

Rivers Activity Management Plan 2018



Quality Assurance Statement

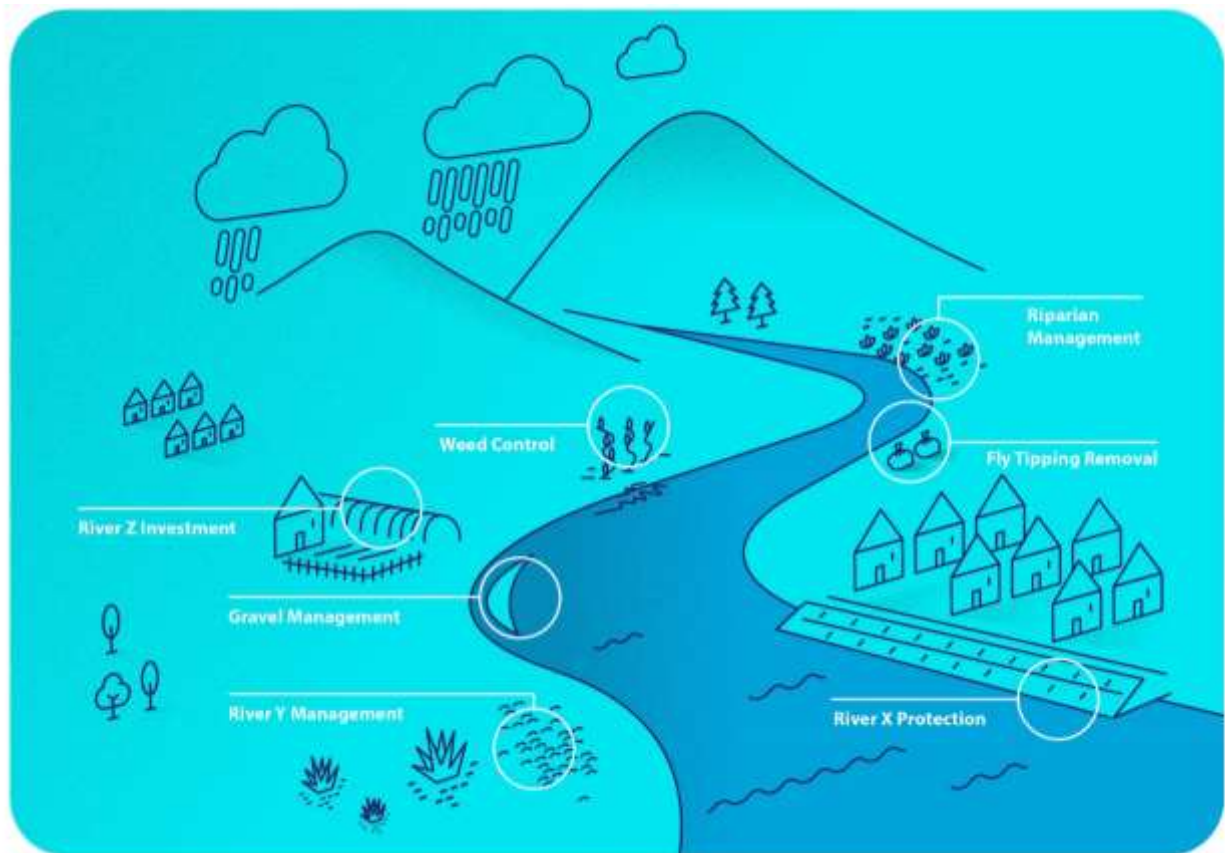
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1 Executive Summary

1.1 What We Do



Tasman District Council maintains 285 kilometres of the District's X and Y classified rivers in order to carry out its statutory roles to promote soil conservation and mitigate damage caused by floods and riverbank erosion. These classified rivers are funded by a differential river rating system based on land value. The rivers works in the classified rivers, such as stopbanks, are predominantly owned, maintained and improved by Council.

There are many more rivers, streams and creeks that are on private, Council and Crown (Department of Conservation, Land Information New Zealand) lands, which are not classified. These unclassified rivers have associated river protection works such as rock walls, groynes and river training works that form part of the river system. These are typically owned and maintained by private property owners and may be partly funded by Council.

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

This activity does not include stormwater or coastal structures, which are covered as individual activities and have their own Activity Management Plan respectively.

1.2 Why We Do It

We aim to maintain river systems in a cost-effective manner in such a way that the community and individual landowners are provided with protection and services to a level acceptable to that community, taking into account affordability.

By implementing and maintaining quality river control and flood protection schemes, Council improves protection to neighbouring properties and mitigates the damage caused during flood events. In 1992 river control functions under the Soil Conservation and Rivers Control Act 1941 for the Tasman District were transferred to the Tasman District Council.

1.3 Levels of Service

Council aims to provide the following levels of service for the Rivers activity.

“Our communities are protected from natural hazard events”

“Our river environments are attractive and enjoyed by our communities”

For the duration of this strategy, Council plans to maintain existing levels of service on a majority of the protection schemes. There are some schemes that improvements are planned to provide a better level of service. For further detail, including measures and targets for the levels of service refer to Section 5.1.

1.4 Key Issues

The key issues for this activity are:



High demand for assistance to prevent further erosion of private property with a limited fund for undertaking works



Balancing the demand for gravel extraction against meeting Council obligations to maintain a healthy river environment



Lower tolerance to the consequences of flooding leading to demand for improved protection

1.5 Responding to the Issues

Council’s planned responses to the key issues are:



Increasing funding to the River Z protection to enable assistance for a greater number of erosion issues around the District



Undertake a programme of river bed surveys to better inform and maintain river gravel extraction quantities

