

Future directions for the management of river and stream bed modification

Review of the Regional Fresh Water Plan for Taranaki

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1. Introduction

1.1 Purpose of report

The purpose of this report is to review issues associated with small stream modification in the Taranaki region and in response to findings, develop and amend policies, methods and rules for the proposed *Regional Fresh Water Plan for Taranaki* (the Freshwater Plan).

1.2 Background

Taranaki has a very dense drainage network, the natural consequence of the regions topography, frequent and plentiful rainfall and gravity's effects upon water.

In Taranaki as in other parts of New Zealand, land reclamation and associated drainage activities have become an essential part of land development and utilisation. Farm development has been encouraged as a means of extending pastoralism and improving farm productivity and profitability. Taranaki has a significant number of small streams (approximately 20,000 kilometres of stream length) and a history of small stream modification, including piping and culverting.

In 2010 the Council undertook a preliminary analysis of small stream modification in Taranaki. The report entitled *Small Stream Modification in Taranaki - An assessment of the ecological and hydrological values of small streams, the cumulative extent and ecological effects of modification, and implications for policy and practice* (2010) highlighted the increasing modification of intact unmodified small streams in Taranaki and the significance of this trend for associated hydrological and ecological values in the region. The report recommended that as part of the Freshwater Plan review, current provisions could be amended to promote

a more appropriate balance between the use, development and protection of small streams. This report gives effect to that recommendation.

For the purpose of this report a 'small stream' is defined as "...a permanent or intermittent flowing body of freshwater less than two metres wide and which has a defined channel and must be able to support aquatic flora and fauna. Small streams include modified watercourses that have a natural headwater of either a channel or a spring and generally follow the path of a historic natural watercourse or reasonably defined natural drainage channel"¹. Small streams do not include artificial watercourses or ephemeral streams that lack a defined bed and the necessary characteristics to support aquatic life.

While the scope of this report is largely focused on activities that impact on small streams, it may also address activities that might impact on larger watercourses.

Small stream modification encompasses a diverse range of activities, including:

- stream realignment – this involves diverting water from its natural course through an open channel and discharging the water back into the same water body.
- stream piping – this means enclosing a stream in a pipe that exceeds twenty five metres in length.
- stream culverting – this involves passing a stream through a pipe that conveys water beneath a crossing which supports a path, road or track. Stream culverting excludes the piping of a stream.

¹ Ephemeral streams that require protection under the Freshwater Plan are included in the definition of an intermittent stream

Other related activities that may, on occasion, result in the modification of small streams, include the maintenance or removal of structures, the construction of fords, bridges and dams, managing instream and stream bank vegetation and river and flood control work.

Stream modification does not incorporate land drainage. Land drainage largely lies outside the scope of this report. While there is some overlap between land drainage and small stream modification, land drainage and its associated effects, e.g. on wetlands and biodiversity values, will be addressed by the Council in a separate report.

Since the adoption of the Freshwater Plan in 2001, there has been an increase in the amount and rate of stream modification. The Taranaki Regional Council (the Council) and the wider community recognise the positive consequences of modifying small streams and that in some circumstances their modification may be appropriate. However, it is also recognised that small stream modification may result in significant adverse effects upon instream habitat and/or on other users and uses of freshwater, and that these effects should be avoided, remedied or mitigated.

As pressures arising from resource use activities develop it is important to review the Freshwater Plan to ensure its provisions remain effective and efficient in addressing existing and emerging issues. Given the Council has commenced a review of the Freshwater Plan it is timely to examine issues associated with small stream modifications, to ensure the Freshwater Plan promotes the appropriate balance between use, development and protection.

1.3 Structure of report

The working paper has six sections.

Section 1 introduces the report, including its purpose, background and structure.

Section 2 outlines the relevant statutes and policy documents that must be considered when recommending amendments to the Freshwater Plan.

Section 3 outlines the extent of small stream modification in Taranaki, including associated benefits and adverse effects.

Section 4 examines policy and management issues associated with the implementation of small stream modification provisions in the Freshwater Plan.

Section 5 presents the recommended amendments to the Freshwater Plan and their associated explanations.

Section 6 provides a summary of key findings and recommendations in the report.

Appendix I includes a summary of the costs and benefits of policy options available for adoption by the Council.

Appendix II of this paper presents rules relating to small stream modification proposed for inclusion in the next Freshwater Plan.

2. Statutory and planning context

This section sets out the statutory and planning context for managing small stream modifications in the Taranaki region.

2.1 The Resource Management Act 1991

Under section 30 of the Resource Management Act 1991 (the Act), regional councils have the following functions for the purpose of giving effect to the Act in relation to managing small stream modification:

- the establishment, implementation, and review of objectives, policies, and methods to achieve the integrated management of the natural and physical resources of the region;
- the control of the use of land for the purpose of avoiding and mitigating natural hazards, the maintenance and enhancement of water quality and quantity and the maintenance and enhancement of ecosystems in water bodies;
- the control of the taking, use, damming and diversion of water, and the control of the quantity, level, and flow of water in any water body, including the control of the range, or rate of change, of levels or flows of water.

Section 13 of the Act places restrictions on certain uses of beds or rivers, stating that *"...no person may in relation to the bed of any lake or river use, erect, reconstruct, place, alter, extend, remove or demolish any structure or part of any structure in, on, under, or over the bed...deposit any substance in, on, or under the bed, or reclaim or drain the bed- unless expressly allowed by a ...rule in a regional plan...or a resource consent"*.

Section 14 of the Act restricts the taking, damming or diverting of freshwater

unless they are *"expressly allowed by a national environmental standard, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent"* or where the water is *"required to be taken or used for an individual's reasonable domestic needs or the reasonable needs of an individual's animals for drinking water"*. Often small stream modification requires the diversion of water, making Section 14 a key consideration when recommending amendments to the Freshwater Plan.

Section 6(a) of the Act requires the Council, when carrying out its functions under the Act, to recognise and provide for *"...the preservation of the natural character of ...wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development"* as a matter of national importance.

The Act provides for a hierarchy of policies and plans and other statutory powers to enable central and local government to carry out their functions. These include national policy statements, national environmental standards, regional policy statements, regional plans, and district plans. This hierarchy ensures that consistency is maintained throughout national, regional and local levels of government.

The definition of 'water' in the Act is a key consideration when reviewing or proposing amendments to the Freshwater Plan. The Act states that water means *"water in all its physical forms whether flowing or not and whether over or under the ground, it includes fresh water, coastal water, and geothermal water but, it does not include water in any form while in any pipe, tank, or cistern"*.

2.2 The National Policy Statement on Freshwater Management

The *National Policy Statement for Freshwater Management 2011* (the NPS) sets out objectives and policies that direct local government to manage freshwater in an integrated and sustainable way, while providing for economic growth within set water quality limits.

The NPS objectives and policies broadly address freshwater issues with no explicit reference to small stream modifications. Despite a lack of targeted policy, the NPS objectives and policies relating to water quality, water quantity and integrated management apply to small stream modifications and will be given effect to as part of the review of the Freshwater Plan.

Objectives A1 [water quality] and B1 [water quantity] both seek to “safeguard the life supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh water”.

The NPS objective for water quantity applies to the management of activities that remove fresh water from a water body, while the NPS objective for water quality applies to activities that compromise the chemical and physical parameters of fresh water. Objective A1 promotes the sustainable management of the use and development of land, and of discharges of contaminants. Objective B1 promotes the sustainable management of the taking, use, damming and diversion of freshwater.

Objective C1 (integrated management) is also of relevance and seeks to “improve integrated management of fresh water and the use and development of land in whole catchments, including the interactions between fresh water, land, associated ecosystems and the coastal environment”.

2.3 Regional Policy Statement

The *Regional Policy Statement for Taranaki* (the RPS) sets out broad objectives and policies for the Taranaki region to promote integrated management in the region. Both regional and district plans must give effect to the RPS.

The RPS identifies two issues that particularly relate to small stream modifications. The issues and associated objectives, policies and methods are outlined below.

Issue 6.6 Managing effects associated with the use of and disturbances to river and lake beds

River and Lake Beds (RLB) Objective 1 seeks “to enable appropriate use of and disturbance within river and lake beds in Taranaki while avoiding, mitigating or remedying any adverse effects of activities on the environment”. RLB Policy 1 sets out the potential adverse effects arising from the use or disturbance of river beds that must be considered when assessing relevant applications for resource consent.

In addition to methods of implementation listed under Issue 6.5 (excluding river and flood control works), methods associated with Issue 6.6 include the monitoring and gathering of information on potential fish barriers, use of financial incentives, communication with affected parties and the preparation of guidelines.

Issue 6.5 Managing land drainage and associated diversion of water

Land Drainage and Diversion (LDD) Objective 1 aims to “recognise and provide for the land production and management benefits of appropriate land drainage and associated diversions of water from land in the Taranaki region while avoiding, remedying or mitigating any adverse effects on the environment”. In achieving this objective LDD Policy 1 highlights matters for consideration that include, amongst others, the natural character of rivers,

water quality, hydrological, ecological and amenity values and other water users.

2.4 Regional Fresh Water Plan for Taranaki

The Council's freshwater management responsibilities are primarily addressed through the Freshwater Plan. This became operative in 8 October 2001.

The Freshwater Plan identifies four issues, each with its own framework of objectives, policies and methods, which form the basis of the Council's approach to managing small stream modification.

Issue 3.1 Protection and enhancement of the natural, ecological and amenity values of fresh water

Objectives relating to Issue 3.1 seek to promote the maintenance and enhancement of the natural character of all Taranaki's rivers and wetlands (OBJ 3.1.3), safeguard the life-supporting capacity of water and aquatic ecosystems (OBJ 3.1.4) and encourage the sustainable management of the environment by recognising the differences in and between rivers and streams (OBJ 3.1.6). Policies 3.1.2 and 3.1.3 outline a number of matters that will be given consideration in managing potential adverse effects of activities on natural character, ecological and amenity values and the life-supporting capacity of fresh water.

The Freshwater Plan recognises a number of catchments with high natural, ecological and amenity values (Appendix 1A of the Plan). Policy 3.1.5 states that the high natural, ecological and amenity values of those rivers and streams listed in Appendix 1A will be maintained and enhanced as far as practicable.

Issue 6.6 Adverse effects on the environment from uses of river and lake beds

The modification of small streams (straightening, realigning and piping)

predominantly falls under Issue 6.6. Objectives relating to the sustainable management of river beds seek to avoid, remedy or mitigate any adverse effects that may result from the use of river beds, flooding and erosion (OBJ 6.6.1 and OBJ 6.6.2).

Policy 6.6.1 sets out those matters that will be taken into consideration when placing a structure into a waterway, such as the need to avoid, remedy or mitigate the adverse effects on the habitat of aquatic and terrestrial flora and fauna, the effects of flooding and erosion and the adverse effects on water quality and aquatic life. Policy 6.6.2 reiterates the importance of maintaining fish passage, and Policy 6.6.3, the need for structures to convey flood flows. Policy 6.6.6 sets out times to avoid disturbing river beds and Policy 6.6.9 sets out matters the Council will consider when assessing resource consent applications for uses of river beds.

Issue 6.7 Adverse effects on the environment from land drainage

Issue 6.7 of the Freshwater Plan addresses the adverse effects on the environment from land drainage. It is important to note that land drainage (taking off or diverting water from the land by artificial channels, pipes or other means²) differs from land reclamation (any permanent filling of a river bed or an area previously inundated by water, thereby creating dry land). Objective 6.7.1 aims "to promote the sustainable management of land drainage while avoiding, remedying or mitigating actual or potential adverse effects on the environment". Policy 6.7.1 sets out those matters that will be considered in relation to land drainage activities.

