert structures and disturbances for gravel extraction or gold mining, may also impact on channel stability and floodway capacity and must be actively managed to avoid, remedy or mitigate adverse effects. These activities also have the potential to interfere with wāhi tapu, sites of cultural significance or taonga.

Activities on the surface of rivers and lakes include a range of boating activities and swimming. Other recreational activities dependent on rivers include angling and passive enjoyment of lake or river scenery. Boating activities might cause adverse noise effects or be in conflict with other recreational activities.

Some activities on the surface have commercial possibilities. Noise, frequency, effects at entry and exit points and conflict between uses are all potential adverse effects. Movement of craft on the rivers and lakes is also regulated by Council's Navigation Safety Bylaw controls to provide for safety of the river users.

Some water body values are identified as being particularly significant by being part of the Water Conservation Orders for the Motueka and Buller Rivers (and their tributaries). The Water Conservation Orders require that Part IV of the Plan does not contain rules that allow specified activities (as permitted activities) including dams on named rivers or obstruction of fish passage. The Water Conservation Orders also prevent activities that alter cross sections, meandering patterns and braided river channel characteristics of specified rivers.

Other values of water bodies, including significant values, are included in Schedule 30A of the Plan, although the list of rivers that may have specific values is not exhaustive and further work is being done on the assessment of significance of values. The Schedule provides the best information about uses and values currently available to the Council and it is currently being updated.

The Council manages those parts of the riverbed owned by the Crown, on behalf of the Crown. Some parts of the bed are owned by adjacent landowners who also have legal rights and interests in how the bed is managed.

All activities carried out in any river bed, public or private, are subject to the provisions of Part IV.

27.0.1 Soil Conservation and Rivers Control

The Council has duties and functions under the Soil Conservation and Rivers Control Act. The activities carried out under the Soil Conservation and Rivers Control Act are subject to the Act and the regulatory framework to be provided by Part IV.

The objects of the Soil Conservation and Rivers Control Act 1941 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 Tasman District Council with the ability to provide works and services in a river in order to meet these objectives. The day-to-day river works and services required under the Soil Conservation and Rivers Control Act and provided by the Council are carried out in accordance with its Rivers Activity Management Plan.

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

27.0.2 Resource Overview

Tasman district's major river systems or catchments are as follows:

- (a) The **Waimea catchment** comprises the Wai-iti River catchment (270 square kilometres) and Wairoa River catchment (463 square kilometres) which drain steep hill country and join approximately 1 kilometre downstream of the Brightwater Bridge to become the Waimea River. The Q50 flow¹ of the Wairoa River at the gorge is 1407 cubic metres per second. The Q50 flow of the Wai-iti River at Brightwater is 481 cubic metres per second. The river plain formed by the Waimea River is intensively farmed and also supports some of the urban centres in the Tasman District.
- (b) The **Motueka River catchment** covers an area of 2170 square kilometres. The upper Motueka drains from the mountainous Red Hill/Maungakura (1629 square kilometres) and Beebys Knob (1436 square kilometres) area. The river flats and terraces in this area are narrow. The Motupiko and Tadmor Rivers drain the head of the Moutere Depression to be joined at Tapawera by the Wangapeka and Baton Rivers—two major tributaries that drain the watershed in the western most corner of the catchment. The river flows in a narrow valley below Tapawera to follow the foot of the Western Nelson Range (Arthur Range/Wharepapa) in a north easterly direction towards Tasman Bay/Te Tai-o-Aorere. The Q50 flow of the Motueka River at Woodstock is 2,038 cubic metres per second.

The Lower Motueka River receives run-off from the catchments of the Stanley Brook, Dove, Orinoco, Waiwhero and Brooklyn streams. These rivers and streams are bounded by wide flats and terraces backed by strongly rolling slopes which rapidly give way to the moderately steep slopes that form the eastern Motueka catchment boundary. The river plains have historically been used for horticultural production. Stopbanks have been installed on the Lower Motueka River up as far as Peach Island, primarily to protect the Motueka township and surrounding infrastructure.

¹ The Q50 may change from time to time according to the size and frequency of floods. It is equivalent to a one year in 50 frequency flood and is also referred to as the 2 percent annual exceedance probability (AEP).

- (c) The **Riuwaka River**, partly fed from karst geology has comparatively stable flows. The river network includes streams modified for land drainage purposes (Little Sydney, Scott's Drain, and Hamilton Drain) which discharge to the estuary via tidal floodgates. The river system is relatively small with the Q50 at the south branch being 104 cubic metres per second, and Q50 at the north branch being 80 cubic metres per second.
- (d) The main **Aorere River catchment** drains from the alpine regions of the Kahurangi National Park. The Boulder, Slate, 15 Mile, 17 Mile, and 19 Mile Creeks (which join the Aorere upstream of Bainham) and the Kaituna River (whose confluence is downstream of Devil's Boots), drain from the steep bush clad Wakamarama Range. The Aorere passes through steep rock gorges before discharging into the flat valley area used predominantly for dairy cattle and sheep farming. The land in these lower catchment reaches is alluvial and highly susceptible to erosion. The Aorere River is one of the largest rivers in the District with a Q50 flow of 3067 cubic metres per second.
- (e) The **Takaka River catchment** drains a mountainous region of around 855 square kilometres into the lower reaches of the Takaka Valley which comprises arable land. The main tributaries to the Takaka River are the Cobb River (on which the Cobb Dam is located) and the Waingaro and Anatoki rivers which join the main river near Takaka. The Waingaro is the largest of the contributing rivers with a Q50 of 1145 cubic metres per second, compared with 681 cubic metres per second from the Anatoki and 693 cubic metres per second from the Takaka River at the Waingaro confluence.
- (f) The **Buller River catchment** is the largest catchment in the District. This catchment includes the water flowing from Lake Rotoiti and Lake Rotoroa (via Gowan River/Te Kauparenu), Lake Matiri (via the Matiri River) and other significant rivers such as the Owen, Mangles, Matakītaki and Maruia Rivers. The Buller River flows into the West Coast Region at Boundary Creek (also known as Eight Mile Creek) upstream of Lyell and then reaches the sea at Westport.

The remaining groups of waterways include:

- (i) West Coast rivers draining into the Tasman Sea which include the Paturau, Anatori, Anaweka, Turimawīwi, and Big Rivers, Sandhills Creek and Webb Stream, that drain the Wakamarama Ranges;
- (ii) Golden Bay streams from Puponga to Wainui Bay;
- (iii) Abel Tasman streams from Wainui Bay to Riwaka;
- (iv) streams flowing into the Moutere and Waimea Estuaries;
- (v) streams draining the Richmond ranges;
- (vi) the Kaihoka Lakes, lakes Otuhie, Killarney and Stanley, and the Mangarakau wetland in Golden Bay;
- (vii) underground rivers in karst (limestone and marble) areas.

27.1 ADVERSE EFFECTS ON ECOSYSTEMS

27.1.1 Issue

Activities that may adversely affect aquatic ecosystems include placement of structures, such as river protection works and culverts, disturbances of the bed, mechanical clearance of aquatic plants, introduction of plants, deposition of substances, reclamation, and drainage. Activities may have adverse effects on:

- (a) habitats of aquatic and terrestrial flora and fauna;
- (b) habitats of invertebrates and spawning areas due to smothering by sedimentation;
- (c) shelter, shade and detrital food source for aquatic life (vegetation loss);
- (d) fish breeding and spawning areas;
- (e) fish passage;
- (f) bird nesting and rearing in some locations;
- (g) mauri and wairua.

27.1.1.1 Aquatic Habitat

There are 20 known species of native freshwater fish in Tasman, nine of which migrate to and from the sea as a critical part of their life cycle.

The following five species found in the Tasman district are classified as “in gradual decline” by the Department of Conservation (2004):

- (a) Giant kōkopu
- (b) Shortjaw kōkopu
- (c) Dwarf galaxias
- (d) Brown mudfish
- (e) Longfin eel

It is possible that following re-ranking of species, other native fish species will be added.

A nationwide reduction in natural habitat is responsible for the decline of our threatened native fish. In the Tasman district, for example, over 95 percent of the pre-European wetland has now been drained.

Longfin eel (tuna) are the most widespread of any freshwater fish species in the Tasman District but are listed as in decline nationally, partly due to damming waterways, habitat removal and degradation and commercial harvesting.

The shortjaw kōkopu has preferred habitat in Abel Tasman National Park, Golden Bay and the West Coast. Dwarf galaxias also thrives in a few parts of the region, such as in the upper reaches of the Motueka River tributaries and the Matakītaki River while the northern galaxias can be found in the upper Buller and Motueka river catchments.

The giant kōkopu and brown mudfish are both lowland species and a lot of their habitat has already been lost. Their habitat is particularly at risk from a range of bed disturbance activities, including stream clearance for improving drainage. Giant kōkopu can still be found in the Moutere Ecological District, the Aorere River catchment and the West Coast. Mudfish live in swamps, drains and forest pools that may dry up in summer. When the water disappears, they can be found in damp places underneath logs and other debris, or they burrow into holes where tree roots have rotted and breathe through their skins to survive in damp places for extended periods.

Inanga, common bullies and short-fin eel are the most common freshwater fish in the region and seem to survive with moderate levels of disturbance and limited riparian woody vegetation. However, inanga (a species making up 90 percent of the whitebait catch) require riparian rushland near the top of the tidal influence in streams and rivers to spawn and a considerable proportion of this habitat has been lost or

damaged. Other whitebait species, such as banded kōkopu, koaro and short-jaw kōkopu, spawn amongst leaf litter and rocks at the top of stream banks in forested streams during high stream flows. Many species of freshwater fish including eels, koura, freshwater mussels (*Hydrilla* sp) and shrimp (*Paratya* sp.) are important as kai as well as maintaining biodiversity.

Inanga, giant kōkopu, torrentfish, and most species of bullies, smelt and lamprey are poor climbers and have trouble getting over barriers with a vertical drop of more than 30 centimetres.

Different species of fish have their niches, from koaro in higher altitude stoney creeks to giant kōkopu which prefer slow-moving deep pools in lowland areas. It is therefore important to maintain and provide for the variety of habitats to support the natural variety of fish species present in Tasman's streams.

Of note is the high biodiversity value of lowland streams and, in particular, those within a few kilometres of the coast. These sections of the river have a relatively high number of species and they can also be subject to high pressure as land use is generally more intensive along lowland streams. For the majority of native fish present in the Tasman District, their abundance, and likelihood of presence, reduces with distance inland.

There are eight species of introduced fish, three of which are actively managed sportsfish—brown and rainbow trout and Chinook salmon. The others include the three coarse fish species, tench, rudd and perch, as well as *Gambusia* and koi carp, all five of which are included in the Council's Tasman-Nelson Pest Management Strategy.

Many fish have very defined breeding seasons. For example, inanga spawn on high tides from February to April inclusive, and brown trout from May to September inclusive, and activities that disturb the bed during these times will adversely affect their spawning.