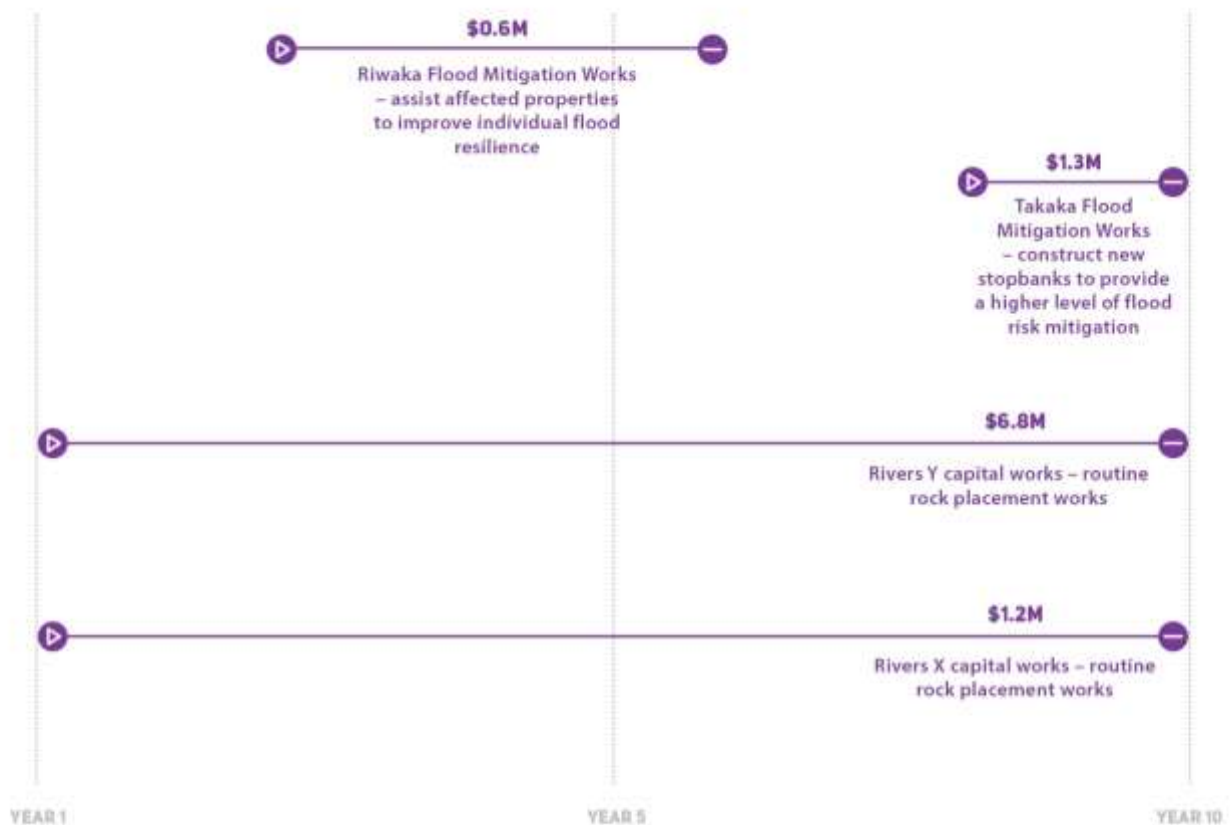


Undertake flood mitigation projects through a combination of planning and physical works in Brightwater, Motueka, Riwaka and Takaka

1.6 Operational Programme



1.7 Capital Programme



1.8 Key Changes

Key changes made since the 2015 AMP are shown below.



Increase funding assistance for private erosion protection and enhancement (Z Rivers) to double that of previous budgets
+\$200,000 PA



Reduction in maintenance spending on rivers protected by stop banks (X Rivers) to match recent actual spend
-\$120,000 PA



Undertake planning to address river flood risks in Motueka, Riwaka and Takaka
+\$450,000

1.9 Key Risks and Assumptions

There are factors outside of Council's control that can change having an impact on Council's ability to do what it planned. Sometimes the impact can be significant. There is always uncertainty in any planning process but the key to good quality planning is to make clear assumptions to help address this uncertainty. This section sets out the key risks and assumptions that relate to this activity:

- Natural hazard events continue at the current rate and there is no catastrophic event.
- The Flood Performance Protection Tool does not highlight areas of poor performance that will require significant investment to bring up to the level of service target.
- There are no changes in legislative requirements following recent flood events.
- Council expects that the central government will remove the 60% flood recovery subsidy

2 Introduction

The purpose of this Activity Management Plan (AMP) is to outline and to summarise in one place, Council's strategic and long-term management approach for the provision and maintenance of its river systems and assets.

2.1 Rationale for Council Involvement

The service provides many public benefits including a level of flood protection to dwellings in the flood plain for selected rivers, river management and river maintenance. It is considered necessary and beneficial to the community that Council undertakes the planning, implementation and maintenance of rivers services in the district in accordance with its respective legislative requirements and responsibilities.

2.2 Description of Assets & Services

For the purposes of this AMP, the District's rivers and associated drainage network has been divided into specific waterways. These waterways generally follow geographical boundaries. The waterways are outlined in Table 1 below.

Table 1: River Network Overview

Waterway	Class	Maintained Length (km)	Total Stopbank Length- both sides of the river (km)
Waimea			
Redwood Valley Stream	X	5.75	-
Redwood Valley Overflow	X	3.00	-
Eves Valley Stream	X	9.50	-
O'Connor's Creek	X	1.80	-
Wai-iti River	Y	30.15	1.4
Waimea River (including Wairoa)	X	13.25	18.1
Upper Motueka			
Motupiko River	Y	14.50	-
Tadmor River	Y	33.00	-
Sherry River (including Wangapeka)	Y	14.50	-
Upper Motueka River	Y	20.00	-
Lower Motueka (incl. Riwaka Delta and Moutere)			
Dove River	Y	18.60	-
Brooklyn Stream	X	3.00	5.0
Lower Motueka River	X	11.25	26.2
Little Sydney Drain	X	4.25	-
Scotts Drain	X	0.80	-

Waterway	Class	Maintained Length (km)	Total Stopbank Length- both sides of the river (km)
Hamilton Drain	X	3.00	-
Riwaka River	X	5.00	8.25
Moutere River	Y	12.00	-
Moutere Creek Ditch	Y	7.00	-
Pawley Creek	Y	2.25	-
Aorere			
Kaituna River	Y	5.75	-
Aorere River	Y	12.00	-
Takaka			
Waingaro River	Y	5.25	-
Anatoki River	Y	5.25	-
Takaka River	Y	28.00	-
Buller System			
Buller River and tributaries	Z	NIL	-

2.2.1 Catchments

The following catchments are described in detail in the sections below.

- Waimea Catchment
- Upper Motueka Catchment
- Lower Motueka Catchment
- Aorere Catchment
- Takaka Catchment
- Buller Catchment

2.2.2 Waimea Catchment

The Wai-iti River catchment (270 km²) and Wairoa River catchment (463 km²) drain steep hill country and join approximately 1km downstream of the Brightwater Bridge (SH6) to become the Waimea River. The river plain formed by the Waimea is intensively farmed.

In 2014, a set of fairway lines (design channel and alignment) were drawn up for the Waimea River based on a 65-135 metre channel and a vegetation buffer measuring 15-35 metres.

A detention dam is located at the head of the Redwood Valley catchment. This structure was installed by the previous catchment board. It is not maintained under the current river operations and maintenance contract.

Waimea: A river control scheme utilising stopbanking over the lower 7.5km of the Waimea River was completed in 1962. All stopbanks and land between stopbanks to the outside edge of the bank are reserve land vested in Council for river control purposes. Stopbanking was developed to a 50-year (2% AEP) standard, accommodating a freeboard of 0.6m. Since then the removal of river gravel has resulted in deepening the bed and therefore increasing its capacity beyond the original Q50 design.