Relevant rules for stream modification

Rules 52 to 76 provide for a diverse range of uses of river and lake beds, a number of which may, on occasion, relate to small stream modification.

² Regional Policy Statement for Taranaki.

The Freshwater Plan provides for the construction, placement and use of a culvert for access purposes as a permitted activity. Rule 57 permits the construction, placement and use of a culvert in, on, under or over the bed of a river as long as (amongst other things):

- the cross sectional area of the river bed is no greater than 10 m²
- the culvert is no greater than 1 m in diameter, with no more than 1 m of fill over the culvert
- the culvert is no more than 25 m in length
- there shall be no significant adverse effects on aquatic life or instream habitat.

Generally piping a length of stream for the purposes of land improvement will not meet the permitted standards for Rule 57. The Freshwater Plan does not include a rule permitting the installation of a longer culvert or pipe into a stream, and such activities are captured under Rule 64. Under Rule 64 (the construction, placement and use of any structure that does not meet the standards, terms and conditions of rules 52-63) a landowner piping a stream for the purpose of land improvement is required to obtain a resource consent.

Other uses of rivers and lake beds are covered by Rules 69-76. The realignment or modification of a stream or river is addressed as a permitted activity by Rule 74. This rule permits the realignment or modification of a stream or river as long as (amongst other things):

- the catchment area upstream is no more than 25 ha;
- the drainage channel shall be no greater than 4 m² in cross sectional area;
- the maximum length of stream that can be realigned or modified shall not exceed 200 m; and

- there shall be no significant adverse effects on aquatic life or in-stream habitat.

If the standards set out in Rule 74 can not be met, resource consent is required under Rule 76 (the default discretionary rule).

3. Small stream modification in the Taranaki region

The following section provides a brief overview of the value of small streams, the extent of small stream modification occurring in Taranaki and the impact of small stream modifications.

3.1 Environmental value of small streams

Small streams have various natural characteristics that contribute to wider hydrological and ecological functions that may be lost or significantly degraded overtime through cumulative modification.

Intact unmodified small streams provide habitat for rare and diverse stream-life. Freshwater biota particularly at risk from small stream modifications include the naturally 'threatened' or 'at risk' brown mudfish, longfin eel, giant kokopu, freshwater crayfish (koura) and freshwater mussel (kakahī).

Small streams also perform important hydrologic functions such as the provision of natural flood attenuation, the buffering of summer low-flows and the recharging of groundwater.

The riparian zone of small streams further help to trap sediments, recycle nutrients and filter pollution from fertilisers and animal waste.

Maintaining the environmental quality of small streams in the region helps to support various recreational pursuits such as fishing, swimming and boating. These activities are dependent on both the maintenance of water quality and quantity.

3.2 Extent of small stream modification in Taranaki

The extent of total modification is a sum of permitted, consented and historical works. However, consideration must also be given to modification work that has been completed without the Council's approval (without the necessary consents).

It is estimated that the total length of streams in Taranaki equates to 20,000 km. It is important to consider this total when drawing conclusions as to the effects of small stream modifications in Taranaki.

3.2.1 Consented modification (figures and values will be updated once information is available)

Since the adoption of the Freshwater Plan in 2001, the Council has issued 320 consents for stream modifications including piping, culverting and realignments, involving 48.8 km of stream (Figure 2).

In that time there has been a steady increase in consented stream modifications. During the period 2006 to 2008, consent application rates for stream modification work almost doubled from the preceding years. This probably reflects the relative 'boom' period that the dairy industry was experiencing at the time, with increased money available to invest in land intensification and the increased awareness for the need for a resource consent for such activities (Figures 1 and 2).

Since 2009, there has been a drop in consented modification, which reflected the economic downturn. However, the amount of stream modification is still relatively high (in 2010/2011 approximately 6.8 km of streams were modified) (Figure 1).

Trends in consented modification suggest that there will continue to be ongoing losses in the length of intact unmodified small streams under the current Freshwater Plan provisions, and that the scale of that loss is largely dictated by the farmers potential to invest in small stream modification³.

3.2.2 Permitted modification

As previously noted, the Freshwater Plan generally 'permits' small scale stream modifications without the need for a resource consent. Most small stream modifications in Taranaki are being undertaken as a permitted activity.

In 2009, the Council carried out an investigation into the amount of small stream modifications occurring as a permitted activity. The investigation involved a desk top study comparing two sets of aerial photographs of the Taranaki ring plain taken in 2001 and 2007. Results indicated a much higher rate of small stream modification than that indicated by records of consent applications.

The investigation identified that between 2001 and 2007 a total of 98 km of stream length was modified. Of the 98 km of stream modification, just 20.2 km was consented, this indicates that a significant amount of work was either permitted or completed without the Council's approval.

A disproportionate amount of the total stream length lost, involved many of the small unnamed coastal catchments in southern ring

plain dairying areas, as well as the Mangatoromiro, Rawa, Ouwe, Mangati, Opuhi and Taikatu Streams (excluding the Mangati Stream, all located on the south-west ring plain between Pihama-Te Kiri and Otakeho-Awatuna). However, when the total distance is considered, the

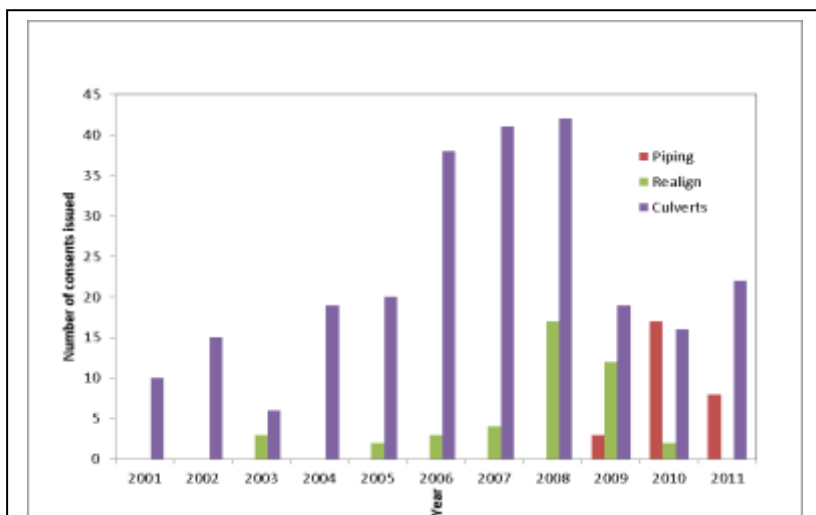


Figure 2: Number of consents issued per annum for stream modification

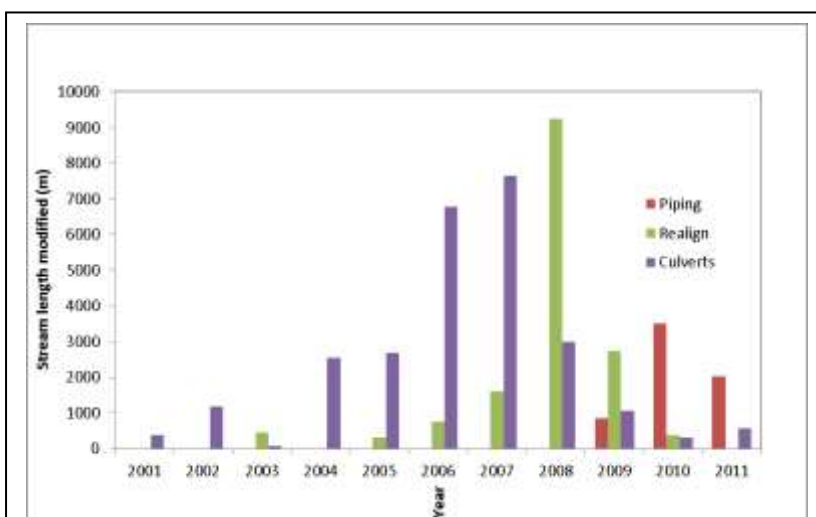


Figure 2: Total consented stream length modified per annum

³ The data included in Figures 1 and 2 represents all past and current consented stream modification that the Taranaki Regional Council is aware of between 2001 and 2011. Due to the review and updating of existing data, there may be some slight variations from the historical data presented in the Small Streams Modification report (2009).

greatest modification occurred in larger catchments like the Kaupokonui, Waingongoro and Patea rivers.

3.2.3 Historical modification

Sections of small streams that had obviously been realigned prior to 2001 due to their lack of meanders and alignment with paddock boundaries or that had been piped prior to 2001, were estimated at 635.1 km of stream length. This is likely to be a conservative estimate, as there is likely to have been modification historically that is not picked up in the aerial photos.

3.2.4 Total modification

The following table presents a summary of small stream modification carried out in Taranaki.

Table 1: Estimated kilometres of small stream modification in Taranaki

	Pre 2001	2001-2007	Total modification
Piped	94	89	183
Realigned	541	10	551
Total modification	635	99	734

Table 1 indicates that between 2001-2007 the total length of detectable modified streams in the region increased by nearly 15% compared to modification prior to 2001.

Of note, most of this modification (90%) relates to the piping of streams, where the length of stream lost has almost doubled in this six year period alone.

3.3 Economic and social benefits derived from small stream modifications

The incentive to modify small streams is predominantly driven by the farmer's desire to improve pasture productivity and farm operations.

With approximately 1,800 dairy herds in the region (15% of New Zealand's dairy herds), dairying dominates farming in Taranaki and is a significant contributor to the regional economy.

Dairying is best suited to flat fertile land that can be easily arranged into manageable paddocks. The dairy industry has a strong presence on the ring plain, which has approximately 11,500km of streams traversing it. This equates to approximately six kilometres of stream per dairy farm in Taranaki that is potentially impeding stock access or increasing the cost of farm infrastructure.

The modification of small streams has the potential to return economic and social benefits. Often the location of streams limit the productivity of a farm by restricting the area of land available to graze stock or the potential for land to be arranged into paddocks that can be farmed effectively. If farmers can increase the value of their land or improve profit margins sufficiently to outweigh the cost of carrying out the work, there exists incentive to modify small streams.

3.4 Environmental impacts of small stream modifications

3.4.1 Hydrological effects

The modification of small streams disrupts the quantity and availability of water in a stream. Straightened channels increase the rate of downstream flow, resulting in more enlarged and incised channels and the accelerated erosion of the stream bed and banks.

The greater the velocity of water the less potential it has to soak into (recharge) the stream bed and banks, and contribute to ground water resources. The effect is then magnified downstream because larger rivers receive water from multiple small headwater basins. This can result in more widespread and frequent flooding.

Similarly, when larger smoother pipes substitute narrow, rough-bottomed stream channels, water is accelerated along subsurface flow paths, increasing the frequency of downstream flooding. Stream modification commonly results in a reduction in the capacity of streams to convey flood flows, which in turn, promotes overland flow and upstream flooding.

3.4.2 Instream habitat loss

The most obvious effect of small stream modification is habitat destruction or modification. For streams that have been piped, the effect is the total loss of habitat for instream and stream bank flora and fauna. In addition to the localised effects, habitat loss to fish can extend further up the catchment above the piping (or culvert) if fish passage is restricted.

3.4.3 Water quality

Headwater streams are source areas and provide transport pathways for sediment, faecal contamination and nutrients. They therefore contribute and may impact upon water quality in the wider catchment.