Habitat requirements for nearly all fish include:

- (i) a meandering channel with a variety of depths and widths;
- (ii) a variety of substrate (usually including in-stream woody debris);
- (iii) a variety of bank shape (from steep and undercut to gently sloping); and
- (iv) streamside vegetation (rushland near the estuary, or shrub or forest canopy).

Activities in the beds or on the banks of rivers have significant potential to affect fish habitat where streams are straightened or cleared of any vegetation or subject to stock trampling. There will be beneficial effects from habitat enhancement work like planting and erosion control, construction of bridges to avoid crossing over the bed, and where adjacent riparian land management includes planting protective vegetation and fencing to exclude stock.

Periphyton (algae, blue-green algae, bacteria and fungi attached to the bed of the waterway) is important as food for grazing invertebrates (including some insects, worms, crustacea) which are, in turn, food for carnivorous invertebrates, birds and fish. These species are susceptible to damage by activities in the bed, but also through sedimentation. Smothering of the stream bed with fine sediment and works in streams can adversely affect these organisms and ecosystem health.

27.1.1.2 Fish Passage

An important issue for the Tasman District is the maintenance and enhancement of fish passage. Structures such as dams, culverts, tidal gates, weirs, bridges, water supply intakes and gauging stations all have the ability to impede or block fish passage. The provision of fish passage or remedying or mitigating the adverse effects of structures on fish passage is essential for the proper functioning of aquatic ecosystems, particularly because of migration to and from the sea by many fish species. There is a complementary provision in legislation administered by the Department of Conservation that requires approval from the Director-General if fish passage is obstructed (Freshwater Fisheries Regulations 1983).

Existing tidal flood gates can have a particularly significant effect on fish passage because of their location close to the coast, and on water quality by reducing dissolved oxygen levels and increasing sedimentation.

This issue is pertinent to both proposed and existing structures. It may be difficult or expensive to retrofit existing structures to provide for fish passage. Many of the adverse effects from these sorts of structures are often caused not so much by their installation, as by erosion at the outlet and lack of on-going maintenance.

The Council is developing an inventory showing where culverts are causing fish passage issues, particularly for watercourses with significant value for native fish or trout habitat.

As at February 2009, Council has assessed 271 structures for whether they are a barrier or a significant impedance to fish passage. Of these about 60 percent are perched culverts and prevent or obstruct fish passage.

The resources required for survey effort mean a complete inventory is currently beyond the capacity of Council. Assessment of Council road crossings within 10 kilometres of the coast have been targeted for remedial action as these are the streams with the highest biodiversity and where the greatest potential loss of access to habitat upstream occurs.

27.1.1.3 Drainage Maintenance

Another important issue for the district is drainage maintenance where aquatic plants, debris and sediment are removed from the waterway by mechanical means (using an excavator in the bed) or by use of herbicides.

This activity is mostly carried out by landowners to enhance the productive capacity of their land by lowering water tables and enabling better pasture growth. Unmaintained drainage systems may also cause adverse effects to upstream properties because of impeded drainage, and drainage maintenance may be necessary.

Drainage maintenance activities can have a significant impact on the ecology of waterways, either through destruction of habitat or sedimentation in downstream receiving water. Lowland streams provide important habitat for significant indigenous species and this habitat can be adversely affected by some drainage activities.

This drainage maintenance is mostly carried out on small lowland waterways that drain pasture. They require ongoing maintenance to continue functioning as drainage systems. Such drains may be contained within the definition of “river” where they are part of a modified water course.

Although effects of activities in these very small rivers may be relatively minor on a small and localised scale, the cumulative effects on habitat within them and discharges from them on the overall health of the District’s rivers can be significant. There are best practice methods that can help reduce adverse effects on aquatic habitat.

27.1.1.4 Birds and Wildlife

Four bird species are known to nest on braided open shingle river beds in Tasman—black-fronted terns, banded dotterels, black-billed gulls and pied oystercatchers. All these birds use river beds for breeding from October to January except for banded dotterels which start breeding as early as August. They all use stoney or sandy areas amongst sparse vegetation, particularly in the upper Buller River and Matakaitaki River. Islands in rivers are particularly favoured nesting sites.

Black-fronted terns, which are endemic to the South Island, are one of the most threatened bird species, being in very rapid decline according to the Department of Conservation’s threat classification. These birds are present in small colonies with scattered nests (usually 2-30 pairs). They are known to breed in colonies on the Matakaitaki, Howard/Hinemootū and Buller rivers and on the Motueka River near Tapawera, although disturbance in this area may have led to more infrequent use of this area currently. The birds are vulnerable as they readily desert their eggs and young if their breeding site is disturbed.

Black-billed gull numbers are declining in South Island. They are considered in serious decline in the threat classification. There are colonies of nests, particularly in Upper Buller and Matakītaki. For example, there are about 100 nesting in the Buller River bed upstream of Harley's Rock.

Banded dotterels number about 30,000 birds in the South Island and are in gradual decline. They also breed on the Waimea River and large parts of the Motueka River. These birds usually hold their own against predators and nest in pairs rather than colonies.

South Island pied oystercatchers breed only in the South Island but numbers appear to be slightly increasing.

Blue Duck (whio) are another nationally endangered bird using rivers in Tasman. These birds are found year round in steeper mountain-fed streams, particularly in or near Kahurangi and Nelson Lakes national parks and the Wairoa catchment. They are threatened particularly by predators but they can be disturbed by damming or diverting water.

Noise and close contact from activities carried out in the beds, including use of the beds by 4-wheel drive vehicles and motorbike enthusiasts and machinery working in the bed for gravel extraction or river control works, as well as physical disruption of the birds and their nests, are likely to be the most significant effects that need to be managed.

27.1.1.5 Biosecurity

Plant and animal pests threaten the rivers' biodiversity and reduce the quality of the habitat for indigenous species. Some pest plants also adversely affect the river or lake morphology or flow regime. Activities that increase this risk need to be managed to reduce adverse effects on the natural functioning and ecosystems of rivers and lakes.

Some activities can create habitats that might change natural processes and functions. For example an impoundment of water created by a dam may also create a habitat that favours aquatic pest plants or create a barrier to the passage of fish, including both indigenous species and pest species.

Both recreational activity and moving machinery from one river system to another can spread pests such as didymo and alligator weed.

The Council's Tasman-Nelson Regional Pest Management Strategy considers these biosecurity risks and contains strategies to manage them. Provisions in Part IV complement these measures.

The alga, didymo (*Didymosphenia geminata*) has become a pest organism in many parts of the region, including around the lake outlets of lakes Rotoiti and Rotoroa. Management of didymo is under the control of Biosecurity New Zealand.

The Council and landowners along rivers carry out pest management activities which may have some adverse effects depending on what methods of control are used. For example, water quality may be affected by control of aquatic pests by chemical sprays or habitat may be affected where control is by mechanical means.

27.1.1.6 Planting

Vegetation which can be either planted or self established can alter a river over time by obstructing or redirecting water flow or sediment movement. These changes may exacerbate flooding by reducing channel efficiency, or may cause or worsen bed and bank instability by accelerating erosion or sedimentation. The stability or function of structures on the bed or bank may also be compromised as a consequence, particularly where erosion threatens the supports of a structure. The activities may also lead to a change in the physical nature of the water body's bed (bedform) by trapping sediment, which may be undesirable if it adversely affects other uses.

Planting, especially in the banks or riparian areas, can also mitigate against erosion and flooding, enhance aquatic habitat and biodiversity, and provide water quality benefits. Council carries out extensive planting programmes in its role as manager of the District's rivers and also encourages and supports appropriate stream side planting to enhance and protect aquatic habitat, biodiversity and water quality.

Often the biodiversity value of planting means that riparian planting by adjacent landowners and the Council consists of indigenous species (including the use of plants that are eco-sourced from surrounding plants) in preference to other plant species. However, biodiversity enhancement is not the only reason for riparian planting, and sometimes other plant species may be more appropriate, including for erosion control in some situations.

Crack and grey willow have been used in erosion control in the past. Both species are nationally recognized plant pests and Council is undergoing a programme to replace them with more appropriate species, including indigenous species, where appropriate.

The introduction or planting of any plant, or any part of any plant (whether exotic or indigenous) on the bed of a lake or river can only occur if it is expressly allowed by a rule in a regional plan or any proposed regional plan, or by a resource consent.

Chapter 8 of the Plan already contains a number of policies and methods to manage activities in riparian margins, especially in relation to public access and natural character, and the clearance of indigenous riparian vegetation. Chapter 33 also recognises the role of riparian margins in protecting water quality.

27.1.1.7 Braided River Habitat

Braided rivers are important habitat for the black-fronted tern, black-billed gulls, banded dotterel and South Island pied oystercatchers. They are home to a number of threatened freshwater species, including longfin eel and dwarf and northern flathead galaxias. The Tasman braided rivers have not been subject to extensive investigation or survey but they are known to support a range of diverse but poorly understood terrestrial invertebrate communities.

Activities such as impoundments, extraction of gravel, flood prevention works and flood plain vegetation can all adversely affect braided river habitats. Vehicle movements are a particular issue for bird-breeding habitats.

27.1.1.8 Aquatic Plant Species

New Zealand native freshwater plants include 38 endemic species. Several of these species have become rare or in decline in Tasman District. The major threats are wetland drainage, habitat modification, nutrient enrichment and the spread of weeds. Some notable rare species include:

- (a) Stout Water Milfoil (*Myriophyllum robustum*) found in swamp forest and lowland streams in northwest Nelson.
- (b) Swamp buttercup (*Ranunculus macropus*) and Mud buttercup (*Ranunculus limosella*) usually found in raupo swamps or slow-flowing lowland streams.
- (c) *Gratiola nana* found in muddy hollows in forest clearings, streamsides or in turf at the margins of lakes, rivers or ponds; sometimes aquatic at edge of shallow lakes or rivers.
- (d) *Lepilaeana bilocularis*, an aquatic herb of lakes, brackish water, or slow-flowing rivers. Usually found in shallow fresh water habitats not far from the coast.
- (e) *Isolepis fluitans* found in slow- to fast-flowing streams, ponds, tarns or lakes.
- (f) Fennel-leaved pondweed (*Potamogeton pectinatus*) usually found in brackish water, such as in slow-moving tidal streams or lagoons, but also found in shallow lowland pools.

Disturbance activities in beds of rivers can have an adverse effect on habitats of these endangered native plant species. Distribution of the plants is not precisely known.

27.1.2 Objectives

- 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.
- 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.

27.1.3 Policies

Refer to Policy sets 27.3.3 – 27.7.3.

Refer to Rule sections 28.1, 28.2.

- 27.1.3.1A** To avoid the loss of river extent and values, unless the Council is satisfied that:
- (a) there is a functional need for the activity in that location; and
 - (b) the effects of the activity are managed by applying the effects management hierarchy.
- 27.1.3.1B** The passage of fish is maintained, or is improved, by instream structures, except where it is desirable to prevent the passage of some fish species in order to protect desired fish species, their life stages, or their habitats.
- 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.
- 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.