A hydraulic model of the Waimea River has recently been completed. The model shows that the stop banks above the Appleby Highway are not predicted to be exceeded in a 100 year or 200 year event (1% and 0.5% AEP respectively). The same model shows that the land behind the flood banks are flooded downstream of the cycleway bridge.

Wai-iti and Wairoa: The lower reaches of the Wai-iti and Wairoa are part of the Class Y scheme.



Figure 1: Waimea River



Figure 2: Wai-iti River

2.2.3 Upper Motueka Catchment

The Motueka River catchment covers an area of 2170 km². The Upper Motueka drains from the mountainous Red Hills Ridge (1629 m) and Beebys Knob (1436 m) area. The river flats and terraces in this area are narrow. The Motupiko and Tadmor Rivers drain the head of the Moutere Depression to be joined at Tapawera by the Wangapeka and Baton Rivers, two major tributaries that drain the watershed in the western most corner of the catchment. The river flows in a narrow valley below Tapawera to follow the foot of the Western Nelson Range (Mt Arthur Range) in a north easterly direction towards Tasman Bay.

In 2014, fairway lines were drawn up the Motueka River. The channel was 90-110 metres and the vegetation buffer was 25-30 metres wide.

Fairway lines were also drawn up for the Motupiko in 2014, with a channel of 65 metres and a vegetation buffer of 20 metres width.

The Upper Motueka River is a Class Y area (open fairways). In the 1960s the lower sections of the Motupiko, Motueka, Tadmor, Sherry and Dove Rivers received channel works designed to secure the valley floors from erosion and reduce the frequency of flooding.



Figure 3: Upper Motueka Looking Upstream to Tapawera

2.2.4 Lower Motueka Catchment

The Lower Motueka River receives run-off from the catchments of the Stanley Brook, Dove River, Orinoco, Waiwhero and Brooklyn Streams. The rivers and streams are bounded by wide flats and terraces backed by strongly rolling slopes which rapidly give way to the moderately steep slopes that form the eastern Motueka catchment boundary. The river plains have historically been used for horticultural production ie, apple, tobacco and hop production.

Stopbanks have been installed in the Lower Motueka River, primarily to protect the Motueka township and surrounding infrastructure. When the Motueka stopbanks were constructed the works were publicly notified at the time of construction and the land owners signed documents ceding the land. Council never took a separate title for the land and owners are reluctant to release control. The stopbank structures themselves are Council-owned assets.

Council do not believe not owning the land under these stopbanks is a serious issue as the Soil Conservation and Rivers Control Act 1941 gives powers for access to carry out maintenance works. Also, the Resource Management Act 1991 (RMA) prevents owners doing anything to affect rivers (which includes altering a stopbank) without a resource consent.

Widespread flooding used to occur frequently in the river plains of the Lower Motueka River. A river control scheme was completed in 1956 comprising stopbanks, channel improvements and bank protection designed to contain a Q50 flood in the Lower Motueka.

The stopbank capacity was analysed in the early 1990s and some areas were found to have a capacity below the design capacity of Q50 (includes 0.6m freeboard). The cost of upgrading the stopbanks to a Q200 capacity was also assessed at this time, estimated to cost \$1 million (1990).

The Motueka Flood Control project is no longer proceeding as Council decided in 2012 that the small benefit provided was not worth the cost (\$16 million). The proposal involved widening and raising the banks along the river side in order to withstand a long duration 1% AEP event where the main failure risk was the saturation and collapse of the stopbanks.



Figure 4: Lower Motueka Looking Downstream over Bluegum Corner

2.2.5 Riwaka Delta Catchment

The rivers network in the Riwaka Delta is a series of streams modified for land drainage purposes – Little Sydney Drain, Scotts Drain, Hamilton Drain and the Riwaka River. The drainage systems run into the Riwaka estuary via tide gate structures. The Little Sydney tide gate is a reinforced concrete structure constructed in-situ. The intake screens were replaced in 2013.

A river control scheme was completed in 1956 comprising stopbanks, channel improvements and bank protection designed to contain a Q20 (5% AEP) flood in the lower Riwaka. A review of the stopbank carried out in 2005 concluded that present stopbanks on the Riwaka River only provide a level of protection to Q10 (10% AEP), and in some places up to Q20 (5% AEP). Refer to the Riwaka River Stopbanks 20 Year Capacity report prepared for Council.

A public consultation process in 2006 concluded that while landowners were happy to see the stopbank system renovated to restore 5% AEP capacity they did not want to have to pay the full cost of the work.



Figure 5: Riwaka River Looking Upstream from the State Highway Bridge

2.2.6 Moutere Catchment

The Moutere River catchment (168 km²) drains moderate hill and flat valley country and joins the sea at the Moutere Stream Bridge on SH60 at the south entrance to Motueka. Much of the upper catchment is plantation forestry. The rolling hill country is used for sheep farming, vineyards/orchards, and the flat valley bottoms are used for hop-gardens, orchards and other intensive horticulture.

The Moutere River was originally hand dug by settlers in the 1880's being about two yards wide and one yard deep. Today it is up to 30 m wide and up to 10 m deep. Sections of the river system are managed as a classified river, and are maintained under the current river operations and maintenance contract.

During the last 100 years concentrating runoff from the catchment into a single greatly straightened channel has resulted in channel capacity increasing decade after decade from the erosion forces. The annual flood as noted from historical data is approximately 60 m³/sec.



Figure 6: Moutere River Looking Towards the Old House Road Bridge

2.2.7 Aorere Catchment

The main Aorere River catchment drains from the alpine regions of the Kahurangi National Park. Its larger tributaries, the 15, 17, and 19 Mile Creeks (which join the Aorere upstream of Bainham) and the Kaituna River (whose confluence is downstream of Devil's Boot), drain from the steep, bush clad Whakamarama Range. The Aorere River passes through steep rock gorges before discharging into the flat valley area used predominantly for dairy and sheep farming. The catchment size is 573 km².

The land in these lower catchment reaches is alluvial and highly susceptible to erosion. There are substantial river works, including rock bank protection and riparian management, downstream of Devil's Boot, and all this area is rated Class Y.

The Aorere River is one of the largest rivers in the Tasman district with a Q50 flow of 3180m³/s at Devil's Boots. In the 1970s a stop bank flood protection scheme was designed but it has never been constructed and is unlikely to be in the future. There is some private tidal stopbanking in the Ferntown area.



Figure 7: Aorere River Looking Upstream Above the Confluence with the Kaituna

2.2.8 Takaka Catchment

The Takaka River catchment drains a mountainous region of around 855km² into the lower reaches of the Takaka Valley which comprises useful arable land. The main tributaries to the Takaka River are the Cobb River (on which the Cobb Dam is located) and the Waingaro and Anatoki which join the main river near Takaka township.