The diffuse source impacts of land use activities and associated impacts on freshwater quality are often regulated by the presence of riparian vegetation. The riparian vegetation filters surface runoff, provides suitable conditions for nutrient uptake or transformations, stabilises stream bank morphology and moves sediment and nutrient generating activities away from streams. However, small stream modification often results in the partial or complete removal of riparian vegetation, impacting upon the water quality of small streams.

A limited understanding of natural processes means piping is sometimes misconstrued as a method of limiting the discharge of contaminants into a stream or

river. This approach fails to recognise the complex nature small streams and their relationship with the surrounding environment. Piping a stream effectively removes this relationship and in doing so, the potential to naturally avoid and mitigate diffuse source impacts of land use activities on freshwater quality.

3.4.4 Impact on consumptive uses

Consumptive use refers to the removal of water from rivers or streams without the intention of returning it. Minor takes and modification work are allowed provided permitted activity conditions in the Freshwater Plan can be met.

The ongoing modification of small streams however, is reducing water storage and lowering base flows. While flood peaks have increased, the median and low flows of some streams have reduced. The cumulative result of modifying small streams is fundamentally less water in the main streams, particularly during normal and or low flow periods.

4. Effectiveness and efficiency of the Freshwater Plan in managing small stream modification

Since the Freshwater Plan was adopted, significant change has occurred in regard to the rate and nature of small stream modification. The cumulative loss of small streams is of particular concern.

In 2008 the Council carried out an interim review of the effectiveness and efficiency of the Freshwater Plan. The review highlighted the following findings:

- lack of commentary in the Plan identifying small stream modification as an issue
- lack of clarity and certainty in the interpretation of the Plan
- inappropriate permitted activity conditions
- lack of provision for the piping of small streams.

4.1 Cumulative effects of small stream modification

Of particular concern to the Council is the cumulative loss of instream habitat. While no definitive figures are available, it is apparent from investigations that cumulatively, small stream modification has already resulted in portions of ring plain catchments being straightened or piped, with a consequent decline in the over all extent and quality of remaining small streams.

As a component of the interim review of the Freshwater Plan, Fish and Game highlighted concerns relating to small stream modification. In particular it was signalled by Fish and Game that each piece of stream realignment or piping is being considered in isolation and the Freshwater Plan does not provide any guidance about the proportion of catchments that should be able to be modified in this way.

The development of a 'trigger level' above which further modification (or habitat loss) would be deemed a significant cumulative effect, was recognised as a potentially useful tool for assessing resource consent applications.

The Council subsequently carried out an investigation into the feasibility of setting appropriate thresholds and limits on small stream modifications. These investigations concluded⁴ the application of a broad scale limit is excessively complex making it almost impossible to set broad rules in the Freshwater Plan that adequately address individual circumstances.

Each catchment and the small streams within it have unique characteristics and pressures. Rather than trying to establish a 'one size fits all' rule, it would be more practicable to address such matters through the resource consents process supported by an appropriate policy framework within the Freshwater Plan.

It is therefore proposed that where appropriate, a limit is applied through the resource consent process to each specific 'piece' of stream modification work. The appropriate policy support must be adopted into the Freshwater Plan to provide a basis through which appropriate limits can be required and enforced.

Relevant amendments proposed to the Freshwater Plan are outlined in Chapter 5 of this report.

⁴ Taranaki Regional Council Memorandum: Methods to address cumulative effects associated with small stream modifications

4.2 Application of the Freshwater Plan

4.2.1 Interpretation of the rules

As part of the interim review of the Freshwater Plan, issues around interpreting and applying the relevant rules were also highlighted.

There is some uncertainty, both within Council and by resource users, in determining in what situations rules relating to beds of rivers and streams apply.

Rule 74 has been identified as a source of confusion for Freshwater Plan users. The rule provides for the realignment and modification of a stream or river. The lack of a definition for realignment and the unclear nature of 'modification' have meant this rule has been problematic, encompassing activities that should not have been classified permitted. Consideration should be given to amending this rule, removing 'modification' to improve certainty and clarity for Plan users.

Rule 57 provides for the construction, placement and use of a culvert, ford or bridge. Although each structure is designed to provide access across the bed of a river or stream, they are associated with different effects upon the environment. Certainty and clarity in addressing such effects would be improved by separating these activities into three rules that include standards, terms and conditions designed to target specific environmental effects associated with the activity.

Rules 65 and 66 include provision for similar activities. Rule 65 provides for the removal of vegetation for river and flood control purposes, while Rule 66 provides for the trimming and clearance of vegetation associated with the safe and efficient operation of bridges, pipelines, cableways and transmission and

telecommunication lines. Consideration should be given to combining these rules to avoid overlap and confusion.

It is further suggested that the Freshwater Plan should include a rule that specifically relates to the piping of streams.

4.2.2 Defining small streams

The difficulty in defining what constitutes a small stream makes enforcing rules in the Freshwater Plan difficult. Sometimes work is carried out without the necessary resource consent because farmers fail to correctly identify the environment they are modifying. The Freshwater Plan must provide clear guidance on what constitutes a river or stream so an appropriate management approach can be applied.

A 'river' is defined in the Freshwater Plan (and in the Act) as a continually or intermittently flowing body of freshwater and includes a stream and modified watercourse, but does not include any artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation and farm drainage canal).

Small streams either permanently or intermittently flowing are considered rivers and therefore are subject to rules in the Plan. However, small streams often start off much less clearly defined on the ground, and it is difficult to determine when a seep area, or flow path becomes a stream and warrants protection under the Freshwater Plan. Definitions of a 'permanent river or stream' and an 'intermittent stream' should be included in the Freshwater Plan to improve the certainty and clarity of interpretation for plan users. In drafting these definitions, it must be clear that an intermittent water course includes seeps or flows of environmental value, but excludes what are essentially areas of runoff that provide

no ecological habitat or hydrological significance.

Plan users have expressed some uncertainty in making the distinction between a modified watercourse and an artificial one, a fundamental factor in determining whether rules in the Freshwater Plan apply to proposed stream modification work. For example, it is difficult to distinguish between a farm drainage canal established through land drainage (an artificial watercourse), and a natural stream that has been realigned to the edge of a paddock (a modified watercourse). A modified watercourse falls within the definition of river, meaning any further modification must be considered under the Freshwater Plan and may be require resource consent.

An Environment Court case in Southland demonstrates the importance of correctly identifying a stream before modifying it. In this case a small watercourse was piped by directing its flow through two nova flow pipes for the purpose of land improvement.

The sole issue in this case was whether the works carried out by the defendant were in relation to a bed of a river rather than in an artificial water course (a farm drainage canal). The judge found that the watercourse was a river for the purposes of section 13(1)(b) of the RMA, based in part on historical aerial photos demonstrating the 'drain' was historically a natural water course; and the defendants were found guilty of the offences charged.

Although rules regarding the use of river and lake beds do not apply to an artificial water course, other rules in the Freshwater Plan could. Under the Act water in an artificial watercourse is still considered

water and as such, rules associated with land drainage and the taking, damming and diversion of water still apply.

4.2.3 Defining stream modification

Given the overlapping activities and effects, Freshwater Plan users may, on occasion, be uncertain as to what activities constitute different types of small stream modification work, making it difficult to interpret and apply the relevant policy framework, e.g:

- sometimes piping a stream is incorrectly identified as culverting
- there is a lack of guidance as to what constitutes the maintenance of a structure
- there is uncertainty around the use of 'diversion' in the Freshwater Plan.

Including definitions in the Freshwater Plan that clearly outline the primary forms of small stream modification should allow applicants to easily establish the nature of their proposed activity and increase the certainty and clarity when processing applications for consent.

4.2.4 Defining Land drainage

Land drainage is defined in the RPS as "*the act of taking off or diverting excess water from the land by artificial channels, pipes or other means.*" It is important to recognise that activities associated with land drainage do not apply to water bodies included under the definition of a river in the Freshwater Plan, but instead involve the creation of artificial channels to transport excess water. The modification of an existing stream does not constitute land drainage.

It should be made clear in 'Issue 6.7' that land drainage is concerned with the creation of artificial channels and not the modification of existing rivers or streams. The definition of 'land drainage' in the

RPS should be included in the Freshwater Plan.

4.3 Aligning small stream modifications with riparian management

Since 2002, implementation of the Taranaki Riparian Management programme has been significantly accelerated. As at 30 June 2012, 2390 riparian plans have been prepared with recommendations that waterways be fenced and planted.

In addition to the Riparian Management Programme, Fonterra now requires dairy farmers to fence their waterways as a condition to the collection of the milk produced.

There is a risk that stream modification work, predominantly stream piping, will be perceived as a more attractive alternative to stream planting and fencing. This would be a perverse environmental outcome and would derogate from other objectives and outcomes being sought by the Freshwater Plan.

Accordingly as part of this review, the Council must ensure its objectives and policies for riparian management are aligned with those addressing small streams to avoid the potential risk of farmers piping their small streams to avoid costs associated with riparian fencing and planting.

4.4 A lack of information to use as a basis for decision making

Through the resource consenting process decisions must be made regarding the significance of environmental effects of proposed small stream modification. Currently these decisions are often made using a qualitative description of effects as a basis for justification. This method of decision making gives no real indication

of the value of the stream affected, the scale of effects or the potential for cumulative effects.

Previous investigations into small stream modification in Taranaki have identified systems adopted in other regions to better quantify appropriate environmental compensation for the loss or degradation of stream environments. In 2006, the Auckland Regional Council (ARC) adopted a new method known as Stream Ecological Valuation (SEV) to quantify the ecological values of streams in the region to help inform resource management decisions. This methodology was developed by an interdisciplinary team including representatives from the ARC, NIWA and Landcare Research.

Since its adoption in 2006, SEV has been used extensively for a wide variety of purposes, but it has been most commonly applied in resource consent applications as part of an assessment of ecological effects and for calculating ecological compensation requirements. The SEV method has also been reviewed and found to be of use in other regions in New Zealand without major changes being required.

A revised version of the SEV method was released in 2011 on completion of a 5 year review into the effectiveness and efficiency of the method. The Council should consider the adoption of a similar system outside of the Freshwater Plan for use in processing consents relating to small stream and river modification.

5. Future directions for the management of river and stream modification

This section sets out policy options relating to the future management of river and stream modification in Taranaki, including draft policies, methods and rules to be considered for inclusion in a Proposed Freshwater Plan.

The current policy framework is not fundamentally flawed, however, small streams are increasingly under more pressure for land development purposes. Through relatively minor changes, significant improvements to the interpretation and application of the Freshwater Plan can be achieved.

Of particular concern and a key consideration in drafting proposed amendments, is the potential for cumulative effects of relatively minor modification work to result in the significant deterioration of some catchments in the region.

5.1 Desired outcomes

Subject to the outcomes of public consultation associated with the review of the Freshwater Plan, the desired outcome sought is as follows:

The best practicable option is adopted that allows for the appropriate modification of small streams while, avoiding, mitigating and remedying any adverse environmental effects.

5.2 Policy options

There are essentially three broad policy responses to be considered when reviewing the Freshwater Plan in regard to small stream modification. They are:

- Option 1: Retain the *status quo*. This option requires no further amendment to the Freshwater Plan, but fails to address issues raised in this report.
- Option 2: Focus on improving the appropriateness of permitted activity conditions and increasing the certainty and clarity with which the Freshwater Plan is interpreted and applied. This option is based on the assumption that conditions can ensure environmental effects remain less than minor. Implementing this option requires relatively minor amendments to the Freshwater Plan.
- Option 3: Adopt a more restrictive approach by treating small stream modification as a controlled activity rather than permitted. This option involves significant amendments to the Freshwater Plan, requiring a modified policy approach.