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- 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.
- 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.
- 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.
- 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;
 - (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.

- 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.
- 27.1.3.8** To maintain spawning habitat for trout, whitebait species and other native fish.
- 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.
- 27.1.3.10** To provide for the use, maintenance and repair of lawfully existing structures in, on or under the beds 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.
- 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.

27.1.20 Methods of Implementation

27.1.20.1 Regulatory

- (a) Regulatory methods to establish thresholds for activities that may be permitted or regulated and to establish limits on the nature and scale of adverse effects.
- (b) Delaying the legal effect of rules regulating fish passage at existing culverts and fords, including tidal flood gates, and adopt a staged approach to restoring fish passage in consultation with landowners and industry groups.
- (c) Requirement for a written fish passage assessment plan by an appropriately competent person in assessment of aquatic ecosystems, which assesses the need and timing for fish passage retrofitting in accordance with policy 27.1.3.4.

27.1.20.2 Education and Advocacy

- (a) Provision of information about ecosystem values and methods to avoid, remedy or mitigate impacts of activities on ecosystems.
- (b) Developing best practice guides to help resource users make sustainable decisions including on:
 - (i) drainage activities;
 - (ii) fish passage, including design, installation and management of culverts;

- (iii) appropriate plant species and planting regimes or methods in river and lake beds and banks;
- (iv) maintenance of whitebait and other native fish habitat.
- (c) Working with manufacturers and landowners to improve design of crossings to minimise impacts on aquatic habitat.
- (d) Council will provide assistance and advice to landowners about:
 - (i) the information requirements for fish passage assessments;
 - (ii) carrying out fish passage assessments;
 - (iii) cost effective fish passage retrofitting options;
 - (iv) priority structures and locations.

27.1.20.3 Monitoring and Investigations

- (a) Working with industry groups, tangata whenua and landowners as well as the Council road asset managers to:
 - (i) assess fish passage needs at existing structures;
 - (ii) identify current barriers to fish passage;
 - (iii) determine priorities for action, beginning with structures closest to the coast; and;
 - (iv) develop a programme of works and target dates for completion of fish passage restoration where assessed as being necessary.
- (b) Carrying out fish surveys and stream habitat assessments to determine freshwater fishery values.
- (c) Regular reporting by Council in consultation with industry groups, landowners, tangata whenua and other stakeholders on measures adopted to improve aquatic habitat including provision of fish passage and adoption of best practice for land drainage activities.

27.1.20.4 Works and Services

- (a) Maintenance on road culverts and tidal gates to restore fish passage on Council road culverts within 10 kilometres of the coast and provision in annual plan budgets to enable this work.
- (b) Management of riparian vegetation and vegetation in river beds through the Rivers Activity Management Plan in a way that is consistent with Plan policy.

27.1.30 Principal Reasons and Explanation

The Council acknowledges the potential for any activity that disturbs the bed of a river to damage or destroy aquatic habitat and Policy 27.1.3.1 seeks to identify and manage these effects. A wide range of activities and structures may affect aquatic ecosystems in varying degrees and the potential for adverse effects needs to be accounted for in performance standards for rules as well as when setting conditions for resource consents.

Where the bed disturbance occurs in water, sediment will be mobilised. The mobilisation of sediment, depending on the scale of the activity, can reduce the clarity of the water by increasing its turbidity. A small reduction in clarity for brief periods will not usually cause significant adverse effects. However, reduction in clarity can adversely affect natural and human use values supported by the lake or river, or other users of the water body if the reduction is severe or prolonged.

In Policy 27.1.3.2, Council advocates for adoption of a best practice approach to drain maintenance works, whether they occur in farm drainage canals, or in modified watercourses. This best practice approach recognises the contribution to aquatic habitats from the range of drainage network systems that exist across the District.

Adverse effects of this activity on both aquatic habitat and water quality can be mitigated by following best management practices. These include incorporating natural meander and maintenance of bank vegetation, such as grasses, to provide habitat for invertebrates and whitebait spawning, shade, and protection from erosion.

In larger drains and small rivers, methods to reduce aquatic weed growth, such as shading the stream, can be effective whilst providing benefits to the stream ecosystems by reducing stream temperature, increasing the quality of habitat for invertebrates and fish, and supplying the stream invertebrates with woody detritus.

These mitigation measures can also contribute to better water quality in farm drainage canals (ditches) and help ensure water quality objectives for the receiving water can be met where water quality is reduced because of adjacent land use activities.

The policies and methods acknowledge the need for landowners to carry out drainage maintenance works so that drainage systems carry drainage and flood water efficiently and in such a way as to allow productive use to be made of adjacent land. They also acknowledge the associated aquatic habitats of drainage systems and seek to maintain these values by adoption of best management practices.

Policies 27.1.3.3 and 27.1.3.4 manage fish passage effects from new and existing structures. Fish passage will be maintained by requiring any new structure in or on the bed of any lake or river to provide for fish passage, while opportunities to restore fish passage are provided by considering where existing structures might be upgraded. Where there are no fish that require passage to be provided, then this element of culvert or structure design is not applicable.

It is likely that there are existing culverts where fish passage has become impeded over time. Opportunities to retrofit existing structures to provide for fish passage will be considered where resource consent applications are required or where compliance action may be necessary. Assessment of the need for retrofitting will take into account practical aspects relating to significance of the aquatic habitat and opportunities to improve it, and the potential costs of the retrofit. A programmed approach, which includes delaying the legal effect of the rules for existing culverts, will be adopted to allow landowners and Council to plan for any required works to restore fish passage over a period of time.

In places where a structure also functions as a ‘tide gate’ to restrict flow of seawater upstream, opportunities for enhancing fish passage are more limited, as the flow of water is stopped on an incoming tide. However, new tide gate design means there are practical opportunities for restoring fish passage in these sensitive environments. Where there is a natural fish passage impedance, such as a waterfall, not far upstream or downstream of a proposed or existing culvert, then the design of the culvert should take into account the nature of the impedance.

Council will provide information to landowners about culvert design, construction and maintenance to assist them in identifying best management practices. The Council is also developing an inventory showing where culverts are causing fish passage issues, particularly for watercourses with significant value for native fish or trout habitat.

The resources required for survey effort means a complete inventory is currently beyond the capacity of Council. However, road crossings within 10 kilometres of the coast have been targeted for assessment and remedial action by Council, as these are on the streams with high biodiversity and can cause loss of access to upstream habitat.

Beneficial effects of planting vegetation in the bed or on the banks of a river on the ecosystem function of the watercourse can be significant, especially as the vegetation grows. In addition, vegetation can establish naturally in the bed and on the banks of rivers and cause problems for the safe and efficient flow of water and for wildlife habitat.

Pest plants are specifically prevented from being established through the Council’s Pest Management Strategy. In addition, the Council recognises the adverse effects of establishing crack and grey willow species. Policies 27.1.3.6 and 27.1.3.7 seek to avoid the adverse effects while enhancing the beneficial effects of vegetation planting. See also method 27.4.20 where provision of support for sustainable management of riparian areas is included.

This policy approach is consistent with related riparian land management policies in Chapter 8 of Part II and Chapter 33 of Part VI.

Trout fishing and white-baiting are significant values of many of the District's rivers and streams. Policy 27.1.3.8 aims to maintain and enhance the value of trout and whitebait spawning habitat as well as other native fish. Maintenance or enhancement of good whitebait habitat along stream margins in tidal reaches will help whitebait numbers by improving the survival rate of eggs and enhance the availability of suitable breeding habitat. The Council does not have precise knowledge about the extent and nature of whitebait fisheries across the District and does not have full understanding about the range of adverse effects from various stock classes. Trout, inanga (whitebait) and eels all have particular social, cultural and economic values. Protecting trout spawning habitat includes limiting bed disturbances in some rivers during May to September when trout spawn. Protecting inanga will require limiting bed and bank disturbances within tidal reaches of rivers between February and May.

Maori have a particular role and interest in the sustainable management of rivers and natural resources. In addition, other organisations, such as the Department of Conservation, the Fish and Game Council, the Royal Forest and Bird Protection Society and other stakeholders, such as landowners and industry groups, all have various roles and interest in the sustainable management of the District's rivers and natural resources. Consent holders and managers of infrastructure are also interested in and affected by provisions relating to the sustainable management of resources. Attention in Policy 27.1.3.9 to management plans that complement Council's resource management functions and duties will help ensure an integrated and co-ordinated approach to managing rivers and lakes.

27.2 THE RELATIONSHIP OF MĀORI AND THEIR CULTURE AND TRADITIONS WITH RIVERS AND LAKES

27.2.1 Issues

Manawhenua iwi hold a range of traditional values for rivers and lakes. These derive from the significance of water and water bodies in traditional Maori culture that continues today. The Māori world-view (te ao Māori) holds that all life and non-living things are both physically and spiritually connected. Atua (spiritual guardians) govern elements and processes in the natural world and Tangaroa as the atua of water, both freshwater and coastal waters, connects and controls all natural processes of water. Water (wai) in all its forms is greatly valued by Māori for its fundamental life-sustaining properties and its mauri (life-force).

There is a strong connection between the values for rivers and lakes and other water bodies, and the history of Māori settlement close to rivers and lakes. Many cultural heritage sites are located close to riverbanks and the coast. These add to the value of rivers and lakes, which are seen as taonga (treasures) and those local rivers (awa) are customarily acknowledged in meeting introductions (mihi). Rivers are also an important source of mahinga kai.

Manawhenua iwi are kaitiaki (those that watch over and guard) for all local rivers and lakes and value their use and management so that each generation receives the water body in as good or better condition. Mana whenua see the broad risk of degradation of the condition of rivers and lakes, through physical modification by disturbances, contamination or vegetation change, as a key issue. The mauri of the river or lake is damaged by any of these occurrences.

Part IV addresses a number of issues of significance to mana whenua concerning avoidance of damage to rivers or lakes. These issues include stock and vehicle access effects on water quality, effects of gravel extraction, effects of dams, effects on fish habitat and fish and eel passage of waterway disturbance to maintain drainage functions or from installing crossings, and disturbance of wildlife habitat. Mana whenua also note the potential for adverse effects on waioara and waimāori, mahinga kai areas, and loss of customary take.

A range of policies, methods and rules seek to address these issues.

27.2.1.1 Mauri and Wairua

Māori regard for water is an appreciation of its practical life-sustaining properties of its mauri. The mauri value of water bodies is often described as a "life force" and can be compared with the life-supporting capacity concept of the Act. Wairua is a less tangible but no less an important value that might be compared to spiritual value or essence of the water.

Structures and activities can adversely affect these values although it is often possible to mitigate or avoid adverse effects.

However the adverse effects on the more spiritual or intangible values that people, including both mana whenua and the wider community have for water and rivers is more difficult. Often the resolution of these issues can be achieved if the outcome is the tangible or evident maintenance of the river's character, amenity, water quality, public access, cultural recognition and surroundings as described in other sections of Part IV.