During the 1960's a scheme of river channel stabilisation (mainly rock protection) and channel widening was introduced over a 37 km length. These works controlled the rate of erosion of farm land and now form part of the Class Y classification scheme.

In 1973, a scheme was planned to divert the tidal reach of river straight to sea with stop banking constructed to protect the township. Shortly afterwards, and through natural processes, a channel formed from the Waitapu Bridge to the sea. The Nelson Catchment Board maintained this new alignment to protect the Waitapu wharf which was in danger of being washed away by other secondary channels that could potentially form.

Following the 1983 event, a Catchment Control Scheme which included 50 year stop bank flood protection and catchment control scheme was designed and costed at around \$7.5million in today's terms (Whole Takaka Flood Relief Scheme). Despite a 70% state subsidy the scheme was turned down through a loan poll. Subsequent reduced schemes have been proposed by the Community Board but have not proceeded to date. The schemes suffer from poor economic returns and adverse effects caused for others.

In 2012, Council resolved to stop any further planning on this protection and a project was included in the Long Term Plan. Periodic reviews of this project are required.

The Waingaro is the largest of the contributing rivers with a Q50 of 1145m³/s compared with 681m³/s and 693m³/s from the Anatoki (20 km upstream of the confluence with the Takaka) and Takaka (at the Waingaro confluence).

2.2.9 Buller Catchment (Not Maintained)

The Buller River drains from the Nelson Lakes through Murchison to the West Coast at Westport, Council's jurisdiction ends at the District boundary at 8 Mile Creek. There are no river rating areas in the Buller Catchment, and any river works that have been carried out are isolated sections of work funded through the River Z subsidised scheme.

There have been occasional proposals for flood protection schemes for Murchison, but none have proceeded due to the reluctance of landowners to fund the schemes.

The Buller catchment also experienced a flood in late December 2010. This was a 910m³/s or Q5 flood event. Repairs were undertaken on the Buller, Tutaki and Matakaitaki Rivers. More recently, there was a Q7 flood event in July 2012.



Figure 8: Middle Buller Looking Downstream Toward Rait Road Bridge

2.2.10 Tide and Flap Gates

There are approximately 30 flap gates maintained as river assets. The majority of these are associated with the stopbank schemes on the Waimea and Lower Motueka rivers to allow areas outside the banks to drain the river. Three of these are tide gates (at Pearl Creek in the Waimea, Little Sydney in Riwaka and Atua Stream on the way to Kaiteriteri).

The old wooden screens in the inlet side of the twin Little Sydney gates were damaged in 2013 and have now been replaced with galvanised steel.

The Atua twin cell gate currently has a fish friendly counterweight device installed to slow the rate of closure allowing a longer window of fish passage upstream on the rising tide. So far this is working well with more sediment build-up on the side with the counterweight and some extension of the saltwater prism beyond the gates.



Figure 9: Atua Gates

3 Strategic Direction

Strategic direction provides overall guidance to Council and involves specifying the organisation's objectives, developing policies and plans designed to achieve these objectives, and then allocating resources to implement the plans.

3.1 Our Goal

We aim to maintain river systems in a cost effective manner in such a way that the community and individual landowners are provided with protection and services to a level acceptable to that community, taking into account affordability.

3.2 Contribution to Community Outcomes

Council operates, maintains and improves flood protection and rivers control assets on behalf of Tasman residents and ratepayers to enhance community well-being, in particular to protect life, property and livelihoods. The flood protection and rivers control group of activities contributes to the Community Outcomes as detailed below.

Table 2: Community Outcomes

Community Outcomes	Does Our Activity Contribute to the Community Outcome	Discussion
Our unique natural environment is healthy, protected and sustainably managed.	Yes	Our flood protection and mitigation activities are carried out in a practical and sustainable way to minimise impacts on the natural river environments, and use best practices in the use of our natural resources.
Our urban and rural environments are people-friendly, well-planned, accessible and sustainably managed.	Yes	We participate in the River Care group to ensure that community views are taken into account with the management of the river catchments, as well as participating in the national Rivers Managers Group to develop the Flood Protection Asset Performance Tool.
Our infrastructure is efficient, cost effective and meets current and future needs.	Yes	Our flood protection and mitigation structures are maintained in an environmentally sustainable manner to a level agreed by the community.
Our communities are healthy, safe, inclusive and resilient.	Yes	Our flood protection works, and river control structures protect our most at risk communities and rural areas from flooding, and are maintained in a safe and cost-effective manner.
Our communities have opportunities to celebrate and explore their heritage, identity and creativity.	Yes	The rivers are a key feature for all that live in the area, many of the community identify who they are by their river. The community become involved in the rivers through planting and regular public opportunities to learn about water quality.

Community Outcomes	Does Our Activity Contribute to the Community Outcome	Discussion
Our communities have access to a range of social, cultural, educational and recreational facilities and activities.	Yes	We maintain the river environment to ensure a pleasant place for recreational activities. We do this by clearing rubbish, pest and weed control and inclusion of plantings for improvements in waterway health.
Our Council provides leadership and fosters partnerships, a regional perspective, and community engagement	Yes	The Council provides expertise and guidance to the community to assist with problems along the river environment.
Our region is supported by an innovative and sustainable economy.	Yes	The flood protection schemes provide communities with confidence that regular flooding will not disrupt normal business activities.

3.3 Infrastructure Strategy

Council's Infrastructure Strategy covers the assets needed to support Council's water supplies, stormwater, wastewater, rivers and flood control, and transportation activities.

The purpose of the Strategy is to identify the significant infrastructure issues for Tasman over the next 30 years, and to identify the principal options for managing those issues and the implications of those options.

When setting out how Council intends to manage the District's infrastructure assets and services, it must consider how:

- to respond to growth or decline in demand;
- to manage the renewal or replacement of existing assets over their lifetime;
- planned increases or decreases in levels of service will be allowed for;
- public health and environmental outcomes will be maintained or improved; and
- natural hazard risks will be addressed in terms of infrastructure resilience and financial planning.

There are three parts to the Strategy; the Executive Summary, the Strategic Direction, and the Activity Summaries. The Strategic Direction section sets the direction for infrastructure management and outlines the key priorities that Council will focus on when planning and managing its infrastructure. The Activity Summaries section provides an overview of each activity and is largely a summary of the relevant activity management plan.

The four key infrastructure priorities included in the Strategy are:

- Providing infrastructure services that meet the needs of our changing population
- Planning, developing and maintaining resilient communities
- Providing safe and secure infrastructure and services
- Prudent management of our existing assets and environment

These priorities have been used to determine and prioritise what is required to be included in the programmes of work for each activity management plan.

3.4 Financial Strategy

The Financial Strategy outlines Council's financial vision for the next 10–20 years and the impacts on rates, debt, levels of service and investments. It will guide Council's future funding decisions and, along with the infrastructure strategy, informs the capital and operational spending for the Long-Term Plan 2018-2028.