In determining an appropriate approach to adopt in regard to small stream modification, it is important to examine the relative costs and benefits of adopting each approach. Appendix I provides an analysis of the costs and benefits of each option available to the council to manage small stream modification.

5.2.1 Proposed policy option for adoption by the Council

Option 2 is the preferred alternative for adoption into the Freshwater Plan. Option 2 gives effect to the Act, addressing environmental concerns regarding small stream modification and issues associated with the interpretation and application of the Freshwater Plan, whilst allowing for appropriate use and development.

Amendments do not seek to modify the broader framework of rules. Activities will maintain their current classification as permitted, controlled or discretionary. Instead amendments seek to modify the scale or nature of activities that fit into

each classification by modifying conditions that trigger an activity's progression from being a permitted activity to a controlled or discretionary one.

5.3 Recommended amendments to the Freshwater Plan

To address the issues highlighted in Sections 3 and 4 of this report, it is recommended that the Freshwater Plan is amended to increase the certainty and clarity in the application of policies and rules designed to address small stream modification.

5.3.1 Amend definition of terms

Recommendation

It is recommended that the revised Freshwater Plan includes definitions for the piping of a stream, a culvert, a ford, a farm drainage canal, a stream, stream realignment, land reclamation, land drainage, maintenance, an artificial water course, a modified water course, a permanent river or stream and an intermittent stream. Proposed definitions are included below.

Artificial water course means a watercourse that is not fed by a natural headwater of either a channel or a spring and includes an irrigation canal, water supply race, canal for the supply of water for electricity power generation and a farm drainage canal.

Culvert means a pipe or similar pre-fabricated structure installed in the bed of a river that conveys water beneath and supports a path, road or track. It includes ancillary components of the installation such as erosion protection structures and fill.

Diversion means a permanent or temporary alteration in the flow path of water. Diversion has the same definition as divert and diverting.

Farm drainage canal means an artificial watercourse that has been formed by excavating land for the purpose of facilitating

the taking off or diverting of excess water.

Ford means a structure within or modification to the bed of a river or stream (that is permanently or frequently overtopped by water) established to provide access across a river or stream bed.

Intermittent stream includes any stream or part of a stream that is not permanently flowing and meets at least one of the following criteria:

- (a) Has a defined water channel and banks; or
- (b) Provides habitat for aquatic flora and/or fauna species.

Note: this definition does not include an artificial watercourse.

Land drainage means the act of taking off or diverting excess water from land by artificial channels, pipes or other means.⁵

Land reclamation means any permanent filling of a river or stream bed or an area previously inundated by water, thereby creating dry land. Land reclamation has the same definition as reclaim and reclaiming.

Maintenance includes activities which retain a structure or asset to its original authorised standard and purpose, and where the character, intensity and scale of the structure, asset or site remains the same or similar. Excludes the extension or reconstruction of structures or assets, or change in location.

Modified watercourse includes a watercourse that meets the following criteria:
(a) Is a river or stream that has undergone some form of alteration in relation to land development; and
(b) Has a natural headwater of either a channel or spring, and generally follows the path of a historic natural watercourse or reasonably defined natural drainage channel.

Note: Applies to the length of river or stream altered.

Permanent river or stream means any watercourse that has continual flow.

Note: this definition does not include an

⁵ Taken from the Regional Policy Statement

artificial watercourse.

Stream has the same definition of a river⁶.

Stream piping means enclosing a stream in a pipe and consequently reclaiming the open stream channel.

Stream realignment means the permanent, diversion of water from its natural course and discharging the water back into the same water body by reconstructing the stream channel on another alignment. Includes the associated disturbance, excavation and reclamation.

Explanation

The insertion of proposed definitions into Section 2 of the Freshwater Plan will increase the clarity and certainty of interpretation for Freshwater Plan users. Proposed definitions will better differentiate between the activities that contribute to stream modification.

5.3.2 Amend description of the Issues

Recommendation

It is recommended that Issues 6.6 and 6.7 be amended. Proposed amendments are highlighted in italics below.

Issue 6.6 Adverse effects on the environment from uses of river and lake beds

.....Structures within river channels and the excavation of the bed may divert river flows and change channel morphology, causing erosion of the bed and banks, *flooding of adjoining land* and may disturb *instream* habitat or create barriers to fish movement. *Installing pipes and culverts in rivers and streams will result in the complete loss of instream and stream bank habitat and may restrict fish passage and reduce a stream's capacity to convey flood flows.*

Disturbance of the beds of rivers and lakes, including stream realignment, results in turbidity and discolouration of water, and may adversely affect aquatic life through the creation of barriers to fish movement and migration, the loss of habitat of plants, invertebrates, fish and other species, and

disruption to fish spawning through smothering of spawning areas.

Issue 6.7 Adverse effects on the environment from land drainage

Land drainage involves the removal of water from land by artificial channels. Typical examples of land drainage activities in Taranaki currently include the realignment of natural run-off and the ring draining of natural ground depressions. In addition to open surface drainage systems, extensive use is made of subsoil drainage pipe systems to lower groundwater and improve pasture yields. *The modification of a river or stream bed, be it modified or natural, does not constitute land drainage.*

Explanation

There are a number of 'Issues' in the Freshwater Plan that relate to small stream modification, providing the context for policies to follow, including any potential for environmental degradation and the positive effects on land productivity. A number of minor amendments are therefore proposed to ensure the problematic nature of stream piping is included in the Freshwater Plan.

It is necessary to provide some clarification in regard to the difference between land drainage and small stream modification activities involving land reclamation. While both increase the land available for use, where they differ is in how this is achieved. Land drainage removes water from an area, while land reclamation involves the addition or relocation of material to fill in a previously unoccupied space (most commonly associated with stream piping). It is important to recognise that land drainage activities are restricted to the construction, use and maintenance of artificial drainage channels, while stream modification work relates to rivers as defined in the Act.

It is considered that Issue 3.1 and 6.8 provide adequate provision for the management of small stream modification and no amendment is necessary.

⁶ Included in the Freshwater Plan

5.3.3 Objectives and policies

Recommendation

No changes are proposed to objectives relating to small stream modification. However, it is recommended that a new policy is included that targets the piping of small streams (POL X) and that cumulative effects be added to POL 6.6.9 as a matter for consideration when assessing resource consents. Proposed amendments are highlighted in italics below.

POL X	<p><i>In considering the effects of piping a stream, particular regard will be given to:</i></p> <ul style="list-style-type: none"><i>a) instream and stream bank habitat loss;</i><i>b) maintaining fish passage;</i><i>c) the erosion and accretion of river beds, upstream and downstream of the pipe;</i><i>d) the risk of flooding, upstream and downstream of the pipe;</i><i>e) water uses and users down stream of the pipe;</i><i>f) the potential to mitigate adverse effects that cannot be avoided or remedied through appropriate environmental compensation.</i>
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POL 6.6.9	<p>When assessing resource consent applications for uses of river and lake beds, the Taranaki Regional Council will consider:</p> <ul style="list-style-type: none">(a) the natural, ecological and amenity values of the water bodies;(b) the relationship of Tangata Whenua with the water body;(c) adverse effects on water quality and aquatic life and instream habitat;(d) possible mitigation measures including appropriate timing of works, provision of fish passage and provision of alternative access;<i>(e) the potential for cumulative effects to result in environmental degradation.</i>
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Explanation

Since the enactment of the Freshwater Plan there has been a significant increase in stream piping by farmers. Currently the Freshwater Plan addresses the piping of streams alongside other activities. It is therefore proposed that a new policy be introduced to specifically address the piping of streams.

Currently the Freshwater Plan does not explicitly address cumulative effects, instead relying on the meaning of effect in the Act to encompass cumulative effects. By including cumulative effects in the matters for consideration when accessing a resource consent, consent officers have clear justification to include relevant conditions to appropriately manage the potential for degradation.

Refer to section 5.6.1 and 5.6.2 for further explanation regarding methods to access the ecological value of a small streams and address cumulative effects.

5.4 Amend Methods of implementation

Recommendation

No changes are proposed to methods of implementation. It is considered that existing methods provide adequate provision for any changes to the Council's procedures discussed in Section 4 of this report.

It is likely a single list of methods of implementation will be adopted that can be applied broadly to issues in the revised Freshwater Plan.

5.5 Amend regional rules

Recommendation

It is recommended that the following amendments be made to the framework of rules in the Freshwater Plan that provide for small stream modification:

- A new rule explicitly addressing the piping of a stream.

- Amend Rule 74 to limit its scope to the realignment of a stream.
- Include new rules based on Rule 57 that address culverts, fords and bridges separately.
- Rules 65 and 66 should be combined.
- A number of minor amendments should be made to standards, terms and conditions throughout the framework of rules.
- A new rule that permits the continued diversion of water and reclamation of land associated with stream realignments.

Minor amendments are included in Appendix II.

Rule xx –Installing and using a culvert, in, on or under the bed of a river not in a defined urban catchment

Classification – Permitted

Standards/terms/conditions

- Cross sectional area of the river bed on or over which the culvert is to be placed (measured from the top of each bank) is no greater than 10m²;
- ~~Structure shall not alter the natural course of the river nor reduce channel capacity to convey flood flows;~~
- *The culvert shall be capable of passing the same flood flow as the channel before culvert installation⁷;*
- *One culvert pipe shall be used per crossing;*
- No significant erosion, scour or deposition results from *installing or using the culvert structure;*
- *The invert of the culvert pipe shall be installed to a depth of approximately one sixth of the diameter of the culvert;*
- The culvert ~~shall~~ does not restrict the passage of fish;
- Construction materials shall be removed from the bed;
- Sediment disturbance ~~shall~~ does not conspicuously change the visual clarity of the water beyond a zone of reasonable mixing⁸;
- *The culvert pipe shall be purpose built for the*

⁷ Refer to Appendix XY for guidelines on selecting an appropriate culvert diameter

⁸ See definition in Section 2 of the Plan.

passage of water (i.e. it shall not be a drum, container or other item not designed as a culvert pipe);

- ~~There shall be no significant adverse effects on aquatic life or instream habitat;~~
- Disturbance of the bed shall be the minimum necessary to carry out the required works;
- ~~No contaminants shall be released to the river bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river bed;~~
- Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water;
- ~~The Taranaki Regional Council shall be informed that the placement of the structure is to occur, at least two working days prior to the commencement of works;~~
- *The height of the fill above the top of culvert pipe shall not exceed 1 m;*
- *A circular culvert pipe shall have a maximum diameter of 1.2m and a minimum diameter of 0.3 m. A non-circular culvert pipe shall have a maximum cross sectional area of 1.1 m², with maximum and minimum cross section dimensions of 1.2 m and 0.3 m respectively.*
- The culvert is not greater than 25 m in length;
- ~~No culverts shall be constructed, placed or used within a defined urban catchment⁹;~~
- *The gradient of the culvert pipe shall be the same as the gradient of the river or stream bed on which it is installed;*
- *Any temporary diversion of water does not cause flooding to land upstream, downstream or adjoining the diversion;*
- *Diversion of water during installation shall only be to the extent, and for the period, necessary to carry out the works, but not more than 48 hours.*

Rule xx –Installing and using a bridge¹⁰ over the bed of a river on private access ways

Classification – Permitted

Standards/terms/conditions

- The bridge has no abutments or piers fixed in or on the bed;
- ~~Bridge soffit is placed level with or above adjoining ground level at the top of the bank;~~
- *The underside of the bridge beam is placed at least*

⁹ Defined urban catchments are contained in Appendix IX of the Plan.