27.2.1.2 Wahi Tapu and Wahi Taonga

The management of sites of cultural significance to mana whenua in rivers or lakes is being integrated with provisions in the Plan to manage cultural heritage sites on land adjacent to rivers or lakes. The cultural heritage site provisions are supported by a Cultural Heritage Sites Database which is the repository for information about cultural heritage sites, including sites that are wāhi tapu and wāhi taonga. The information is part of the Plan through provisions of Chapter 16.13, and referred to in Part IV rules.

27.2.2 Objective

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.

27.2.3 Policies

Refer to Policy sets 27.1.3 – 27.7.3.

Refer to Rule sections 28.1 – 28.5.

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.

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.

27.2.20 Methods of Implementation

27.2.20.1 Regulatory

- (a) Rules that ensure impact of activities on Māori values are taken into account, including through Part II provisions for cultural heritage sites on land adjacent to river and lake beds.

27.2.20.2 Education and Advocacy

- (a) Provision of information about methods to avoid, remedy or mitigate impacts of activities on ecosystems.
- (b) Develop good practice guides to help resource users make sustainable decisions.
- (c) Working with or supporting landowners, industry groups, Māori, other statutory groups (such as Fish and Game Council and Department of Conservation) and agencies (such as Landcare Trust) to improve water quality that is degraded as a result of the cumulative impacts of adjacent land uses.

27.2.20.3 Investigations

- (a) As part of Method 10.2.20.2(a), collaborate with and assist Māori to identify all significant cultural heritage sites, including wāhi tapu, wāhi tapu areas, and wāhi taonga within or close to river and lake beds.

27.3 RIVER BED STABILITY AND CHANNEL EFFICIENCY

27.3.1 Issues

27.3.1.1 River Management

Activities in, on or under the bed of lakes and rivers may give rise to erosion, degradation, accretion (adding to the banks) and aggradation (adding to the beds).

Whilst erosion, degradation, accretion and aggradation can occur naturally, these processes can be aggravated or caused by activities in river and lake beds and also by land use within the wider catchments. While the adverse effects of erosion and bed degradation can be significant, effects of these processes may be beneficial by providing valuable gravel resources or contributing to coastal stability.

The Council manages the rivers to mitigate flood risks and erosion and to maintain efficient channel capacity under the provisions of the Soil Conservation and Rivers Control Act. It carries out a range of activities in the District's rivers, including rock protection, vegetation planting and clearance of vegetation from within channels. The works carried out to maintain stability of river beds and maintain efficient channels are identified in the Council's Rivers Activity Management Plan. These activities need to be assessed against the need to avoid, remedy or mitigate adverse effects on the environment. The community, including mana whenua, landowners adjacent to rivers and stakeholders such as the Fish and Game Council, Department of Conservation, and the Forest and Bird Society have a high level of interest in how decisions about river management are made and there is a high level of consultation on its river management works.

Similarly, the effects of other activities on river and flood protection works also need to be accounted for. Placement of structures, gravel extraction or relocation, crossings by vehicles and stock, plantings or reclamations and alluvial gold mining have been identified as specific activities that may or are known to cause unstable river beds in Tasman District, especially if bed armour is adversely affected or holes created in the bed. In addition, existing structures and river works can be adversely affected by these processes.

27.3.1.2 Gravel Removal

There is constant and large demand for high quality gravel in the Tasman district. River bed gravel has historically been a source of good quality gravel that is relatively cheap to extract and process. However, the amount of gravel entering the river systems at the river source (mountains and hills) in general is low.

In order to meet demand for gravel and aggregates sustainably, the Council has provided for Quarry Protection Areas where sources of hard rock have been identified. The potential of these areas to supply gravel and rock in the future are protected from reverse sensitivity issues through limitations on residential development. Council also makes provision for the quarrying of gravel from within berm lands and Policy 30.1.3.28 recognises the potential for wetland creation at those sites. Gravel quarrying in the alluvial plains is not encouraged as it is associated with a range of adverse effects, especially adverse effects on the productive capacity of the land.

An analysis of 40 years of historical data relating to river bed levels in the District concludes that the amount of gravel being taken from the main rivers, including the Waimea, Motueka and Takaka Rivers, is exceeding the amount entering the river systems over that time.

The analysis reveals that the loss of gravel within the system can be attributed to both natural loss and gravel extraction, but the majority of the loss (estimated at more than 80 percent for the Motueka River) is associated with gravel extraction (based on gravel returns). The issues associated with bed degradation have been exacerbated significantly by gravel extraction. Some natural degradation of river beds is unavoidable. However, further degradation can be greatly reduced by limiting gravel extraction in river beds.

Even in degrading rivers, gravel moves within the river bed and can sometimes form beaches or banks that are more or less stable. If gravel beaches build up significantly, they can cause localised problems during floods as banks are over-topped.

The perception that bed levels are increasing in some of these degrading rivers, and that Council needs to take more gravel out of rivers to manage this perceived problem, is sometimes reinforced by the appearance of gravel beaches that are much higher than the adjacent water level.

The size of the gravel resource appears larger than it really is if it is seen as the difference between water level and the top of the gravel beach rather than considering the bed level in a more longitudinal way, i.e. along the length of a river rather than at a specific beach location.

Part of the river works control programme requires management of gravel to deliver outcomes expressed in the Rivers Activity Management Plan which is prepared to fulfil Council duties and functions under the Soil Conservation and Rivers Control Act 1941.

The Rivers Activity Management Plan is expressly:

...to outline and summarise in one place, the Council's strategic and management long-term approach for the provision of river erosion protection and flood mitigation works and associated operation and maintenance of these works (from the Council's Tasman District Council Rivers Activity Management Plan)

The Rivers Activity Management Plan does not provide a river gravel management role unless it is for the purposes described above.

It is important for Council to manage gravel beaches to address localised flooding risk. However, this must be done in the context of maintaining the stability of the entire river. It means that gravel relocation within a degrading reach that could include moving gravel across the bed to fill eroded sections, would be the preferred management method rather than extraction of the gravel beach.

In addition to this river gravel management objective for the control of river-bed levels and floodway capacity, there is also a separate demand for extractable gravel for a range of end-uses in the building and construction industry, including for the construction of roads.

Where consent is issued to take gravel for private purposes from riverbed land owned by the Crown, resource management fees are charged by Council and the funds collected to contribute to costs of Council river management work. In cases where gravel is taken or extracted from privately owned riverbed land, a fee imposed by the Council may still be applicable, and the landowner may also be entitled to compensation for the gravel resource which is negotiated with the landowner.

Where river protection or erosion control works are necessary on this privately-owned riverbed land, Council must consult with landowners before undertaking any work and negotiate the payment of any applicable compensation.

The extraction of river gravels and sands from a river bed to meet industry demand, including for roading, is in greater amounts than that required to manage bed and bank stability and flood risks for all rivers.

The Plan will provide the framework for both managing any effects of activities that may be required to carry out river erosion and flood control work, as well as managing the effects of any extraction of sand or gravel for purposes not related to erosion or flood control.

The more explicit determination of the Council's resource management role in the Plan will complement the Rivers Activity Management Plan to provide a much greater level of certainty about why, where and when gravel may be extracted from the rivers in a consistent way.

The process historically followed by the Council's river asset managers to manage gravel extraction as part of the river works programme is not as transparent as a resource consent process. However, the river asset managers do need the flexibility to manage gravel in a way that maximises their ability to manage the river works programme efficiently, effectively and in a timely manner.

The dynamic nature of river systems and the connection between gravel management for river management purposes requires a responsive management approach.

The allocation of gravel to specific high value end-uses or identified end-users has been considered by Council, especially to end-uses which have a high level of public benefit such as roading. However, its powers to allocate gravel resources are limited by the provisions of the Act. Gravel is not a resource like water which can be allocated under the Act nor does the consent holder have any priority for continuing rights of allocation, because the power to make allocation rules in regional plans does not extend to gravel in river beds.

27.3.1.3 Connection with Groundwater

Erosion or degradation of river beds can significantly affect connected groundwater bodies (i.e. aquifers). In the Tasman District many of the shallow alluvial aquifers, and indirectly some of the confined aquifers, are replenished by leakage from the rivers. The water level (pressure) in the river principally drives recharge to the adjacent aquifers. Significant changes to the river bed level consequently affect the water level (pressure) in the river and hence the recharge rate to the adjacent aquifers.

Bed lowering has been shown to lower adjacent unconfined aquifer water levels leading to lower recharge, and so lower storage in the aquifer. For example, the Wai-iti River provides recharge to the Appleby Gravel Unconfined Aquifer and the result of a degrading river bed has meant that water users' access to water declined significantly. The Council is attempting to reverse this effect by construction of weirs in the river bed designed to build up gravel levels.

Other water bodies that are potentially influenced by river bed levels include springs with flow contributions from the Takaka River, including the Te Kakau Stream.

The recharge of the Motueka Plains aquifers is also dependent on flow in the Motueka River. Computer modelling of the effects of changing bed levels has shown a connection with groundwater recharge, although the 30 centimetre decrease in bed level that has already occurred over 40 years has not significantly affected recharge.

27.3.1.4 Degrading Beds

Any decrease in river-bed level will increase the risk of instability of river banks and any protection works on these banks and undermine structures such as bridges in the beds, particularly during a flood when erosion forces are higher. This is because the stability of the foundations decreases as bed levels reduce below the design level. These effects may take some time to become evident.

Bed degradation effects mostly become evident through existing bank protection works or structures failing in a flood event. Consequently the works need to be either rebuilt or topped up to the required height. A degrading bed generally results in increasing costs in both maintaining existing structures and river protection works, and building new protection work.

To reverse the effects of a degrading bed caused by excessive gravel abstraction in the Wai-iti River, the Council has built weirs to help retain and build up the natural flow of gravels and sediments upstream of the weirs and promote groundwater recharge and water storage (ref. 27.3.1.3).

Structures erected or placed in river beds can cause or worsen erosion and degradation by interrupting gravel movement down the river or by redirecting the flow of water towards banks. Culverts, weirs, concreted fords, bridges and dams are commonly used structures in Tasman District that can lead to these adverse effects on river beds and banks.

27.3.1.5 Aggrading Beds

Similarly, accretion or aggradation may result in reduced effectiveness of river works, structures and affect waterway capacity, including flood flows and water levels of adjacent aquifers. Aggradation may also reduce effectiveness of structures such as dams.

27.3.1.6 Material Transport

A decrease in the amount of aggregate moving down the rivers can cause or worsen bed and bank erosion or degradation and can cause coastal erosion on the down-drift side of a river mouth. Many of these effects may take time to evolve.

Reducing volumes of sand and aggregate that reach the coast can exacerbate coastal erosion processes on the shoreline. While there is very little by way of direct example of this situation on Tasman's coastline, the District's coastal littoral drift systems are fed, in part, from river sediment inputs to the coast.