Three key financial limits are established in the Financial Strategy that set Council's overall financial boundaries for its activities. These include:

- Rates Income - limited to \$65 million per annum and targeted rates to \$60 million per annum.
- Rates Increases - limited to a maximum of 3% per annum, plus an allowance for annual growth in rateable properties.

Debt - net external debt limited to a maximum of \$200 million

Infrastructure expenditure forms a large proportion of Council's spending being 39% of operational expenditure and 80% of capital expenditure over the next 10 years. Because of this, the Infrastructure Strategy and Financial Strategy are closely linked to ensure the right balance is struck between providing the agreed levels of service within the agreed financial limits. Often these financial limits will influence how Council manages and develops existing and new assets. This is especially so for the next 10 years.

Over the next 10 years, forecast rate income increases and debt levels are projected to be near Council's limits. Council has had to work hard to prioritise and plan a work programme which addresses key issues while staying within these limits. Given Council's debt is projected to peak at \$199.6m in Year 2020/21 there is very little scope to add further work programmes in the next five years.

3.5 Key Issues

3.5.1 Flooding Risk

Many settlements in the District have established near rivers and are exposed to risk in high rainfall events. This risk is not new, but changing weather patterns is also changing the risk profile which includes a higher likelihood of flooding. Council cannot remove flood risk entirely, but can work with communities to make them aware and reduce the flood risk that they may face.

Motueka

A study and engineering report concluding in 2011 detailed that the current Motueka stop banks were vulnerable to several modes of failure the most likely is stop bank collapse. What is not well understood is the consequences of these failure modes and what the best options to address it are.

Riwaka

The October 2013 event overtopped the left bank a few hundred metres upstream of the state highway bridge, contributing to flooding of properties near Cook's Corner and further along the road towards Kaiteriteri. In February 2018, Ex-Cyclone Gita again caused Riwaka River to overtop the left bank in addition Brooklyn Stream overtopped the bank and flooded a number of properties in the Brooklyn area. These events have increased demand for improved protection.

Improvements to the Riwaka stopbank would have to be significant to make any appreciable difference to the properties. The cost to undertake Riwaka river stop bank improvements that would make a difference in flood events outweigh the benefits that would be achieved. Instead, Council will work with individuals who are most affected to assist them in improving resilience to their properties.

Takaka

Takaka Township is prone to flooding from the Takaka River which poses a flood risk to a number of commercial and residential buildings in Takaka, and to public infrastructure.

Some years ago, and over a number of years a private bank was built with the intention of preventing flooding in Takaka Township. This bank is referred to as the McKenzie bank and has a nominal rating for a Q15 event. Given the private nature of the bank, it is not maintained by Council.

Council investigated the flooding issues and land zoning for Takaka over 2010-2012. As part of the investigation, modelling was undertaken to ascertain the benefit of the bank, and the implications from raising and extending. The modeling showed that the bank provided some benefits to the southern end of town, but also showed worse outcomes for some properties at the northern end of Takaka. As part of this work, Council consulted the Takaka community on the flooding issues. The response from the community was muted but a direction to not undertake work that will incur cost to the local community.

Work is still to be undertaken on reviewing flow paths, consideration of taking over management of the McKenzie bank, and investigating options to minimise breakout of flood waters at key pressure points.

3.5.2 Increased Demand for Erosion Assistance

Tasman has experienced several major storms since 2010. Council infrastructure and private property has suffered damage from the associated flooding, slips, erosion and debris flows. Council has a 'Classified Rivers Protection Fund' for repair works required within maintained river systems. Council has historically funded up to 50% of the costs of works undertaken within 'River Z areas', with the landowner paying for the remaining 50%. Rainfall events over the last few years have tended to affect smaller catchments and waterways with short high intensity events becoming more prevalent. This has increased demand for assistance in River Z areas.

In response to this demand, Council has planned to increase River Z budget and review the River Z funding policy. The Policy review will consider the following:

- what is a community benefit
- should it be on a first in first served basis
- can proactive vs reactive works be funded
- need ability to fund works 100% that do not have direct landowner benefit but are prudent i.e. fly tipping removal, tree or blockage removal.

3.5.3 Proactive Gravel Management

Until recently Council has allowed gravel extraction based on localised survey or visual inspection. Without extensive survey data it was unclear how the whole river system was responding to this extraction and whether there was scope for increased removal. By improving river bed surveying it enables Council to maximize gravel extraction without compromising the natural environment.

3.6 Prioritisation

Council cannot afford to undertake all work at once due to financial and resource constraints. This means that Council needs to prioritise what work it undertakes first, and what work can wait until later.

There are multiple factors that affect the priority of individual works. These include:

- The need to protect public health & safety
- Statutory compliance
- Meeting the needs of tomorrow's population
- Readiness to implement works
- Co-funding opportunities
- Enabling pleasant community environments
- Benefits and risks
- District distribution
- Strategic fit

Council has taken all of the above into consideration when planning its programme of work. Generally, mandatory requirements such as statutory compliance take priority, and discretionary activities have been programmed second to this.

4 Key Linkages

There are multiple factors that influence how Council manages this activity. They can be internal or external and include legislation, policies, regulations, strategies and standards. This section summarises these key linkages.