¹⁰ Bridges may require a building consent from the relevant territorial authority under the Building Act 1991

300 mm above adjoining ground level at the top of the bank;

- The cross sectional area of the channel over which bridge is to be placed (measured from the top of each bank) is no greater than 10m²;
- The catchment area upstream of the bridge is no more than 200 ha in area;
- ~~Structure shall not alter the natural course of the river nor reduce channel capacity to convey flood flows;~~
- The bridge is constructed to prevent contaminants entering water from the deck of the bridge;
- No significant erosion, scour or deposition results from installing and using placement of the structure-bridge;
- ~~Excess~~ Construction materials shall be removed from the bed;
- Sediment disturbance shall does not conspicuously change the visual clarity of the water beyond a zone of reasonable mixing;
- Disturbance of the bed shall be the minimum necessary to carry out the required works;
- Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water;
- Installation of the bridge shall not restrict the passage of fish;
- No excavations or infilling of the banks of a river, stream, lake or wetland shall be carried out;
- ~~There shall be no significant adverse effects on aquatic life or instream habitat;~~
- ~~No contaminants shall be released to the river bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river bed;~~
- The Taranaki Regional Council shall be informed that the placement of the structure is to occur, at least two working days prior to the commencement of works;

Rule xx - Installing and using a ford in, on or under the bed of a river.

Classification – Permitted

Standards/terms/conditions

- Cross sectional area of the river bed on or over which the ford is to be placed (measured from the top of each bank) is no greater than 10m² and the banks on either side of the ford shall be less than one metre high.
- The ford shall not be used for livestock access purposes;
- ~~Structure shall not alter the natural course of the river nor reduce channel capacity to~~

~~convey flood flows;~~

- The ford does not cause flooding to land upstream, downstream or adjoining the site of installation ;
- The ford shall does not restrict the passage of fish;
- No significant erosion, scour or deposition results from installing and using the ford;
- Construction materials shall be removed from the bed;
- Sediment disturbance shall does not conspicuously change the visual clarity of the water beyond a zone of reasonable mixing¹¹;
- Disturbance of the bed shall be the minimum necessary to carry out the required works;
- Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water;
- Any temporary diversion of water does not cause flooding to land upstream, downstream or adjoining the diversion;
- Diversion of water during installation shall only be to the extent, and for the period, necessary to carry out the works, but not more than 48 hours.
- ~~Ford raises the level of the bed no more than 300mm;~~
- ~~There shall be no significant adverse effects on aquatic life or instream habitat;~~
- ~~No contaminants shall be released to the river bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river bed;~~
- The Taranaki Regional Council shall be informed that the placement of the structure is to occur, at least two working days prior to the commencement of works;

Rule xx - Removal or trimming of vegetation from the bed of a river or lake for the purpose of maintaining a safe and efficient channel.

Classification – Permitted

Standards/terms/conditions

- Vegetation removed must be completely removed from the bed, and disposed of in a location where it will not return to the channel during floods;
- Disturbance of the bed shall be the minimum necessary to carry out the works;
- Sediment disturbance does not conspicuously change the visual clarity of water beyond a zone of reasonable mixing.
- ~~There shall be no significant adverse effects on aquatic life or instream habitat;~~
- ~~No contaminants shall be released to the~~

¹¹ See definition in Section 2 of the Plan.

~~river bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river bed;~~

Rule xx – Piping a river or stream

Classification – Discretionary

Rule 74 – Realigning a stream or river

Classification – Permitted

Standards/terms/conditions

- Catchment area upstream of the realignment ~~or modification~~ is no more than 25ha;
- ~~Drainage channel shall be no greater than 4m² in cross sectional area;~~
- ~~The length of river or stream to be realigned or modified shall not exceed 200m;~~
- ~~The length of the river or stream to be reclaimed does not exceed 50m and no two realignments on the same land title shall be within 100m of each other;~~
- No significant erosion, scour or deposition shall result from stream realignment;
- Realignment does ~~shall~~ not restrict the passage of fish;
- ~~Realignment does not cause flooding to land upstream, downstream or adjoining the realignment;~~
- ~~Disturbance of the bed is the minimum necessary to carry out the required works;~~
- ~~The channel banks of the realignment shall have a gradient no steeper than one horizontal to one vertical i.e. 45°.~~
- ~~There shall be no significant adverse effects on aquatic life or instream habitat;~~
- ~~The Taranaki Regional Council shall be informed that the placement of the structure is to occur, at least two working days prior to the commencement of works;~~

Rule xy - The continued diversion of water and reclamation of land associated with a stream realignment.

Classification – permitted

- *Realignment was lawfully established;*
- *Realignment does not restrict the passage of fish;*
- *Realignment does not cause significant flooding or erosion of downstream, upstream or adjacent properties;*
- *Realignment does not cause significant erosion, scour or deposition.*

Explanation

The current framework of rules relating to small stream modification could be improved through increased clarity and certainty. Any amendments must continue to promote an appropriate balance between the use, development and protection of small streams.

The potential for the piping of a stream to result in significant environmental degradation requires a regulatory response to be included in the Freshwater Plan. A new rule should be included within the group 'Other Structures' to provide for the piping of streams.

Currently Rule 57 provides for the construction, placement and use of fords, culverts and bridges on, under or over the bed of a river. Although these structures are all used for access purposes, they are associated with varying environmental effects. Dividing Rule 57 into three separate rules allows standards, terms and conditions to be tailored to the potential environmental effects associated with each structure.

Rules 65 and 66 permit similar activities for a different purpose. Rule 65 allows for the removal of vegetation for river and flood control purposes, while Rule 66 allows the trimming and clearance of vegetation for the safe and efficient operation of bridges, pipelines, cableways and transmission and telecommunication lines. Environmental effects associated with activities outlined in Rules 65 and 66 are not significantly different to warrant separation. Combining these rules avoids any potential for confusion.

Rule 74 was drafted to address the realignment and modification of a stream or river, however, has proved problematic in its application due its ambiguity and the lack of definition for realignment. It is therefore proposed that the rule be amended to address only realignment and

an appropriate definition be included in the definitions section of the Freshwater Plan.

Rules 53 and 54 provide for the maintenance, repair, alteration, reconstruction or minor upgrading of an existing structure in, on or over the bed of river or lake. The inclusion of 'reconstruction' and 'minor upgrading' in the description of the activity has proved problematic. The scale of work associated with reconstruction results in more than minor adverse effects and the use of 'minor upgrading' is considered ambiguous. It is proposed the words 'reconstruction' and 'minor' be removed from the description of the activity and a condition be introduced that promotes a 'like for like' approach to maintenance and upgrading work.

It would be impractical to require a stream realignment to be removed upon consent expiring. A new rule subject to conditions permitting the continued diversion of water and reclamation of land associated with stream realignments is considered necessary for inclusion into the Freshwater Plan. Any consent issued for the stream realignments should be for the initial diversion and reclamation works. Once established the diversion of water and reclamation would be a permitted activity. Conditions relating to fish passage, flooding and erosion will ensure adverse effects remain less than minor.

The decision to maintain the existing classification of activities as permitted, controlled and discretionary was made on the basis that standards terms and conditions could be drafted that would ensure any effects upon the environment would be less than minor. Failure to meet these standards, terms and conditions would result in the activity requiring resource consent as a controlled or discretionary activity. The following table outlines conditions proposed for inclusion into the framework of standards, terms

and conditions for permitted activities relevant to small stream modifications in the Freshwater Plan.

Some minor amendments are proposed to existing conditions to ensure the Freshwater Plan is interpreted in a consistent way. These amendments do not alter the level of protection previously associated with the conditions. The proposed framework of rules is included in Appendix II.

Table 2: New conditions proposed for inclusion into the Freshwater Plan and justification for their inclusion

	Condition	Explanation
Bridges – Rule X	The bridge is constructed to prevent contaminants entering water from the deck of the bridge	This condition ensures the bridge is designed and installed with a mechanism to prevent the direct discharge of contaminants into water. This could include guttering on a concrete bridge or a mat on a timber bridge.
	The installation of the bridge shall not require the excavation or infilling of the banks of a river or stream	Ensures the banks of a river or stream do not undergo significant modification during the installation of the bridge.
	The underside of the bridge beam is placed at least 300mm above the adjoining ground level at the top of the bank	Replaces existing condition that uses ‘soffit’ to describe the underside of the bridge. The use of ‘soffit’ is considered to technical, limiting the ease of interpretation.
	Catchment area upstream of the bridge is no more than 200ha in area	Limits the amount of water that could flow down the channel and subsequently the size of channels over which a bridge could be placed.
Fords – Rule X	The cross sectional area of the river or stream bed on or over which the ford is to be placed (measured from the top of each bank) is no greater than 10m ² and the banks on either side of the ford shall be less than one meter high	By restricting the installation of a ford to locations where the banks of a river or stream are less than 1m in height, this condition helps to ensure the appropriate structure is installed i.e. a ford is not used where a culvert or bridge would be more appropriate.
	The ford shall not be used to provide access for livestock across the bed of a river or stream.	The use of fords for livestock access allows for the direct discharge of effluent into water bodies. This condition restricts a farmer’s use of fords to purposes not including livestock access, reducing the risk of contamination.
	The ford shall not cause flooding to downstream, upstream or adjacent properties.	Replaces existing condition regarding flood flows but excludes reference to altering the natural course of river.
Culverts – Rule X	One culvert shall be used per crossing	The use of more than one culvert divides the flow of water. This division of flow reduces the velocity of water, which in turn results in the deposition of material in the culvert. Deposition can cause blockages and promote upstream flooding.
	The invert of the culvert pipe shall be installed to a depth of approximately one sixth of the diameter of the culvert;	Helps to maintain fish passage. A culvert that is raised above the bed of a river or stream can prevent fish from entering the culvert.
	The culvert shall be purpose built for the passage of water (i.e. it shall not be a drum, container or other item not designed as a culvert)	Ensures appropriate structures are used, decreasing the risk of blockage.
	The maximum fill height above the top of the culvert shall not exceed 1m	During flooding this condition promotes the over topping of the culvert to prevent significant damming of water.
	A circular culvert pipe shall have a maximum diameter of 1.2m and a minimum diameter of 0.3m. A non-circular culvert pipe shall have a	A culvert with a diameter smaller than 300mm is easily blocked, restricting fish passage and promoting flooding. A culvert with a diameter

	maximum cross sectional area of 1.1m ² , with maximum and minimum cross section dimensions of 1.2m and 0.3m respectively.	larger than 1.2m requires significant modification to the bed and extensive erosion control measures axillary to the culvert pipe.
	The gradient of the culvert pipe shall be the same as the gradient of the river or stream bed on which it is installed;	Changing the gradient of a river or stream bed could modify flow characteristics, restricting fish passage and increase the likelihood of flooding and erosion.
	The culvert shall be capable of passing the same flood flow as the channel prior to culvert installation	Replaces existing condition regarding flood flows but excludes reference to altering the natural course of river. It is proposed this condition includes a footnote that refers to an appendix that provides some guidance in selecting a suitable sized (diameter) culvert.
Realignment - Rule 74	The length of the river or stream to be reclaimed shall not exceed 50m and no two realignments on the same land title shall be within 100m of each other	The current length of stream permitted to be reclaimed (200m) is considered excessive. Reducing this length to 50m limits the potential for more than minor environmental effects. By excluding future realignments within 100m of an existing realignment on the same title of land, the risk of cumulative effects degrading a water body is decreased.
	Realignment does not cause flooding to land upstream, downstream or adjoining the realignment	Meandering rivers and streams (commonly subject to realignment) slow the flow of water, helping to decrease the potential for flooding. The risk of flooding to land upstream, downstream and adjoining the realignment must be given consideration when realigning a river or stream.
	The channel banks of the realignment shall have a gradient no steeper than one horizontal to one vertical i.e. 45°	Ensures channel banks of the realignment channel do not collapse and block the flow of water.
Other rules	Any alteration shall not result in any increase in the area of river or lake bed occupied by the structure.	Ensures that the scale of the structure remains similar to that of the structure prior to maintenance or upgrading.
	The dam shall not impound a volume of water greater than 20000m ³	Limits the size of the dam that can be constructed and subsequently the risk of flooding and environmental effects. A large dam is defined in the Building Act 2004 as a dam that retains 3 or more metres depth, and holds 20,000 or more cubic metres of water or other fluid. The Freshwater Plan will only permit the construction of small dams.
	An officer from the Taranaki Regional Council will oversee works associated with the installation of structures for the purpose of river and flood control.	Replaces existing condition that requires those acting on behalf of the Council to notify the Council two working days before the commencement of works. This condition has proved impractical and problematic.
	Any temporary diversion of water does not cause flooding to land upstream, downstream or adjoining the diversion <i>Note: This condition has been applied to rules where a temporary diversion could be deemed necessary</i>	Ensures the potential for flooding to result from the diversion of water around works on the bed of a river or stream is given consideration. The temporary diversion may provide the same level of flood capacity as the channel under modification or alternatively works should be carried out under low flow conditions where there is no chance the temporary

		channel will be required to contain flood flows.
	Diversion of water during installation shall only be to the extent, and for the period, necessary to carry out the works, but not more than 48 hours.	This condition is already in used in the Freshwater Plan, however, it is considered appropriate to apply it more widely where a temporary diversion may be required to carry out work on a river or stream bed. The 48 hour limit does not apply to dams constructed under Rule 59 (permitted activity rule for dams).