Littoral transport rates along the Tasman Bay/Te Tai-o-Aorere shoreline are relatively modest. Yet there are significant erosion problems in several areas along the coast. This is due to prevailing wave energies removing more sediment material from a particular coastal compartment than it transports into that compartment. The net result is erosion. A more abundant sediment supply to the coast would result in the littoral drift system being better fed, resulting in either a stable equilibrium or even accretion occurring.

Sediment supply from rivers to the coast is only part of the situation affecting change to the coastal margin but is nonetheless a relevant consideration.

27.3.1.7 Erosion and Flooding Hazards

Erosion, degradation, aggradation or accretion can worsen natural hazards, particularly (in the case of aggradation or accretion) a reduction in the channel capacity exacerbating flooding and bank erosion increasing the risk of loss or damage to land, buildings and other property. Flood risk may also be aggravated when these processes undermine or weaken river management works, especially stopbanks.

27.3.1.8 Emergency Works

Damage to rivers' stability and capacity, and damage to structures and property following extreme events, especially floods, is an ongoing risk for landowners, the Council's asset managers and other asset managers, including managers of roading and power assets. Measures can be taken to reduce or mitigate damage at least from some events, including by planting and structures to provide for river stability, careful management of land disturbances on adjacent land and appropriate riparian land management. However, there will always be a potential need for repair or remedial works following extreme events. In some cases, emergency works can be carried out where immediate preventative or remedial works are required or where there is a risk of loss of life or injury, or serious damage to property.

27.3.2 Objectives

- 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.

27.3.3 Policies

Refer to Policy sets 27.1.3.

Refer to Rule sections 28.1, 28.2, 28.5.

- 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:
- effects on existing structures and lawfully authorised activities;
 - 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.

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.

Gravel Extraction Management Policies

- 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.
- 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.
- 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.
- 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.
- 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.

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.

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.

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.

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.

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.

27.3.20 Methods of Implementation

27.3.20.1 Regulatory

- (a) Rules relating to the management of gravel and activities in the beds of rivers and lakes.

27.3.20.2 Education and Advocacy

- (a) Education and advocacy to promote good stream management practices that help avoid or mitigate damage from bed and bank erosion.
- (b) Assistance, including advice and funding, for riparian planting and fencing to help manage adverse effects of bank erosion.

- (c) Development of a Best Practice Guideline, in consultation with landowners and stakeholders, to guide decisions made about the nature and extent of activities necessary to enhance river bed and bank stability and flood-carrying efficiency of river channels.

27.3.20.3 Works and Services

- (a) Liaison with the asset managers responsible for the Council's Rivers Activity Management Plan to ensure a co-ordinated and sustainable approach to the management of the District's rivers.
- (b) Specification in the Council's Rivers Activity Management Plan prepared under the Soil Conservation and Rivers Control Act 1941 of the purpose of extraction of any gravel or material from a river under that programme to:
 - (i) protect the channel from erosion or instability;
 - (ii) maintain efficient movement of floodwaters and sediment down the channel;
 - (iii) prevent or mitigate the effects of flooding.
- (c) Working with river asset managers in consulting with landowners adjacent to rivers, landowners who own the bed of the river and managers of infrastructure located in river beds on an annual basis to determine priorities for river works, especially management of gravel and debris build-up in river channels.

27.3.20.4 Monitoring and Investigation

- (a) Ongoing investigation and collection of data about bed levels, pattern of river protection works over time and the movement of gravel within river systems.
- (b) Ongoing investigation and collection of data about the connection between river bed levels and adjacent groundwater levels and spring flows.
- (c) Investigation of options for preparation of river management plans that address the range of river functions, values and uses including management of the river bed, adjacent riparian land and land within stopbank areas.

27.3.30 Principal Reasons and Explanation

Policy 27.3.3.1 aims to manage adverse effects of carrying out activities that may affect bed or bank stability. The main activities are associated with construction of structures where beds are disturbed or flows are subsequently altered by the structure. Bed disturbances associated with stream maintenance or flood control works can also affect bed stability or flood flows.

Policy 27.3.3.2 provides for the carrying out of activities which enhance river bed and bank stability and flood carrying efficiency of river channels while ensuring that adverse effects on water quality, aquatic habitat and of noise and dust are accounted for.

There are significant benefits to the environment, including people and communities, in providing for maintenance and enhancement of river bed and bank stability and flood-carrying efficiency of river channels. This is consistent with the main objective of the Council's Rivers Activity Management Plan.

The policies acknowledge the need for river management works to address flood hazard and flooding risks while at the same time acknowledging that adverse effects on aquatic habitat must be addressed.

The policies recognise the benefits of activities carried out as part of the river works management programme including planting and plant maintenance, plant removal, placement of structures, management of gravel within river beds, and other floodway maintenance activities. The adverse effects of these works, such as impacts on water quality from sediment generated by relocation of gravel or damage to aquatic habitat, can be managed by controlling the way in which the work is carried out.

In addition to regulation, the Council will help ensure that landowners have good information and financial assistance for best practices to manage their rivers and streams.

The Waimea River Park Management Plan provides an example of an integrated approach to managing the river, adjacent riparian land and land within the stopbanks that might be applied to other rivers or parts of rivers. The consultative process involved many community interest groups and stakeholders and provides an overview of management issues and methods for managing them. The Plan recognises this as a potentially useful management tool to assist in making decisions about river management.

Rivers in the region are generally managed to maintain stability and reduce flood damage. This management is the responsibility of the Tasman District Council and landowners. The level of management and degree of protection from all flood damage will generally not be adequate to prevent all damage to the river banks and adjacent structures from severe floods and other extreme events. Some flood damage will require urgent repair to minimize further significant damage to the river system or structures such as roads, bridges or dwellings.

If flood repair works are not carried out promptly, then adverse effects of undesirable bed aggradation and degradation can worsen over time. Enabling and carrying out repair of the river and any associated structures immediately after a flood will assist the Council and adjacent landowners to mitigate adverse effects on the natural values of the river, including aquatic habitat and water quality, from the repair works and will contribute to minimizing the level of disturbances necessary in rivers in the longer term.

While floods are the most common extreme weather event, significant debris can end up in the waterways following heavy snow falls or wind events.

Gravel Management

The overall trend of the main rivers and their tributaries (including the Waimea, Motueka and Takaka) shows net bed level reductions. Removal of gravel from rivers can be an important contributor to erosion and degradation in river beds. Consequential impacts on river bed and bank stability may increase over time as degradation continues or is accelerated by gravel extraction.

Exceptions include some of the smaller tributary rivers, including the Motupiko River, where a proportion of coarse sediments do not reach the main channel. In other instances, a landslip might contribute a large amount of debris to a channel. In these cases, decreasing flood capacity and adjacent land management requirements would justify removal of gravel build-up. Other exceptions may be extraction from a tributary near the confluence of a larger river or at a discontinuity, such as a gorge or near the coast where deposition naturally occurs. In these cases, progressive deposition may be removed to a stable profile because its removal is considered to have no significant effect.

These policies ensure that bed degradation trends in the District's major rivers are monitored and managed. The possible adverse effects of gravel extraction from the beds of rivers are addressed at the stage of setting sustainable extraction levels as well as at the consent application stage. This approach is needed to manage adverse effects on channel stability and flood-carrying efficiency as well as the other matters listed, especially in rivers where the overall trend is degrading river beds.

The policies also provide for Council's river management role to protect the river channel from erosion or instability, maintain efficient movement of flood waters and sediment down the channel, and to prevent or mitigate adverse effects of flooding. For most rivers, any extraction of gravel is provided for to meet these functions first. For some rivers, including parts of the Buller and Matakita, a small amount of gravel may be available for other purposes.

Establishing extraction limits allows consent applicants a much higher level of certainty and where allocations limits are not set, the matters to be considered in assessing adverse effects are clear.

The policies account for gravel within the river bed that is not normally mobilised by mean annual floods. Gravel management is sometimes initiated where there are risks of localised flooding because of a build-up of gravel beaches in some river reaches. The policy approach allows for redistribution of the gravel which has built up on beaches within a degrading river system.

Gravel sometimes needs to be extracted from rivers in order to prevent flooding and for other river management reasons, such as maintaining channel capacity or protecting riverwork structures. This gravel is included within the extraction limits.

Gravel relocation from beaches to elsewhere in the same river may be required as part of the Council's river management works to maintain flood carrying capacity and maintain bed and bank stability and avoid further bed degradation effects. Council will consult with landowners and mana whenua in assessing priorities for action to manage bank instability and adverse flooding effects on adjacent lands.

Gravel is also a valuable natural resource for the roading and construction industry and subject to extraction demand. Where gravel is available to meet this demand, the Council imposes a fee on extracted gravel, which contributes towards the costs of river management work. Compensation may also need to be negotiated with the landowners as appropriate where gravel is taken from private riverbed land.

Investigation work has been carried out to establish more precisely the relationship between bed level in the Lower Motueka River and adjacent groundwater levels. Indicative modelling shows that the impact of lowering the Motueka River bed by 0.3 metres has a relatively insignificant effect on the Motueka Plains aquifer recharge. A more significant link has been shown for the Wai-iti River link with adjacent groundwater.

The evidence so far indicates that sustainable management of degrading rivers and associated water resources requires a more precautionary approach until there is more refinement and understanding of these adverse effects and the connection between natural bed dynamics and effects caused by gravel extraction.

Maintaining knowledge about the river systems by ongoing monitoring is essential to promoting the sustainable management of river beds and the overall river catchment, and will provide for integrated management within the system.

The allocation of gravel to specific end-uses or end-users has been considered by Council, especially to end-uses which have a high level of public benefit such as roading. However, its powers to allocate gravel resources to end-uses are limited by the provisions of the Act and common law. Gravel is not a resource like water, which can be allocated to end-uses.

In any event, the policies adopted by Council recognize, firstly, that the main river systems are degrading and, secondly, that gravel management is controlled primarily by river management needs to ensure efficient flood-carrying capacity and channel stability and that these needs have priority over any other end-uses.

27.4. IMPACTS ON WATER QUALITY

27.4.1 Issues

Part VI of the Plan addresses water quality and contaminant discharge management. There are some water quality effects that result from activities in, on, or under the beds of rivers and lakes. The primary issues of concern that have relevance for both parts of the Plan are:

- Fine sediment discharges from bed disturbance, including from gravel extraction, alluvial mining in beds, suction dredging, construction of bridges or culverts, river works, vehicle and stock access (crossings and general access); and
- Stock effluent discharges from access to waterways (crossings and general access).

Stock and vehicle disturbances and access to beds of rivers and lakes can also 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.

27.4.1.1 Sediment Generation

Adverse effects associated with fine sediment discharge may include smothering of river-bed habitat (pools and spaces between stones) and spawning areas. This reduces invertebrate habitat as well as impacting on fish which depend on invertebrates as a food source. Sediment may also injure the gills of fish and invertebrates and, by reducing water clarity, reduce opportunities for fish feeding. Migration patterns may be altered as fish on the move choose to avoid turbid waterways. Reproduction of some fish, particularly trout could also be adversely affected. Dissolved oxygen may be reduced as a result of the discharge, particularly if the sediment is rich in organic sediment. Reduced water clarity can also reduce amenity and recreational values.