4.1 Overview

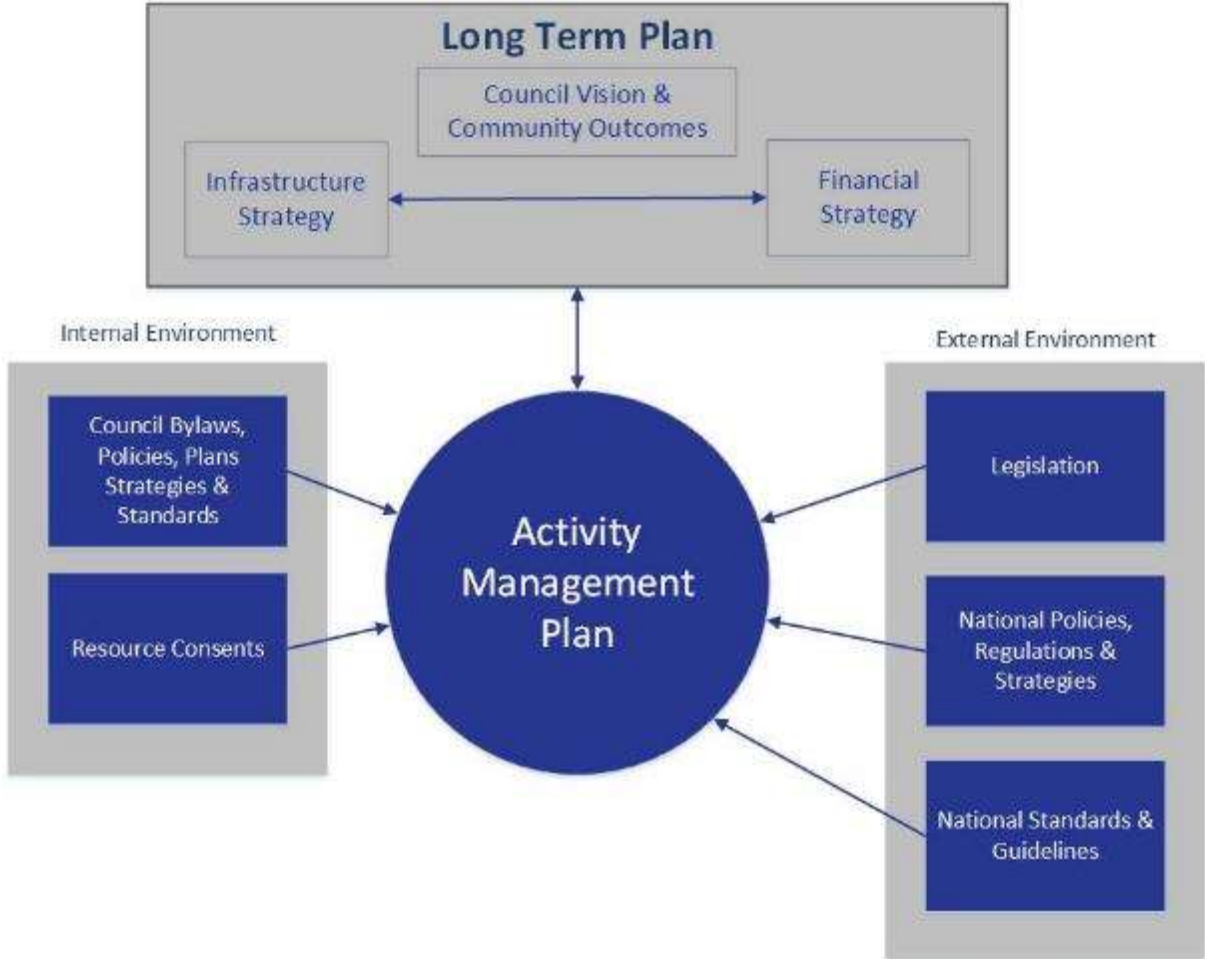


Figure 10: Rivers Relationship of other Documents

4.2 Key Legislation

The Acts below are listed by their original title for simplicity however all Amendment Acts shall be considered in conjunction with the original Act, these have not been detailed in this document. For the latest Act information refer to <http://www.legislation.govt.nz/>.

Table 3: Summary of Key Legislation that Relates to Rivers Activity

Legislation	Affect on the River Activity
The Local Government Act 2002	The Local Government Act requires local authorities to prepare a ten-year Long Term Plan and 30-year Infrastructure Strategy, which are to be reviewed every three years. The Act requires local authorities to be rigorous in their decision-making by identifying all practicable options and assessing those options by considering the benefits and costs in terms of the present and future well-being of the community. This activity management plan provides information to support the decisions considered in the Long Term Plan.

Legislation	Affect on the River Activity
The Soil Conservation and Rivers Control Act 1941	This Act defines the catchment boards and their powers and responsibilities.
The Biosecurity Act 1993	This Act defines, pest surveillance, prevention and management.
The Civil Defence Emergency Management Act 2002 (Lifelines)	This Act promotes the management of hazards. This includes mitigating flood risk which includes planning for emergencies, response and recovery from an event.
The Resource Management Act 1991	This Act sets out obligations to protect New Zealand's natural resources such as land, air, water, plants, ecology, and stream health. Resource consents draw their legal authority from the Resource Management Act 1991.
The Land Drainage Act 1908	This Act details drainage of land and the responsibilities of each entity. This includes requirements and powers of the controlling authority.

4.3 Key Planning, Policies and Strategies

4.3.1 National Policies, Regulations and Strategies

Table 4: Summary of National Documents that Relates to Rivers Activity

Documentation	Affect on the River Activity
The New Zealand Coastal Policy Statement 2010	The policy statement informs the Tasman Regional Management Plan and Council must give consideration the policy statement during consent consideration on anything around the coast.
Coastal Hazards and Climate Change (Guidance for Local Government)	This provides guidance for assessing, planning and managing increasing risks facing communities along the coast along with tools and techniques to determine how it will effect property.
Te Tiriti o Waitangi – Treaty of Waitangi	The Treaty of Waitangi is an agreement between Māori and the Crown. Under Section 4 of the Local Government Act 2002 local authorities are required to 'recognise and respect the Crown's responsibility to take appropriate account of the principles of the Treaty of Waitangi and to maintain and improve opportunities for Māori to contribute to local government decision-making processes'. Further sections of the Act, particularly 77 and 81, detail the scale of requirement for local authorities to seek contributions and involvement from Māori in consultation and decision-making processes.

4.3.2 New Zealand Standards

Table 5: Summary of Standards that Relates to Rivers Activity

Standard	Affect on the River Activity
AS/NZS 9401:2008 Managing Flood Risk – A Process Standard	This standard uses a risk based approach to manage flood risk. This is used to help inform decisions around flooding by analyzing the risk.

4.3.3 Local Policies, Regulations, Standards and Strategies

Table 6: Summary of Local Documents that Relates to Rivers Activity

Documentation	Affect on the River Activity
Tasman District Council District Plan – Tasman Resource Management Plan (TRMP)	A combined regional and district plan with statements of issues, objectives, policies, methods and rules addressing the use of land, water, coastal marine area and discharges into the environment.
Tasman Regional Policy Statement (TRPS)	An overview of significant resource management issues with general policies and methods to address these. Part 8 River and Lake Resources outlines the control of river channels and management of floodplains to avoid or mitigate flooding of riparian lands.

5 Levels of Service

A key objective of this plan is to match the levels of service provided by the rivers activity with the agreed expectations of our customers and their willingness to pay for that level of service. These levels of service provide the basis for the life cycle management strategies and works programmes identified in this plan.

Levels of service can be strategic, tactical, operational or implementational and should reflect the current industry standards and be based on.

- Customer Research and Expectations: Information gained from stakeholders on expected types and quality of service provided.
- Statutory Requirements: Legislation, regulations, environmental standards and Council bylaws that impact on the way assets are managed (ie. resource consents, building regulations, health and safety legislation). These requirements set the minimum level of service to be provided.
- Strategic and Corporate Goals: Provide guidelines for the scope of current and future services offered and manner of service delivery, and define specific levels of service, which the organisation wishes to achieve.
- Best Practices and Standards: Specify the design and construction requirements to meet the levels of service and needs of stakeholders.