Existing conditions should be deleted where they are difficult to interpret and apply. The condition “*there shall be no significant adverse effects on aquatic life or instream habitat*” is attached to a number of permitted activities in the Freshwater Plan where there is potential for works to occur within the wetted part of the channel. This condition has proved difficult to interpret and apply, for this reason it is proposed that it be removed. Other conditions, such as those relating to fish passage and disturbance for example, will ensure adverse effects on aquatic life remain less than minor. In addition to permitted activity conditions, the inclusion of a discretionary rule specifically for stream piping allows consent officers to attach appropriate conditions to stream modification work that previously may have been carried out as a permitted activity.

The condition, “*the structure is not on or in an area listed in the Historic Places Trust register or an identified waahi tapu*” is proposed for deletion from Rule 55 (removal or demolition of structures). It is intended that the Proposed Freshwater Plan includes appendixes that outline sites of historic, archaeological or waahi tapu significance. Reference to these appendixes will be included in the description of the activity for rules 53 and 55.

5.6 Other recommendations

5.6.1 Stream ecological valuation

Recommendation

The Council adopts a system to quantify the effects of small stream modifications on ecological values.

Explanation

Guidance is required to assist Council staff and resource consent applicants to investigate and document potential environmental effects of proposed small stream modifications. Applicants generally provide a qualitative description

of the small stream they propose to modify and any associated environmental effects as a component of an AEE (Assessment of Environmental Effects) in their resource consent application.

The SEV system discussed in the Section 4.4 of this report provides an efficient and effective method of calculating the environmental compensation necessary to offset the loss of ecological function in streams affected by human activities. It can also identify the highest priority stream reaches and most effective actions for stream restoration work so that resources may be allocated optimally.

Adopting an SEV system could significantly benefit the resource consenting process, improving the state of small streams in Taranaki, providing a basis for environmental compensation and improving the confidence with which consent officers make decisions. Although the Council already requires environmental compensation through the consent process, an SEV system will provide some consistency in calculating the level of compensation necessary to offset adverse effects.

The SEV system appears to be a tool that could contribute to resolving issues identified in this report regarding small stream modification in Taranaki. It is recommended that the Council commission a review of the SEV system for Taranaki conditions and develop guidance on its application. This guidance could be incorporated into the appendixes of the Freshwater Plan, exist as supporting documentation available to the public upon request and/or as a resource consent practice note. The methodology would be applied by consent officers when additional information is required to make a decision regarding the granting or refusal of consent.

5.6.2 Education

Recommendation

Update existing guidance material relevant to small stream modification.

Explanation

Despite amendments addressing issues associated with the interpretation and application of the Freshwater Plan, additional guidance is still required to help plan users navigate the framework of policies, objectives and rules. Guidance documents are already in existence and are available to the public, however, these require updating to reflect any changes to the policy framework in the Proposed Freshwater Plan.

5.6.3 Consent conditions

Recommendation

A standard consent condition relating to Policy 6.6.9(e) should be drafted and applied to consents for the modification of river and stream beds, addressing the potential for cumulative effects to result in environmental degradation.

Explanation

When viewed in isolation, applications for the modification river and stream beds could be conceived as having less than minor environmental effects and would therefore be eligible for consent. However, overtime multiple applications relating to a confined stretch of river or stream could collectively have more than minor adverse effects and result in environmental degradation. Policy 6.9.9(e) provides a basis for the application of a condition by which a defined stretch of river or stream would be protected from future modification work. The use of this condition would be at the discretion of the council officer processing the consent.

5.6.4 Riparian Management

Recommendation

Riparian management plans should target a broader range of farm management issues.

Explanation

Currently riparian management plans focus on encouraging farmers to plant the riparian margins of their streams to help protect against water contamination. There is potential for these plans to serve a much broader purpose, targeting a range of farm management issues. The Council should consider diversifying the role of land management officers so farm plans can present information that can be used more broadly.

6. Summary

Since the enactment of the Freshwater Plan there has been a significant increase in small stream modifications occurring in Taranaki with the potential to cause environmental degradation. Of particular concern are the cumulative effects of a large number of often relatively minor works that result in the significant loss or degradation of instream habitat in some catchments.

The increased rates of modification threaten the ecological and hydrological significance of small streams. Council studies and experiences have demonstrated that the existing policies and rules that relate to small stream modification can be improved to better address the impacts of small stream modifications.

Relatively minor but nevertheless important amendments are recommended to the current policy framework to aid the interpretation and application of the Freshwater Plan. Proposed amendments to the Freshwater Plan relate solely to management of river and stream beds. In brief amendments include:

- the inclusion of various definitions relating to small stream modification
- minor additions to Issues 6.6 and 6.7 identifying small stream modification as an issue for the Council
- identifying stream piping and cumulative effects in relevant policies
- addition of a new rule specifically addressing stream piping
- amend Rule 74 to address only stream realignment, separate Rule 57 into three separate rules and combine rules 65 and 66
- improving the appropriateness of standards, terms and conditions

associated with rules that relate to small stream modification.

These amendments do not represent a significant shift in the Councils approach to managing river and stream beds. With the exception of a new rule for stream piping, amendments predominantly focus on addressing cumulative effects and improving the certainty and clarity with which the Freshwater Plan is interpreted and applied.

Further work is required 'outside' the Freshwater Plan. A number of recommendations proposed in this report target guidance material and council procedure (consent conditions, AEE, education) as opposed to direct amendments to the Freshwater Plan. It is recommended the Council carries out an investigation into the application of a SEV system in Taranaki, prepares or updates relevant guidelines for plan users (these may be a separate document or an appendix attached to the back of the Freshwater Plan) and drafts a consent condition relating to cumulative effects to be applied to resource consents for stream modification work.

This report has been drafted with the purpose of informing the wider review of the Freshwater Plan. The paper examines management issues associated with small stream modification in Taranaki, evaluates the effectiveness and efficiency of the Councils current management approach and sets out recommendations for future directions. Although this report has focused on small stream modification, relevant rules apply to both rivers and streams (Rivers and streams have the same definition under the Act and the Freshwater Plan).

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- Taranaki region Council, 2008. *Effectiveness and efficiency of the Regional Freshwater Plan for Taranaki*, June 2008.
- Invercargill district court decision, 4 March 2009: Between Southland Regional Council and Southern Pastoral Holdings Ltd and Sydney William Matthew Drummond. Oral Judgement of Judge J E Borthwick.

Appendix I: Cost and Benefits of Policy options

Outcomes sought:		1. The best practicable option is adopted that allows for the appropriate use and development of small streams while, avoiding, mitigating and remedying any associated adverse environmental effects.			
	Option	Increased environmental outcomes	Flexibility for resource users	Least cost	Conclusion
1	Retain the status quo, this option requires no further amendment to the Freshwater Plan.	✗	✓	✓	Option 2 is the preferred alternative for adoption into the Freshwater Plan. Option 2 gives effect to the Act, effectively addressing environmental concern regarding small stream modification and issues associated with the interpretation and application of the Freshwater Plan, whilst allowing for appropriate use and development.
2	Focus on tightening permitted activity conditions and increasing the certainty and clarity with which the Freshwater Plan is interpreted and applied.	✓	✓	✓	
3	Adopt a more restrictive approach by treating small stream modification as a controlled activity rather than permitted.	✓	✗	✗	
Matters for consideration:		<ul style="list-style-type: none"> • There is an increasing trend in the amount of consented and permitted small stream modifications occurring in the Taranaki region. • Modifying small streams can result in significant adverse environmental effects. • Modifying small streams can help increase farm productivity. • Plan users have experienced challenges interpreting and applying standards, terms and conditions associated with rules in the Freshwater Plan that relate to small stream modifications. 			

Appendix II: Current Plan provisions

Existing structures

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
Use of existing structures (excluding pipelines used to convey liquid contaminants) in, on, under, or over the bed of a river or lake	52	<ul style="list-style-type: none"> • Structure was lawfully established ; • Structure does must not restrict the passage of fish; • The structure shall be maintained in a structurally sound condition at all times; • There shall be no significant adverse effects on aquatic life or instream habitat; • No significant erosion, scour or deposition shall result from the use of the structure. 	Permitted			

Maintenance of structures

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
Maintenance, repair, reconstruction or minor upgrading of a structure in, on, under, or over the bed of a river or lake. Excludes structures listed in Appendixes XYZ and ZYX.	53	<ul style="list-style-type: none"> • Any alteration does shall not result in any increase in the area of river or lake bed occupied by the structure; • Activity is for the purpose of maintaining structure in good repair or working order or for minor upgrading; • No contaminants shall be released to the river or lake bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river or lake bed; • Sediment disturbance does not give rise to a decrease in conspicuously change the visual clarity of water of more than 50% beyond a zone of reasonable mixing¹² that is persistent and ongoing; • All material removed from the structure and excess construction materials must be removed from the bed; • There shall be no significant adverse effects on aquatic life or instream habitat; • Water diverted around the structure for the purposes of carrying out the activity, shall be for a period of no more than 48 hrs; • Disturbance of the bed is the minimum necessary to carry out the required works; • Any temporary diversion of water does not cause flooding to land upstream, downstream or adjoining the diversion; • Diversion of water during maintenance, repair or upgrading of a structure shall only be to the extent, and for the period, necessary to carry out the works, but not more than 48 hours. 	Permitted			
Maintenance, repair, alteration, reconstruction or minor upgrading of an existing structure, in, on, under, or over the bed of a river or lake, that does not meet the conditions of Rule 53	54	<ul style="list-style-type: none"> • Activity is for the purpose of maintaining structure in good repair or working order or for minor upgrading. 	Controlled	May be non-notified without written approval	<ul style="list-style-type: none"> • Effects on water quality; • Effects on aquatic ecosystems; • Effects on the values of the waterbody; • Disturbance of the bed; • The method and timing of works; • Duration of consent; • Monitoring and reporting requirements; • Review of consent conditions and the timing and purpose of the review; • Payment of administrative charges; • Payment of financial contributions 	3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.1, 6.6.2, 6.6.3, 6.6.6, 6.6.9

¹² See definition in section 2 of the Plan.