There is a fine sediment transport and deposition process under way that has ecological effects or risks to managed fisheries, especially in Tasman Bay/Te Tai-o-Aorere. This has been a long term process which has resulted in an overall change in seabed community structure based on sediment particle size.

The coastal sedimentation effects are most likely caused by major storms or flooding and not activities in the river. Research into the historical sedimentation rates in the Bay have been recently initiated to provide better understanding about this issue.

Policies and methods in Part II of the Plan address effects of sediment discharges from land disturbance activities.

27.4.1.2 Stock Crossing and Access to River Beds

Any farming system with high intensity of stocking rates will add to the risk of decreased water quality if stock has access to waterways. Manure containing high microbe and nutrient levels from the animals can be deposited directly into the water or on the bed. Stock trampling can damage the bed and banks and cause sediment to enter the water, and animals like pigs and deer enjoy 'wallowing' in the bed causing extensive damage to habitat. Intensive dairy, beef and deer farming in the District are known to cause adverse impacts on water quality.

There is also a lot of information about the significant adverse water quality effects from dairy farms where crossing rivers is required for twice-daily milking. No other stock class is managed so that frequent regular crossing of water courses is required in that same way.

Adverse environmental effects on ecosystems within waterways from stock crossing and access may include:

- Microbial contamination of waterways rendering them unsuitable for drinking and contact recreation use—inputs of pathogenic microbes (such as *Campylobacter*) pose a significant threat to human and animal health;
- Increased nutrient loadings and thus increasing algal growth that can escalate into algal blooms;
- A rise in ammonia concentrations, which can be toxic to fish species;
- The reduction of water quality and the smothering of benthic (bottom-dwelling) organisms caused by additional sediment loads;
- Loss of amenity values through discolouration of water and odour.

27.4.1.3 River Water Quality

Council's State of the Environment reporting shows concentrations of total nitrogen and dissolved inorganic nitrogen (nitrate nitrogen plus ammonium nitrogen) exceeded guideline values regularly at some sites around the District.

Concentrations of total phosphorus and dissolved reactive phosphorus also regularly exceeded guidelines for control of algal growth at a relatively large proportion of sites throughout the District.

Council's State of the Environment Monitoring data shows consistently high water clarity in most rivers and which is among the clearest in New Zealand. As well as being essential for healthy aquatic functioning, the clarity of water is also integral to other uses and values including recreational activities such as angling and swimming and for amenity and landscape values.

27.4.1.4 Clean Stream Accord

There have been significant improvements in farm management practices over the last few years that aim to improve water quality and to promote sustainable management of rivers. The Dairying and Clean Streams Accord reflects an agreement between the government, regional councils and the dairy industry to improve the environmental performance of dairying and it establishes a goal of achieving "clean, healthy water in dairying areas".

A Regional Action Plan was developed by Fonterra and Tasman District Council with input from Federated Farmers to detail regional commitments toward achieving better management of stock access to streams and management of nutrients, taking into account circumstances specific to the Tasman district.

The Regional Action Plan has several performance targets and implementation actions, including requirements for excluding stock from streams and providing culverts and bridges for stock crossings.

Overall, Tasman District appears to be well placed with respect to most of the performance targets of the Clean Streams Accord.

The majority of lakes and estuarine areas in the District bordered by dairy farms have been protected from adverse effects of stock access to the water. There is less information about levels of access to wetlands, although the Council currently offers financial assistance and management advice for the management of wetlands.

27.4.1.5 Other Stock Management Systems

The level of performance by stock farming systems other than dairying (sheep, deer and beef) is less well understood. These farming systems tend to have fewer and less regular river crossings by stock. However as production intensifies and stock numbers increase, the risks to water quality also increase. Some of these farming systems may need to amend farming practices to reduce adverse effects on water quality. Sheep farming generally has a lower impact on water quality but the significance of effects depend on stocking density, stock management systems, and location and density of watercourses.

The sheep and beef industries have less well-established partnerships and environmental performance targets. While a national “Primary Sector Water Partnership Leadership Programme” has been initiated by the primary industries under the Ministry for the Environment initiated water programme of action, it is still in its embryonic stages and as yet no local implementation programme has been initiated. It should however provide a platform from which Council can engage with these industries to address local issues and establish performance standards.

27.4.1.6 Bridges and Regulations

Resource consents are needed for all bridges and culverts unless there is a rule in the Plan to permit them.

Building consents are also required for bridges as structures under the Building Act, dealing with safety and structural aspects.

Removing or reducing these regulatory barriers (resource and building consents) may increase the rate at which river crossings are constructed to avoid adverse effects of stock and vehicle crossings on rivers and water quality.

It is considered that the most appropriate way of dealing with the regulatory regime is to permit small-scale bridges or culverts, but to consider safety and design aspects through the building consent process.

Bridges that have any piers in or on the bed are likely to require specialist design. Rivers of this size may also be navigable. The scale of work in the bed of the river during construction will have a greater potential to cause adverse effects. These bridges have the potential to have significant adverse effects on water and flood flow and have potential to cause adverse effects on the stability of beds and banks of rivers and are therefore restricted discretionary activities.

However, it is important that bridges are still constructed to good engineering design so that it can be used safely by stock and vehicles. Design, supervision and construction requirements relating to the safety of bridges are considerations of the building consent process.

27.4.1.7 Vehicle Access

Passage of vehicles across river beds may mobilise sediment and damage beds and banks as well as aquatic habitat. The degree to which adverse effects are caused will depend on the nature of the substrate, geology, frequency of crossing, length of passage along the stream, and type of vehicle. (There may also be adverse effects on wildlife and conflicts between other river users and these effects are considered in 27.1 and 27.6.)

Vehicles cross rivers or use them for access in a range of situations across the District, including as part of river management activities by agencies such as the Council, Department of Conservation, Fish and Game Council as well as for access by landowners to property and use by people carrying out recreational activities.

In most situations, adverse effects on water quality are insignificant or minor but potential does remain for damage to the river, especially where the river is used as an accessway and not just a crossing, where crossings are frequent, or where the habitat values are particularly sensitive to disturbance by vehicles.

An associated effect of high levels of public access to rivers can increase incidence of dumping of rubbish, particularly near urban settlements, and other anti-social behaviour. There are no specific provisions identified for Part IV to deal with this and it remains to be dealt with as part of a compliance team response (although some of the suggested education material can refer to this issue).

27.4.2 Objective

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.

27.4.3 Policies

Refer to Policy sets 27.1.3, 33.1.

Refer to Rule sections 28.3, 36.2.

- 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.
- 27.4.3.2** To require and promote sustainable stock management practices that avoid, remedy or 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.
- 27.4.3.3** To encourage and support industry, landowner and other initiatives that promote sustainable use of water and land.

27.4.20 Methods of Implementation

27.4.20.1 Regulatory

- (a) Rules that allow or regulate activities according to the risk of adverse effects.

27.4.20.2 Education and Advocacy

- (a) Advocacy and information about sustainable resource use, including good practice information about building bridges and culverts, and management of rivers and streams.
- (b) Education and advocacy, in consultation with industry stakeholders, to promote stock management initiatives that avoid, remedy or mitigate the adverse effects of stock on river and lake beds.
- (c) Assistance, including advice and funding, for riparian planting and fencing to help manage adverse effects on water quality from stock and bank erosion.

27.4.20.3 Monitoring and Investigation

- (a) Research and investigation that improves the knowledge of the effects of stock on river and lake beds.
- (b) Regular reporting by Council in consultation with industry groups, landowners, mana whenua and other stakeholders on measures adopted to maintain or improve water quality and improve aquatic habitat, including adoption of best practice for managing stock impacts on rivers, provision for bridges and culverts to manage stock and vehicle crossings and stream fencing.

27.4.30 Principal Reasons and Explanation

The policies aim to avoid, remedy or mitigate adverse effects of sediment generation, nutrients and disease-causing organisms on aquatic values from activities in, on, under or over river and lake beds.

Sediment generation from bed disturbance activities such as gravel extraction, alluvial mining or prospecting and river maintenance work usually arises due to direct disturbance within or immediately adjacent to the wetted bed of rivers. Generation of sediment can often be avoided by not carrying out some of these activities in the wetted part of the bed.

Some activities are carried out in the wetted bed of the river, such as suction dredging for alluvial gold, some river protection works, some bridges and crossings. Performance standards for permitted activities or conditions of resource consents can limit the extent to which these activities cause adverse effects.

For many resource users, advice and advocacy will help them adopt sustainable management practices that reduce the risk of adverse effects on water bodies from the more routine activities carried out in the beds of rivers.

Where water quality has been affected by stock or vehicle crossings, alternative crossings, fencing or other changes to land use practices will result in improved water quality.

Council will promote sustainable stock management practices that address adverse effects on water quality from stock access to water bodies. These practices will also be promoted through farm quality programmes, industry accords, and other industry sector-based quality assurance programmes.

Policies enable further initiatives from the farming sector to be incorporated into the management framework as they develop over time. They also provide clarity with regard to outcomes that Council is seeking.

Council acknowledges the role of industry in promoting sustainable resource use and encourages a partnership approach in dealing with this issue.

The Part IV policies are supported by policies in Part VI seeking to avoid, remedy or mitigate adverse effects of contaminants associated with stock and vehicle access to waterways and other disturbances of the bed, including sediment and disease-causing organisms. The Part VI policies acknowledge the need for action where water quality is degraded for certain uses, especially in relation to Water Conservation Orders, water quality needs for stock drinking and contact recreation, and provide guidance for deciding priorities for action.

27.5 HAZARDS

27.5.1 Issues

The most relevant hazards that may adversely affect human life, property or other aspects of the environment with regard to lake and river beds is earthquake, erosion, subsidence (of banks), sedimentation and flooding. Earthquakes hazards are addressed in Part II of the Plan.

Activities in the beds of rivers that aggravate erosion or degradation of the bed or banks, undermine river protection work, alter river or flood flows or destabilise the river are addressed in section 27.3.

Climate change risks include more extreme events and sea level rise. The district can expect more extreme hydrological events potentially of larger magnitude than previously observed, making river bed and bank stability a critical issue. Council will take these risks into account in adopting its river management plans and programmes.

Considerable flood protection works have been carried out in the region, particularly on the Motueka and Waimea rivers and have significantly reduced the risk from most flood events. Council will carry out effective flood protection works in conjunction with better land use and adequate and timely flood forecasting. This is because measures taken to reduce the flood risk, including river control works, can actually increase the catastrophic potential of large floods because they enable an increased occupancy and level of development within flood plains.