5.1 Our Levels of Service

Table 7 summarises the levels of service and performance measures for this activity. The light blue shaded rows show those that are included in the Long Term Plan and reported in the Annual Plan. Unshaded white rows are technical measures that are only included in the activity management plan.

Table 7: Levels of Service

Levels of Service (we provide)	Performance Measure (we will know we are meeting the level of service if ...)	Current Performance	Future Performance Targets			
			Year 1	Year 2	Year 3	Year 10
			2018/19	2019/20	2020/21	2028/29
Protection Our communities are protected from natural hazard events	We maintain Council's flood protection schemes at or above current performance levels. As measured through the Flood Protection Asset Performance Tool developed by the River Managers Group.	Actual = New measure	Waimea: 85% medium or less risk Lower Motueka: 50% medium or less risk Riwaka: 75% medium or less risk			
	The major flood protection and control works that are maintained, repaired and renewed their original constructed standard. (Riwaka River = 1 in 10 yr flood return in 1950). (Lower Motueka River = 1 in 50 yr flood return in 1950). (Waimea River = 1 in 50 yr flood returning 1950). No failure of flood protection in the existing stopbank system maintained by Council below the specified design levels (Mandatory Performance Level 1)	2015/16 = 100% 2016/17 = 100%	100%	100%	100%	100%
Amenity Our river environments are attractive and enjoyed by our communities.	We maintain existing native riparian planting sites and develop new sites. Number of plants planted and measured through river maintenance contract claim payment and audit records.	2015/16 = 15,461 2016/17 = 15,259	> 13,000	> 13,000	> 13,000	> 13,000
	Complaints about illegal dumping in the X and Y classified rivers and on adjacent beaches on public land are actioned within 5 working days. As measured through Customer Services Requests in Council's database. CSR's are responded to within 5 days.	2015/16 = 100% 2016/17 = 100%	100%	100%	100%	100%

5.2 Level of Service Changes

Council reviews its levels of service every three years, as part of the Long Term Plan development. Table 8 below summarizes the key changes Council has made during development of the Long Term Plan 2018 – 2028.

Table 8: Summary of areas where we made changes to our levels of service

Performance Measure	Summary of change
Environment	Removed the performance measure to comply with resource consents.
Protection	Added a new performance measure to use the Flood Protection Asset Performance Tool developed by the River Managers Group.
Protection	Remove the performance measure to have all of the River Z fund spent every year.
Amenity	Added a new performance measure to ensure riparian planting is undertaken.
Asset Management	Remove the performance measure to consider the river care group.

5.3 Levels of Service Analysis and Performance

5.3.1 Environment

The performance measure requiring compliance with resource consents has been dropped. The conditions of the applicable resources consents are not onerous, and Council should have little trouble complying. Compliance with the consents should be implied, and not used as a measure of performance.

5.3.2 Protection

The River Managers Group have developed a Flood Protection Asset Performance Tool to provide a common method throughout New Zealand of measuring the performance of the river protection schemes. This will be used by other Councils as a way of measuring performance and highlight where improvements should be made.

Council plans to maintain the performance measure to maintain the flood protection works to the original designed condition will be maintained. Retaining the original design condition ensures the asset doesn't degrade and that customers are provided with a consistent level of protection.

The performance measure to ensure that the Rivers Z fund is spent every year is unnecessary because the number of enquiries to fund new works is significantly greater than the funds available. For this reason, Council removed the measure.

5.3.3 Amenity

The performance measure in response to illegal dumping of rubbish in the river system has been retained so that Council continues to track the occurrence of illegal dumping and can consider further intervention measures if necessary.

A new performance measure around the number of plants planted in the year has been included. This is to ensure that continued improvement in the river ecology is being maintained.

5.3.4 Asset Management

The performance measure that the river care group consider the annual maintenance programme has been removed as this is undertaken as normal part of consultation of the river activity.

6 Our Customers and Stakeholders

Council consults with the public to gain an understanding of customer expectations and preferences. This enables Council to provide a level of service that better meets the community's needs.

6.1 Stakeholders

There are many individuals and organisations that have an interest in the management and / or operation of Council's assets. Council has a Stakeholder and Engagement Policy which is designed to guide the expectations with the relationship between Council and the Tasman community. Council has made a promise to seek out opportunities to ensure the communities and people it represents and provides services to have the opportunity to:

- be fully informed;
- provide reasonable time for those participating to come to a view;
- listen to what they have to say with an open mind;
- acknowledge what we have been told;
- inform contributors how their input influenced the decision Council made or is contemplating.

Engagement or consultation:

- is about providing more than information or meeting a legal requirement;
- aids decision-making;
- is about reaching a common understanding of issues;
- is about the quality of contact not the amount;
- is an opportunity for a fully informed community to contribute to decision-making.

The key stakeholders Council consults with about the Rivers activity are:

- elected members (Community Board members);
- Iwi (Councils Treaty Partners);
- Regulatory (Consent compliance);
- fisheries organisations;
- Fish and Game;
- River Care Groups;
- Heritage New Zealand;
- service providers / suppliers (Network Tasman, power companies);
- Civil Contractors New Zealand (Nelson-Marlborough);
- affected or interested parties (when applying for resource consents);
- neighbours.

River Care groups have been formed in the following catchments;

- Takaka Waingaro/Anatoki;
- Aorere/Kaituna;
- Upper Motueka Catchment;
- Waimea Catchment;
- Dove;
- Lower Motueka

6.2 Consultation

6.2.1 Purpose and Types of Consultation

Council consults with the public to gain an understanding of customer expectations and preferences. This enables Council to provide a level of service that better meets the community's needs.

Council's knowledge of customer expectations and preferences is based on:

- feedback from residents surveys;
- feedback from staff customer contact;
- ongoing staff liaison with community organisations, user groups and individuals;
- public meetings;

Council commissions residents surveys on a regular basis (the National Research Bureau Ltd has provided this service since 2008). These NRB Communitrak surveys assess the levels of satisfaction with key services, including provision of community facilities, and the willingness across the community to pay to improve services. Other informal consultation is undertaken with community and stakeholder groups on an issue by issue basis, as required.

6.2.2 Consultation Outcomes

The annual Communitrak survey does not specifically measure customer satisfaction of rivers and flood protection but the 2011 and 2017 survey did ask about spend emphasis. From both surveys, rivers and flood protection was the activity that a large proportion of residents would like more spent and is shown in Table 9 below.

Table 9: Rivers and flood protection spend emphasis

	Spend More (%)	Spend about the Same (%)	Spend Less (%)	Don't Know (%)
2017	47	46	3	4
2011	45	47	2	6

Despite this response, residents provided few specifics as to what they wanted to see additional funds spent on rivers and flood protection. However, when the residents that want to spend more are broken into their wards there are some regional trends as seen below in Table 10.