Removal of structures

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
<p>Removal, demolition or decommissioning of a structure, in, on, under, or over the bed of a river or lake. <i>Excludes structures listed in Appendixes XYZ and ZYX.</i></p>	<p>55</p>	<ul style="list-style-type: none"> • There shall be no use of explosives in the water; • Structure does not alter the existing level of the bed by more than 500mm in vertical height; • Channel width of river (measured from bank to bank) is no greater than 10m; • Structure, or part of the structure being removed, must be completely removed from the bed; • The structure is not on or in an area listed on the Historic Places Trust Register or an identified wāhi tapu site; • No significant erosion, scour or deposition results from the removal or demolition of the structure; • Disturbance of the bed is the minimum necessary to carry out the required works; • Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water; • Sediment disturbance does shall not conspicuously change the visual clarity of the water beyond a zone of reasonable mixing¹³; • There shall be no significant adverse effects on aquatic life or instream habitat; • No contaminants shall be released to the river or lake bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river or lake bed; • Water diverted around the structure for the purposes of carrying out the activity, shall be for a period of no more than 48 hrs; • <i>Any temporary diversion of water does not cause flooding to land upstream, downstream or adjoining the diversion;</i> • <i>Diversion of water during removal, demolition or decommissioning shall only be to the extent, and for the period, necessary to carry out the works, but not more than 48 hours.</i> • The Taranaki Regional Council shall be informed that the removal or demolition activity is to occur, at least two working days prior to its commencement. 	<p>Permitted</p>			

¹³ See definition in section 2 of the Plan.

Removal of structures (continued)

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
Removal, demolition or decommissioning of a structure or any part of a structure, in, on, under, or over the bed of a river or lake, which does not meet the conditions of Rule 55	56	<ul style="list-style-type: none"> • Structure, or part of the structure being removed, must be completely removed from the bed. 	Controlled	May be non-notified without written approval	<ul style="list-style-type: none"> • Duration of consent; • Removal of accumulated sediment or bed material; • Effects on water quality, aquatic ecosystems, and the relationship of Tangata Whenua with the water body; • The diversion of water; • Disturbance of the bed; • Method and timing of works; • Monitoring and reporting requirements; • Review of consent conditions and the timing and purpose of the review; • Payment of administrative charges; • Payment of financial contributions 	3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.1, 6.6.2, 6.6.3, 6.6.6, 6.6.7, 6.6.9

Access structures

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
<p>Construction, placement installing and using of a culvert, in, on, under or over the bed of a river¹⁴ outside a defined urban catchment</p>	<p>xx</p>	<ul style="list-style-type: none"> • Cross sectional area of the river bed on or over which the culvert is to be placed (measured from the top of each bank) is no greater than 10m²; • Structure shall not alter the natural course of the river nor reduce channel capacity to convey flood flows; • <i>The culvert shall be capable of passing the same flood flow as the channel before culvert installation¹⁵;</i> • <i>One culvert pipe shall be used per crossing;</i> • No significant erosion, scour or deposition results from <i>installing or using</i> the culvert structure; • <i>The invert of the culvert pipe shall be installed to a depth of one sixth of the diameter of the culvert;</i> • The culvert shall does not restrict the passage of fish; • Construction materials shall be removed from the bed; • Sediment disturbance shall does not conspicuously change the visual clarity of the water beyond a zone of reasonable mixing¹⁶; • <i>The culvert pipe shall be purpose built for the passage of water (i.e. it shall not be a drum, container or other item not designed as a culvert pipe);</i> • There shall be no significant adverse effects on aquatic life or instream habitat; • Disturbance of the bed shall be the minimum necessary to carry out the required works; • No contaminants shall be released to the river bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river bed; • Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water; • The Taranaki Regional Council shall be informed that the placement of the structure is to occur, at least two working days prior to the commencement of works; • <i>The height of the fill above the top of culvert pipe shall not exceed 1m;</i> • <i>A circular culvert pipe shall have a maximum diameter of 1.2 m and a minimum diameter of 0.3 m. A non-circular culvert pipe shall have a maximum cross sectional area of 1.1 m², with maximum and minimum cross section dimensions of 1.2m and 0.3m respectively.</i> • <i>The culvert is not greater than 25 m in length;</i> • No culverts shall be constructed, placed or used within a defined urban catchment¹⁷; • <i>The gradient of the culvert pipe shall be the same as the gradient of the river or stream bed on which it is installed;</i> • <i>Any temporary diversion of water does not cause flooding to land upstream, downstream or adjoining the diversion;</i> • <i>Diversion of water during installation shall only be to the extent, and for the period, necessary to carry out the works, but not more than 48 hours.</i> 	<p>Permitted</p>			

¹⁴ Bridges may require a building consent from the relevant territorial authority under the Building Act 1991.

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
<p>Construction placement <i>Installing and using a bridge over the bed of a river on private access ways</i>¹⁸</p>	xx	<ul style="list-style-type: none"> • Bridge has no abutments or piers fixed in or on the bed; • Bridge soffit is placed level with or above adjoining ground level at the top of the bank; • <i>The underside of the bridge beam is placed at least 300mm above adjoining ground level at the top of the bank;</i> • Cross sectional area of the channel over which bridge is to be placed (measured from the top of each bank) is no greater than 10m²; • <i>Catchment area upstream of the bridge is no more than 200ha in area;</i> • Structure shall not alter the natural course of the river nor reduce channel capacity to convey flood flows; • <i>The bridge is constructed to prevent contaminants entering water from the deck of the bridge;</i> • No significant erosion, scour or deposition results from installing and using placement of the structure-bridge; • Excess Construction materials shall be removed from the bed; • Sediment disturbance shall does not conspicuously change the visual clarity of the water beyond a zone of reasonable mixing; • Disturbance of the bed shall be the minimum necessary to carry out the required works; • Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water; • <i>Installation of the bridge shall not restrict the passage of fish;</i> • <i>No excavations or infilling of the banks of a river, stream, lake or wetland shall be carried out.</i> • There shall be no significant adverse effects on aquatic life or instream habitat; • No contaminants shall be released to the river bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river bed; • The Taranaki Regional Council shall be informed that the placement of the structure is to occur, at least two working days prior to the commencement of works; 	Permitted			

¹⁵ Refer to Appendix XY for guidelines on selecting an appropriate culvert diameter

¹⁶ See definition in Section 2 of the Plan.

¹⁷ Defined urban catchments are contained in Appendix IX of the Plan.

¹⁸ Bridges may require a building consent from the relevant territorial authority under the Building Act 1991.

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
<p>Construction placement Installing and using a ford in, on, under or over the bed of a river¹⁹</p>	xx	<ul style="list-style-type: none"> • <i>Cross sectional area of the river bed on or over which the ford is to be placed (measured from the top of each bank) is no greater than 10m² and the banks on either side of the ford shall be less than one (1) meter high.</i> • <i>The ford shall not be used for livestock access purposes;</i> • Structure shall not alter the natural course of the river nor reduce channel capacity to convey flood flows; • <i>The ford does not cause flooding to land upstream, downstream or adjoining the site of installation ;</i> • <i>The ford shall does not restrict the passage of fish;</i> • <i>No significant erosion, scour or deposition results from installing and using the ford;</i> • <i>Construction materials shall be removed from the bed;</i> • <i>Sediment disturbance shall does not conspicuously change the visual clarity of the water beyond a zone of reasonable mixing²⁰;</i> • <i>Disturbance of the bed shall be the minimum necessary to carry out the required works;</i> • <i>Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water;</i> • <i>Any temporary diversion of water does not cause flooding to land upstream, downstream or adjoining the diversion;</i> • <i>Diversion of water during installation shall only be to the extent, and for the period, necessary to carry out the works, but not more than 48 hours.</i> • Ford raises the level of the bed no more than 300mm; • There shall be no significant adverse effects on aquatic life or instream habitat; • No contaminants shall be released to the river bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river bed; • The Taranaki Regional Council shall be informed that the placement of the structure is to occur, at least two working days prior to the commencement of works; 	Permitted			

¹⁹ Bridges may require a building consent from the relevant territorial authority under the Building Act 1991.

²⁰ See definition in Section 2 of the Plan.

Access structures (continued)

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
Construction, placement Installing and using culverts within defined urban catchments ²¹	58	<ul style="list-style-type: none"> • Structure shall not alter the natural course of the river nor reduce channel capacity to convey flood flows; • <i>The culvert shall be capable of passing the same flood flow as the channel before culvert installation;</i> • Culvert Structure does shall not restrict the passage of fish; • No significant erosion, scour or deposition shall result from the placement of <i>installing and using the culvert structure</i>; • Excess Construction materials shall be removed from the bed; • Disturbance of the bed shall be the minimum necessary to carry out the required works. 	Controlled	May be non-notified without written approval	<ul style="list-style-type: none"> • Effects on water quality; • Effects on aquatic ecosystems; • Effects on the values of the waterbody; • Disturbance of the bed; • Deposition on the bed; • Design of the structure; • The location, method and timing of works; • Duration of consent; • Monitoring and reporting requirements; • Review of consent conditions and the timing and purpose of the review; • Payment of administrative charges; • Payment of financial contributions. 	3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.1, 6.6.2, 6.6.3, 6.6.6, 6.6.9.

²¹ Defined urban catchments are contained in Appendix IX of the Plan.

Barrier structures

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
<p>Construction, placement Installing and using a dam²², weir, bed level control, or silt retention structure that impounds water, in or on the bed of a river or lake</p>	<p>59</p>	<ul style="list-style-type: none"> • Structure has a maximum wall height (measured vertically from the downstream bed to the crest) of 3m; • Catchment area upstream of the structure is not more than 25ha; • Structure must have an auxiliary spillway which is capable of conveying flood flows; • Structure does shall not impound water beyond the property on which it is built, unless agreed to in writing by any affected property owner(s); • No takes for domestic use, stock-watering, fire-fighting, or any other take authorised by a resource consent, shall be restricted <i>by installing and using</i> the structure; • Structure must not alter the natural course of the river nor reduce channel capacity to convey flood flows; • No significant erosion, scour or deposition shall result from <i>installing and using</i> the structure; • Excess Construction materials shall be removed from the bed; • Disturbance of the bed shall be the minimum necessary to carry out the required works; • Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water; • Sediment disturbance does shall not conspicuously change the visual clarity of the water beyond a zone of reasonable mixing²³; • Structure does shall not restrict the passage of fish; • <i>Dam does shall not impound a volume of water greater than 20,000m³;</i> • <i>Any temporary diversion of water does not cause flooding to land upstream, downstream or adjoining the diversion;</i> • <i>Diversion of water during installation shall only be to the extent, and for the period, necessary to carry out the works.</i> • There shall be no significant adverse effects on aquatic life or instream habitat; • No contaminants shall be released to the river bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river bed; • The Taranaki Regional Council shall be informed that the placement of the structure is to occur, at least two working days prior to the commencement of works; 	<p>Permitted</p>			

²² Dams greater than three metres in height require a building consent from the relevant territorial authority under the Building Act 1991

²³ See definition in Section 2 of the Plan.