27.5.1.1 Dam Hazards

Although dams lead to positive benefits for people, communities and the environment, they can hold large quantities of water which can lead to extensive damage if there is an uncontrolled release. Such a release could occur through a failure of the structure, or an overtopping caused by, for example, a landslide into the reservoir. The damage, which occurs largely downstream of the dam, may include loss of life, property, infrastructure, or the natural and human use values of the affected water bodies. The risk of damage depends on the size of the dam structure, the volume of water impounded, and topography.

A dam is designed and maintained to reduce the risk of failure. The risk of dam failure, including cumulative risks where a downstream dam may be affected by a dam failure, needs to be managed by Council under both the Resource Management Act and the Building Act. The adverse effects of the dam structure in the bed of the river also need to be managed under the provisions of Part IV.

Dam failure may be caused by earthquakes, dam design or construction faults, inadequate maintenance or management. There are strong parallels between dam structures and buildings in relation to earthquake hazard risks. Buildings are designed and constructed to withstand earthquake shaking effects (among other hazards) to a certain standard of intensity (in terms of lateral acceleration). Dam structural failure may have off-site effects in a worst case failure scenario, from rapid water or debris flow.

Council policies regarding dam construction and inundation hazard recognise national dam safety legislation now adopted in the Building Act. The key aspects of the Building Act for regional council responsibilities over dams apply to “large” dams which are defined as structures containing a water depth of 3 metres or more and impounding 20,000 cubic metres or more of water or fluid.

Under the Building Act, the onus of the safety assessment is on the dam owner. Regulations require dam owners to classify the dam as either low, medium or high impact. The criteria and standards for dam safety are formulated in regulations.

This Building Act safety assessment system will contribute to ongoing monitoring of large dams in a way that complements the requirements of the Resource Management Act.

There are some overlapping responsibilities between the Building Act and the Resource Management Act. The Council has adopted policies, rules and processes that account for the overlap and minimise the regulatory burdens for applicants.

There are also some gaps between the provisions of the two Acts. The main gap is in the absence of building standards for the construction and ongoing maintenance of dams that are of a lesser size than a “large” dam specified in the Building Act. Until now, the Council has regulated small dam construction under the Transitional Regional Plan.

While there is some overlap in considering the adverse effects of dams, the effects of damming water on river ecosystems above and below a dam are addressed in Part V, while this Part provides for managing the effects of the structure on the river. Water Conservation Orders for the Buller and Motueka rivers and their tributaries specify restrictions on dams.

27.5.1.2 Managing the Risks

Council can influence the hazard classification for existing dams by allowing changing land uses below dams, for example, by allowing built development in an area likely to be inundated should an existing dam fail. The Council considers that it is appropriate to consider this aspect of risk from existing dams as part of a subdivision proposal.

It is possible that with the new dam regulations, which will eventually require owners of large dams to provide information about inundation areas, better understanding about dam risks will help guide decisions about future development.

In future, large dam owners are likely to have an interest where development proposals increase the risk classification for an existing dam by placing more buildings and structures within a possible inundation area. (The regulations do not address the effects of development below dams that are not large dams).

Some dams were authorised by consents under Section 13 of the Act that have now expired, but require continued authorisation. However, many of these existing dams have been managed under consents granted under the rules in Part V of the Plan for damming water. Conditions imposed under these consents address stability and maintenance issues that would normally be considered as part of Section 13 consent.

27.5.2 Objective

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.

27.5.3 Policies

Refer to Policy set 27.4.3.

Refer to Rule sections 16.3, 28.2.

- 27.5.3.1** To identify, manage and reduce the risk of hazards from failure or overtopping of dams in river beds.
- 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.
- 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 relevant water permit that manage structural safety risk.

- 27.5.3.4** To take into account risks of dam failure or overtopping on potential buildings and structures when considering applications for subdivision.

27.5.20 Methods of Implementation

27.5.20.1 Regulatory

- (a) Rules relating to the construction of dams and development below existing dams.
- (b) Integrating the consent process under the Building Act and the Act.
- (c) Rules that ensure risks from existing dams are taken into account when considering applications for subdivision.

27.5.30 Principal Reasons and Explanation

The Council recognises that flood hazard management is important to enable people and communities to provide for their social, economic and cultural wellbeing and for their health and safety. Managing the effects of activities on flood and erosion protection works is covered in section 27.3.

Section 27.3 also addresses management of adverse effects caused by activities carried out to manage flood and erosion risks. Other Council processes will examine flood management and protection of communities from flooding risks.

Council also wishes to ensure creation of new hazard from dams in river beds is avoided by managing subdivision in floodplains where subsequent structures are at risk from dam failure (when considering applications for subdivision). It is consistent with dangerous dam legislation as it seeks to minimise risk to structures from dam failure or from a natural flood.

Conversely, owners of large dams face increasing costs if increasing downstream development raises the risk classification for their dam.

Some existing dams have no current authorisation for the continuing presence of the dam in the bed of a river as required under Section 13 of the Act. For some of these dams, stability and maintenance aspects are addressed in existing permits authorising the damming of water.

Where an existing dam structure has no authorisation, but where a water permit to dam water is applicable and has relevant conditions for the management of the dam structure and its safety, Council will seek consents under this part of the Plan when those consents expire. Council will seek consents under this part of the Plan when those consents expire. Where there is no applicable water permit to dam water or no relevant conditions, Council will require an application to authorise the structure and to ensure proper on-going maintenance of the dam.

27.6 NATURAL CHARACTER, LANDSCAPE, CULTURAL, RECREATIONAL AND AMENITY VALUES

27.6.1 Issues

A range of activities carried out in, on, under or over the beds of rivers and lakes, including on the surface, may impact on the natural character of rivers and lakes and landscape, amenity, recreational and cultural values, including heritage and wairua values. Noise from activities in or on the beds of rivers may also impact on people who live near them.

The preservation of natural character, maintenance and enhancement of lawful public access to rivers and lakes and protection of outstanding natural features and landscapes are matters of national importance and the Council must also have particular regard to the maintenance and enhancement of amenity values.

27.6.1.1 Amenity and Natural Character

Amenity values are defined in the Act as those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence and cultural and recreational attributes.

Natural character is not defined in the Act but the Plan lists a series of characteristics or features that help determine natural character:

- (a) landform, including natural features and patterns;
- (b) natural processes that create and modify landform;
- (c) indigenous plant and animal species present;
- (d) natural sounds;
- (e) natural water quality;
- (f) absence, or unobtrusiveness, of use and development;
- (g) expansive open space, especially where there is knowledge that undeveloped space is in public ownership; and, in particular, the sea.

A workable definition has been adopted by a number of landscape architects and other resource management practitioners that states that natural character describes the naturalness of river environments. The degree or level of natural character within an area depends on:

- (1) the extent to which natural elements, patterns and processes occur; and
- (2) the nature and extent of modifications to the ecosystems and landscape or riverscape.

The highest degree of natural character (the greatest naturalness) occurs where there is least modification. The effect of different types of modification upon the natural character of an area varies with the context and may be perceived differently by different parts of the community.

27.6.1.2 Effects of Activities

The issues that have been identified locally with regard to natural character, amenity, cultural and recreational values include:

- Visual impacts from buildings and structures;
- Impacts on recreational activities (including whitebait fishing, trout fishing, game bird hunting, swimming, kayaking, rafting, and other surface water activities);

- Congestion issues for both water-related activities on the surface and activities involving vehicles on the beds, including congestion that arises from the use of access points for surface water activities and interactions between different activities (or the persons carrying them out);
- Generation of noise;
- Conflict with other recreational activities;
- Reduction in navigational safety;
- Litter and other wastes generated in the area;
- Alienation river margins with recreational facilities and structures.

The natural environment of the District is dominated by mountains, lakes and rivers. The varied lakes and rivers provide the basis for a wide range of recreational opportunities, both private and commercial, from jet-boating and rafting to angling, picnicking and swimming. The changing moods and aspects of the lakes and rivers, particularly combined with the District's other magnificent scenery, provide many opportunities for viewing, contemplation and enjoyment.

The District's major lakes, Rotoiti and Rotoroa, are within the Nelson Lakes National Park. While commercial and recreational activity is regulated by the Department of Conservation through the Nelson Lakes National Park Management Plan through concessions, not all of the adverse effects of activities are able to be regulated by the Department.

Other lakes are either on private property or not subject to significant recreational activity (e.g. Lakes Otuhie and Kaihoka).

The Buller and Motueka river water conservation orders identify and protect the outstanding wild, natural, scenic, rafting, fisheries, wildlife and scientific values of identified rivers. The water conservation order for the Buller River catchment specifically recognises the use of specific stretches of this river and some of its tributaries for canoeing, kayaking, trout fishing, and wildlife and native fisheries values.

There is increasing recreational activity on the Buller River and other nearby rivers. There is less recreational pressure by motorised craft on the Motueka River and its tributaries, although kayak and canoe use and trout fishing are significant.

Further definition of the nature and significance of amenity and landscape values for the remaining rivers has not been carried out; however the continued pleasantness, integrity, diversity and safety of the rivers are essential to the economic welfare of the District and to the enjoyment of the District's natural resources by residents and visitors both now and in the future. Some of these values have been identified in Schedule 30A, although the Schedule does not yet contain complete information about all rivers and their values.

Overcrowding and over-use of the rivers can result in adverse effects, which could undermine the natural character and amenity values in the District's rivers.

27.6.1.3 Cultural, Heritage and Social Values

Rivers and their waters have a range of cultural and social values for people and communities and these values can overlap with each other and with other values. These values include tangible values such as amenity, mauri, maintenance of good water quality for a range of reasons, recreational activities, historic places, mahinga kai (food) which all have a very high value for the District's people and communities. Some important values are less tangible and include concepts of spiritual, wairua, intrinsic or aesthetic values.

All of these values can be adversely affected by activities in the beds of rivers and lakes or on their surface. Some recreation activities can also adversely affect each other.

27.6.1.4 Activities on the Surface

The use of the surface of rivers and lakes is regulated by Section 9 of the Act and is permitted unless a rule in the Plan provides otherwise.

There appears to be increasing numbers and types of surface water activities now being undertaken in rivers and lakes around the region. This is due to several factors including invention of new types of craft, increases in tourism, improvements in access to rivers, and spill-over from other locations.

Activities on the surface of rivers can and do have adverse effects on the amenity of their surrounding environment, the quality and enjoyment of recreational activities, natural and wildlife conservation values, and public health and safety. Noise in particular, as well as conflicts between incompatible activities, congestion and effects at entry and exit points, all have potential to cause adverse effects.

27.6.1.5 Use of the Beds for Recreation

There is also an apparent increase in the use of 4-wheel drive vehicles in river beds around the District. This may cause adverse effects through disruption of other recreational activities, and may lead to congestion and noise-related issues. They also have impacts on ecosystems, including bird nesting areas. These effects are likely to be more pronounced when groups of vehicles access the river beds in convoy, such as happens with commercial operators or clubs.

The Council does not have specific data relating to these 4-wheel drive activities, but has information from elsewhere that shows damage caused to aquatic habitats from frequent vehicle passage. There is some anecdotal evidence about adverse effects in some high use areas such as the lower Waimea River.

27.6.1.6 Structures

Visual impacts of structures can have significant adverse effects on amenity values and natural character, particularly where these values are significant.

The use of lakes and rivers for recreational uses can include construction of structures and facilities alongside or in the margins of the rivers. These can involve jetties, launching ramps, toilet and changing facilities and administrative facilities for commercial operations. Such facilities and structures may result in adverse environmental effects relating, for example, to their visual impact, the concentration of pedestrian, vehicle and boating activity, oil and fuel spillages, noise, and the alienation of the river from general public use.

The construction of a range of structures and facilities associated with activities on the adjacent land can also have an adverse effect on the natural character and amenity of the margins of rivers. Structures such as irrigation or water supply intakes can degrade visual amenity along stretches of rivers with high levels of naturalness.

The waters of both the Motueka and Buller rivers and their tributaries are protected by water conservation orders. They are recognised as wild and scenic rivers with a high degree of landscape value. The orders do not specifically control the placement of structures (except for dams and intake structures that intrude visually into the landscape for those parts of the Buller catchment rivers that are considered wild and scenic) and Part IV further assists in addressing this issue by ensuring effects of structures in the bed on visual amenity are properly regulated. Structures on land adjacent to these rivers are managed by Part II policies and rules.

27.6.1.6 Uses of the Surface of Rivers and Lakes

The surface of rivers in Tasman District can be used for both commercial and private recreational activities.

All motorised boats can make noise, cause wash and travel at high speeds affecting the environment and other river users in some way. Similarly, all crafts and kayaks require putting in and out of the water and

intrude to some degree into the wilderness qualities of remote areas, especially where there are large numbers of users. Wash effects on river and lake margins and damage to the banks are potential adverse effects of some boating activities.

The degree to which activities are dominated by private or commercial users depends to some extent on the time of the year, although summer is usually busier. The commercial operators are generally more predictable, known elements and the private boaters being less predictable.

There are two reasons for distinguishing between private and commercial operators in terms of their environmental effects. These reasons, however, will not apply to all activities or to all water bodies:

- (a) Firstly, the number of boating trips undertaken by the commercial operators could well outnumber any private recreational use. The adverse effects could be substantial where there are high numbers of regularly commercial trips and the continuation of these trips throughout the year. Also, commercial operations have an incentive to expand. There is limited data on numbers of recreational users in comparison to commercial activities and in some areas, private recreational use can be high.
- (b) Secondly, some commercial boats, such as jetboats and hovercraft, are quite different from other recreational boats with greater potential for adverse effects on the surrounding environment. The commercial jet boats, for example, are mostly significantly larger boats with more powerful and potentially noisier engines.

The Council does not consider that controls on private recreational water users are appropriate or necessary.

It does consider that the potential for adverse effects from commercial activities requires regulation to be managed appropriately. While there are currently few, if any, significant issues arising from commercial craft on the surface of water bodies, Council considers that there is a future potential for adverse effects, especially in relation to conflict between incompatible activities or in relation to increasing numbers of users and consequential effects on amenity values.

Commercial operators are also required to be licensed under the Council's navigation bylaws which are limited to addressing issues of safety, both on the water and at entry and exit points. The Navigation Safety Bylaw contains provisions to manage boat speeds and safety; the Bylaw remains unchanged by Part IV.

It does not cover adverse effects on amenity values, manage conflicts between other river users, or address public access issues.

At the moment there are no significant safety concerns as a result of the congestion of water users on rivers. The District does contain some difficult stretches of river, which could come under more pressure for intensive use, especially from commercial operations. At some point, the level of use of those stretches of the rivers could be such as to give rise to adverse environmental effects and safety. The point at which this occurs, however, will depend on the physical characteristics of the river, the level of use by other users, and the nature of the activities.

27.6.1.7 Te Waikoropupu Springs

The Plan recognises the significance of Te Waikoropupu Springs. (See schedules 30A and 16.13C)

The Springs are within Scenic Reserve which is managed by the Department of Conservation (Reserves Act 1977) and the Te Waikoropupu Springs Management Plan (operative since 26 February 2009). Under these provisions, the Department controls a number of activities within the Reserve, including access to the bed of the springs and activities on the surface of the water. The management plan contains provisions that will prevent swimming and diving within the Springs.

These provisions have been adopted to protect the Springs against didymo invasion and also account for iwi values. They also serve to protect amenity and natural values, including the aquatic habitat of the Springs. Adverse effects from the ever-increasing usage of the Springs by swimmers and divers were also

identified by mana whenua and the Department of Conservation. The development of the plan has taken a considerable time and involved a great deal of consultation.

The conflicts surrounding the use of the Springs for swimming and diving have already been identified by the Department of Conservation. The Council has clear jurisdiction to address these resource use conflicts by including a rule in the Plan.

27.6.2 Objective

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.

27.6.3 Policies

*Refer to Policy set 27.7.3.
Refer to Rule sections 28.4.*

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.

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.

27.6.20 Methods of Implementation

27.6.20.1 Regulatory

- (a) Rules that allow or regulate activities according to the risk of adverse effects on social and cultural values, including regulation of commercial operation of craft on the surface of rivers and lakes.

27.6.20.2 Education and Advocacy

- (a) Programme of education and advocacy for methods to avoid, remedy or mitigate adverse effects of activities, including advice and education to 4-wheel drive vehicle clubs, and jet sprint clubs;

27.6.30 Principal Reasons and Explanation

Policy 27.6.3.1 recognises that structures and activities can impact on natural character, landscape, amenity, cultural and social values, and on public access to rivers. The Council will ensure that adverse effects of activities carried out in rivers and lakes on these values will be properly managed through rules and other methods. The policy and related rules also ensure that public access to rivers, especially for recreation, is maintained and enhanced where appropriate. In some situations, adverse effects on ecosystems on public safety may require public access to be restricted. (Impact of these activities on wildlife habitats is covered in section 27.1).

The Council seeks to avoid, remedy or mitigate adverse effects of surface water activities on rivers and lakes on landscape and amenity values, including adverse effects arising from congestion in rivers and lakes or at points of access to rivers and lakes, or adverse effects arising from noise and conflicts between other river users and wildlife.

The Council intends to generally permit the use of beds for vehicle access but will impose performance standards to reduce risk of adverse effects. Education and advocacy methods will help to alert people using the beds of rivers for access or recreation, especially through 4-wheel drive activities, about the potential for adverse effects, particularly cumulative effects as number of users increase over time. No regulation in respect of potential effects on amenity or conflict between users is further suggested in relation to vehicles.

Council wishes to avoid the creation of adverse effects arising from commercial operations on the surface of rivers which may occur at a rate and scale exceeding the capacity of the river environment to absorb.

The Council recognises the specific and significant values of Te Waikoropupu Springs. It can support and be consistent with the Department of Conservation Reserve Management Plan and Bylaw for the Springs by including rules that limit access to the bed and surface of the water. Part IV objectives, policies and rules recognise the adverse impacts on mana whenua cultural values, the adverse effects on amenity of this nationally important water body, and the actual and potential adverse effects on aquatic habitat in and adjacent to the Springs.

27.7 USES AND VALUES OF RIVERS AND LAKES

27.7.1 Issues

Schedule 30A in Part V is a preliminary identification of uses and values for the District's water bodies. It is limited to identifying the significant values that may be affected by water quantity (flow or level of water).

The Schedule is incomplete. It does not identify all known values. In addition, there is a need to develop more transparent criteria to help in establishing the significance of the various water body uses and values. That is, the Plan refers to international, national, and regional significance in relation to some water body values, but there is little information showing how significance was assessed. The assessment of relative significance will eventually help guide water management decisions, especially where there are competing uses and values.

At present the Schedule provides some information when assessing the effects of any activity requiring resource consent. There are also restrictions on some activities according to the identified presence of a particular value (for example, trout spawning reaches, bird nesting, kōkopu, inanga habitat and kayaking).

There is a need to guide decision-making in relation to the Schedule especially in circumstances where there is incomplete knowledge or uncertainty about a particular value or about its significance.

27.7.2 Objective

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.

27.7.3 Policies

Refer to Policy sets 27.1.3, 30.1, 33.1.

Refer to Rule sections 28.1 – 28.5., 31.1 – 31.5, 36.2, 36.4, 36.6.

- 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.
- 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.

27.7.20 Methods of Implementation

27.7.20.1 Regulatory

- (a) Rules that address the need to take into account the adverse effects of activities on identified water body uses and values and require the identification and assessment of other uses and values where necessary.

27.7.20.2 Investigation

- (a) Continuing monitoring and collection of data to identify the values and uses of rivers and lakes.
- (b) Development of methods that help assess relative significance of river and lake uses and values.
- (c) Amendments to Schedule 30A to identify appropriate management objectives and methods for rivers and lakes where there are competing uses and values, having regard to these uses and values and their significance.

27.7.30 Principal Reasons and Explanation

Many activities that might be carried out in the beds of rivers and lakes could impact on or generate risks for the uses and values already identified in Schedule 30A. Other uses and values are included in Part VI as a series of water classifications (for the Motueka and Waimea rivers and their tributaries) that are based on identified uses of the water and that are not linked to any criteria for significance of use. That is, if water is managed for fisheries or stock water, then the relevant schedule in Part VI specifies the water quality parameters of the water that are sufficient for sustaining that value or use.

The Council plans to develop the scope of Schedule 30A so that it will be relevant to considering the effects of any activity in or near a river or lake that might impact on those uses and values under Parts II, IV, V and VI of the Plan.

The policies and rules recognise that not all known values are listed in Schedule 30A and, where necessary, other values may need to be accounted for.

The development of the Schedule will use work being carried out nationally on significance assessment that will help resolve uncertainties, improve consistency and clarify management objectives for rivers and lakes. Any review or amendments to the Schedule will be subject to public consultation as required by the Act.

27.50 ANTICIPATED ENVIRONMENTAL RESULTS

- 27.50.1** The habitat of indigenous aquatic fauna and flora is protected and indigenous biodiversity of aquatic habitats is maintained or enhanced.
- 27.50.2** The habitat of trout and whitebait is protected.
- 27.50.3** Fish passage in lakes and rivers is not inhibited by existing or new structures.
- 27.50.4** Physical changes to aquatic habitat in the beds of rivers and lakes caused by bed disturbance are minimised.
- 27.50.5** 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.
- 27.50.6** Gravel extraction occurs within a sustainable yield.
- 27.50.7** People and communities are protected from the adverse effects of flooding.

- 27.50.8** 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.
- 27.50.9** The unavoidable adverse effects of inundation resulting from the damming of water are remedied or mitigated.
- 27.50.10** Potential adverse effects arising from overtopping or failure of a dam structure are avoided or remedied.
- 27.50.11** Conflicts between users of the beds or surface of rivers and lakes are minimised.
- 27.50.12** 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.