Other structures

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
Construction, placement Installing and using structures undertaken by or on behalf of the Taranaki Regional Council for the purpose of river and flood control	60	<ul style="list-style-type: none"> • No significant erosion, flooding scour or deposition shall result or be likely to result from <i>installing</i> of the structure; • Works do shall not cause a navigational hazard; • Excess Construction materials shall be removed from the bed; • Disturbance of the bed shall be the minimum necessary to carry out the required works; • Sediment disturbance shall does not conspicuously change the visual clarity of water beyond a zone of reasonable mixing. • There shall be no significant adverse effects on aquatic life or instream habitat; • The Taranaki Regional Council shall be informed that the works are to occur, at least two working days prior to the commencement of works; • <i>An officer from the Taranaki Regional Council shall oversee works associated with installing the structure.</i> 	Permitted			
Construction, placement Installing and using structures in, on, under or over the bed of a river or lake, excluding structures provided for in Rules 57- 60	61	<ul style="list-style-type: none"> • Structures for the conveyance of stormwater shall be no greater than 150mm in diameter; • Structure shall does not cause a navigational hazard; • Structure does not alter the natural course of the river nor reduce channel capacity during flood flows; • <i>The structure does not cause flooding to land upstream, downstream or adjoining the site of installation;</i> • Structure does not cause significant erosion, scour or deposition; • Disturbance of the bed shall be the minimum necessary to carry out the required works; • Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water; • Sediment disturbance does will not conspicuously change the visual clarity of water beyond a zone of reasonable mixing²⁴; • All construction materials shall be removed from the bed; • <i>Any temporary diversion of water does not cause flooding to land upstream, downstream or adjoining the diversion;</i> • <i>Diversion of water during installation shall only be to the extent, and for the period, necessary to carry out the works, but not more than 48 hours.</i> • Structure does shall not restrict the passage of fish. • There shall be no significant adverse effects on aquatic life or instream habitat; • No contaminants shall be released to the river bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river bed. 	Permitted			

²⁴See definition in Section 2 of the Plan.

Other structures (continued)

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
<p>Construction, placement Installing and using structures for the purpose of river and flood control in, on, under or over the bed of a river or lake which cannot meet the conditions of Rule 60</p>	62	<ul style="list-style-type: none"> • Length of structure shall be no more than 25 metres; • Structure does shall not result in any flooding or erosion of any properties; • <i>The structure does not cause flooding to land upstream, downstream or adjoining the site of installation</i> • No significant erosion or scour shall result or be likely to result from placement of the structure; • Excess Construction materials shall be removed from the bed. 	Controlled	May be non-notified without written approval	<ul style="list-style-type: none"> • Effects on water quality; • Effects on aquatic ecosystems; • Effects on the values of the waterbody; • Disturbance of the bed; • Deposition on the bed; • Design of the structure; • Future extensions of the structure; • The location, method and timing of works; • Duration of consent; • Monitoring and reporting requirements; • Review of consent conditions and the timing and purpose of the review; • Payment of administrative charges; • Payment of financial contributions 	3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.1, 6.6.2, 6.6.3, 6.6.6, 6.6.9, 6.6.10.
<p>Construction, placement Installing and using piped or channelled stormwater structures in, on, under or over the bed of a river or lake in a defined urban catchment as shown in Appendix IX which does not meet the conditions of Rule 61</p>	63	<ul style="list-style-type: none"> • Structure has an internal diameter of 900mm or less, or an equivalent cross sectional area; • An outfall structure shall extend no greater than 1 metre out from the toe of the bank and shall not cause a navigational hazard; • No significant erosion, scour or deposition results from installing and using placement of the structure or the discharge from it; • Excess Construction materials shall be removed from the bed; • Disturbance of the bed must shall be the minimum necessary to carry out the required works. 	Controlled	May be non-notified without written approval	<ul style="list-style-type: none"> • Effects on water quality; • Effects on aquatic ecosystems; • Effects on the values of the waterbody; • Disturbance of the bed; • Deposition on the bed; • Design of the structure; • The location, method and timing of works; • Duration of consent; • Monitoring and reporting requirements; • Review of consent conditions and the timing and purpose of the review; • Payment of administrative charges; • Payment of financial contribution. 	3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.1, 6.6.2, 6.6.3, 6.6.6, 6.6.9.

Other Structures (continued)

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
Piping a stream	XX		Discretionary			3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.1, 6.6.2, 6.6.3, 6.6.6, 6.6.9, 6.6.10, POL X.
Construction, placement Installing and using any structure that does not meet the standards, terms and conditions of Rules 52-63	64		Discretionary			3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.1, 6.6.2, 6.6.3, 6.6.6, 6.6.9, 6.6.10.

Plants

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
Removal or trimming of vegetation from the bed of a river or lake for the purpose of maintaining a safe and efficient channel.	xx	<ul style="list-style-type: none"> • Vegetation removed must be completely removed from the bed, and disposed of in a location where it will not return to the channel during floods; • Disturbance of the bed shall be the minimum necessary to carry out the works; • Sediment disturbance does not conspicuously change the visual clarity of water beyond a zone of reasonable mixing. • There shall be no significant adverse effects on aquatic life or instream habitat; • No contaminants shall be released to the river bed from equipment being used for the activity, and no refuelling of equipment shall take place on any area of the river bed; 	Permitted			
Removal of vegetation from the bed of human-made lakes	67	<ul style="list-style-type: none"> • Vegetation removed shall be completely removed from the bed; • Disturbance of the bed shall be the minimum necessary to carry out the works; • The best practicable option shall be adopted at all times to prevent or minimise any actual or potential adverse effect on the environment arising from any disturbance activities. 	Controlled	May be non-notified without written approval	<ul style="list-style-type: none"> • Effects on water quality; • Effects on aquatic ecosystems; • Effects on the values of the waterbody; • Disturbance of the bed; • Deposition on the bed; • The location, method and timing of the activity; • Duration of consent; • Monitoring and reporting requirements; • Review of consent conditions and the timing and purpose of the review; • Payment of administrative charges; • Payment of financial contributions. 	3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.4, 6.6.6, 6.6.9, 6.6.10.
Planting, introduction or removal of vegetation from within the bed of a river or lake that is not provided for or does not meet the conditions of Rules 65-67	68		Discretionary	May be non-notified		3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.4, 6.6.6, 6.6.9, 6.6.10.

Other uses of river and lake beds

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
The clearance or removal of debris ²⁵ from the bed of a river or lake for the purpose of river and flooding control	69	<ul style="list-style-type: none"> • Debris do shall not include sand, gravel or other bed material; • <i>Debris cleared shall be completely removed from the bed and disposed of in a location where they cannot enter back into the channel during floods;</i> • Disturbance of the bed shall be the minimum necessary to reduce the threat of flooding or erosion to an acceptable level; • Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water, <i>unless it is necessary to reinstate a river to its previous position following a flood event;</i>; • Activity-shall does not alter the natural course of the river; • No erosion, scour or deposition shall result from the clearance; • There shall be no significant adverse effects on aquatic life or instream habitat; 	Permitted			
Extraction of sand or gravel from the bed of a river for domestic or on-farm purposes	70	<ul style="list-style-type: none"> • Sand or gravel is for private use on the property from which it is extracted; • Quantity of bed material extracted is no greater than 15m³/yr; • Disturbance of the bed shall be the minimum necessary to carry out the required works; • Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water; • Sand or gravel is extracted from an area of the river bed not covered by water at the time of extraction; • Area from which sand or gravel is extracted is levelled out so that no mounds or depressions remain. 	Permitted			

²⁵ Debris is material that may be obstructing river flows or causing a nuisance and includes tree trunks and branches, structures or parts of structures and dead stock (see Section 2 of this Plan for definition).

Other uses of river and lake beds (continued)

Activity	rule	standards/terms/conditions	classification	notification	Control/discretion	Policy reference
Extraction of sand, gravel, aggregate or rocks from a river or lake bed, or the recontouring of the bed, for flood and river control purposes carried out by or on behalf of the Taranaki Regional Council	71	<ul style="list-style-type: none"> • Extraction or recontouring must not restrict the passage of fish; • Between 1 May and 31 October there shall be no disturbance of any part of the bed covered by water, <i>unless it is necessary to reinstate a river to its previous position following a flood event</i>; • There shall be no significant adverse effects on aquatic life or instream habitat; • Disturbance of the bed shall be the minimum necessary to carry out the required works; • The Taranaki Regional Council shall be informed that the works are to occur, at least two working days prior to the commencement of works; • Sediment disturbance shall not conspicuously change the visual clarity of water beyond a zone of reasonable mixing. 	Permitted			
Extraction of sand, gravel, aggregate or rocks from: <ul style="list-style-type: none"> • the bed of a lake that is not provided for or does not meet the conditions of Rules 70 and 71 or²⁶; • a river that does not meet the conditions of Rules 70 and 71 	72		Discretionary			3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.5, 6.6.6, 6.6.9, 6.6.10
Extraction of sand gravel, aggregate or rocks from the bed of a river for purposes other than those specified in Rules 70 and 71	73		Prohibited			

²⁶ Where extraction occurs outside of a river or lake bed and groundwater seepage and stormwater accumulates, the extraction of material is not considered to be occurring from the bed of a lake.

Other uses of river and lake beds (continued)

Activity	rule	standards/terms/conditions	classification	nc	Control/discretion	Policy reference
Realignment of a stream or river	74	<ul style="list-style-type: none"> • Catchment area upstream of the realignment or modification is no more than 25ha; • Drainage channel shall be no greater than 4m² in cross sectional area; • The length of river or stream to be realigned or modified shall not exceed 200m; • <i>The length of the river or stream to be reclaimed does not exceed 50 m and no two realignments on the same title of land shall be within 100 m of each other;</i> • No significant erosion, scour or deposition shall result from stream realignment; • Realignment does not restrict the passage of fish; • <i>Realignment does not cause flooding to land upstream, downstream or adjoining the realignment;</i> • Disturbance of the bed is the minimum necessary to carry out the required works; • <i>Realignment does not impact upon the downstream availability of water;</i> • <i>The channel banks of the realignment shall have a gradient no steeper than one horizontal to one vertical i.e. 45°;</i> • There shall be no significant adverse effects on aquatic life or instream habitat; • The Taranaki Regional Council shall be informed that the placement of the structure is to occur, at least two working days prior to the commencement of works; 	Permitted			
<i>The diversion of water and reclamation of land associated with a stream realignment</i>	xx	<ul style="list-style-type: none"> • <i>Realignment was lawfully established ;</i> • <i>Realignment does not restrict the passage of fish;</i> • <i>Realignment does not cause flooding to land upstream, downstream or adjoining the realignment;</i> • <i>Realignment does not cause significant erosion, scour or deposition.</i> 	Permitted			
Disturbance of the beds of human-made lakes by dredging	75	<ul style="list-style-type: none"> • Disturbance of the bed shall be the minimum necessary to carry out the required works; • The best practicable option shall be adopted at all times to prevent or minimise any actual or potential effect on the environment arising from any disturbance activities. 	Controlled	May be non-notified without written approval	<ul style="list-style-type: none"> • Effects on water quality; • Effects on aquatic ecosystems; • Effects on the values of the waterbody; • Disturbance of the bed • Deposition on the bed • The location, method and timing of the activity; • Duration of consent; • Monitoring and reporting requirements; • Review of consent conditions and the timing and purpose of the review; • Payment of administrative charges; • Payment of financial contributions. 	3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.1, 6.6.9

Other uses of river and lake beds (continued)

Activity	Rule	Standards/Terms/Conditions	Classification	Notification	Control/Discretion	Policy Reference
Excavation, drilling, tunnelling, deposition of any substance, reclamation and any other disturbance of the bed of a river or lake which is not provided for or does not meet the conditions of Rules 69, 74 and 75	76		Discretionary			3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 3.2.1, 3.2.2, 3.2.3, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 5.1.1, 6.6.1, 6.6.9.