Table 10: Breakdown of "Spend More" on rivers and flood protection into Wards

	Lakes-Murchison (%)	Golden Bay (%)	Motueka (%)	Moutere-Waimera (%)	Richmond (%)
2017	67	52	53	39	43
2011	62	57	48	32	44

It can be seen that there is a high proportion of the residents want to spend more across all wards. Lakes-Murchison and to a lesser degree Golden Bay have consistently had over half the residents desiring that more be spent, indicating a lower level of satisfaction in those Wards.

7 Current and Future Demand

The ability to predict future demand for services enables Council to plan ahead and identify the best way of meeting that demand. That may be through a combination of demand management and investing in improvements. This section provides an overview of key drivers of demand and what demand management measures Council has planned to implement.

7.1 Demand Drivers

Key factors driving demand for river assets include:

- Change in expectations
- Land development
- Climate change
- Population growth
- Extension of the classified rivers network

7.2 Assessing Demand

7.2.1 Community Expectations

Community expectations can change and generally depend on how the community has coped during the most recent flood or the level of damage sustained. The community expectation needs to be related to risk management and affordability issues. The extent of the future demand will be determined by investigations and community consultations.

7.2.2 Climate Change

Climate change is likely to affect the rainfall intensity, frequency, and duration of flood events. This may affect rock demand for bank protection, channel clearing and stopbank free board. At present, Council has not factored the potential effects of climate change into its 30 year programme of works.

7.2.3 Population Growth

The link between population growth and the demand for river activities is not as direct as it is for the other activities. Generally, population growth leads to intensification of land use and demand for further housing development in areas vulnerable to flooding. This may lead to a desired increase in the level of flood protection.

7.2.4 Extension of Classified Rivers Network

Class Y

It is unlikely there will be significant growth of the Class Y scheme due to additional landowners joining the scheme. The reasons for this being:

- Individuals are not aware that they have this option
- Councils erosion and flood protection schemes already cover much of the highly productive land

Class X – Stopbanks

New schemes or extensions to Class X schemes (stopbanks) are anticipated in the next 20 years. The areas where these works might occur include Lower Motueka and Takaka.

7.3 Demand Management

The objective of demand management (sometimes called non-asset solutions) is to actively seek to modify customer demands for services in order to:

- optimise utilisation/performance of existing assets;
- reduce or defer the need for new assets;
- meet the organisation's strategic objectives (including social, environmental and political);
- deliver a more sustainable service;
- respond to customer needs.

7.3.1 Council's Approach to Demand Management

When applying demand management techniques to river assets, the mitigations listed in Table 11 are considered relevant:

Table 11: Summary of Rivers Demand Management

Factor	Effect	Mitigation Measure
Gravel extraction	Over extraction of gravel may create bank erosion and lowering of ground water levels.	Access to the gravel resource is controlled by Council staff, with input from external agencies eg, Fish and Game and the Department of Conservation.
Urban development	An increase in impermeable areas may affect the runoff volume (likely to be relevant to small catchments only). An increase in population density may result in an increased demand for protection due to the increased value of land and assets being protected.	Managed through the development process and the TRMP conditions. Managed via an increased level of service as developed in consultation with the community and decided by Council.
Land use	Forestry operations such as clear felling and earthworks temporarily change catchment characteristics and increase debris run-off, possibly affecting fairway clearing and bank erosion and gravel supply.	Management of forestry operations, and restrictions on sediment control and site clearance through the TRMP, and compliance with the Soil Conservation and Rivers Control Act.
Dams	Construction of dams (specifically the Waimea Community Dam) is expected to have a positive effect on the management of a river due to the reduced flow peaks and more consistent flows.	Accept.

8 Lifecycle Management

Lifecycle cost is the total cost to Council of an asset throughout its life including, creation, operations and maintenance, renewal, and disposal. Council aims to manage its assets in a way that optimises the balance of these costs. This section summarises how Council plans to manage each part of the lifecycle for this activity.

8.1 Asset Condition and Performance

8.1.1 Waimea Catchment

The stop banks scheme is well designed and constructed and generally in good condition, however, the stop banks have steeper batters than other comparable stop bank schemes in New Zealand and the toe of the bank is close to the main river channel in at least one location. Like many of the stop bank schemes in the district, there is stock damage, trees growing in the banks, vehicle crossings and fences that can contribute to reducing the effectiveness of the banks. The Waimea River has had a historical build-up of gravel materials, in recent years, this build up has been reduced through controlled gravel extraction.

Waimea: In January 1986 a large flood of 1466m³/s (just over a Q50 event) caused extensive bank damage, exacerbated by the over-extraction of gravel. There are still areas with narrow berm areas between the stopbanks and the main river channel which may be threatened during a big flood. The left bank below the Appleby Bridge was raised in 1988 in response to the 1986 flood. The most recent large event in the Waimea was in February 2016 of 1315m³/s (Q20). At the same time the Wai-iti experienced a flood event of 344m³/s or Q13.

Council undertook a validated hydraulic model analysis of the Waimea River from the confluence of Waimea and Wai-iti Rivers to Best Island. Results show that above Appleby Highway Bridge both the left and right stop banks are not predicted to be exceeded in the 1% or 0.5% AEP design events with freeboard, although the maximum levels were within 200mm of the crest in some places. Results show that the stop bank is overtopped in a 1% AEP event on both the left and the right banks downstream of the Cycleway Bridge.

8.1.2 Upper Motueka Catchment

The Upper Motueka is a dynamic river serving one of the largest catchments in the District and all works are erosion protection only. The river is semi braded and one of the weediest in the District with a significant proportion of the Rivers Y maintenance budget being spent on this catchment. In recent years, Council have concentrated on these weeds and have made significant reductions to the historic broom coverage.

The Tadmor experienced a Q18 flood event in July 2012 (105m³/s).

The Motupiko experienced a Q7 flood event in October 2013 (65m³/s).

8.1.3 Lower Motueka Catchment

The Lower Motueka River is the largest flood protection scheme and the river has some of the largest flows. The stop banks have historical problems with boils and seepage during extended periods of flood, likely due to poor compaction during construction. The land is not owned by Council which makes controlling activity on the stop banks difficult. Typical undesirable activities on the stop banks include grazing, trees, buildings on or adjacent to the bank and driveways access over the bank.

Flood events include:

- July 1983 with a peak discharge of 2149 m³/s estimated at the time to be Q50 event. Though the flood flow was contained in the main channel through the stop banked areas, damage to a value of \$1 million occurred, generally as lateral erosion along stop banks.
- 1990 with a peak discharge of 1680 m³/s recorded at Woodstock.
- December 2011 with a peak discharge of 1295m³/s (Q13) in the Lower Motueka.

The Wangapeka River is the major tributary and has had multiple (three Q5 to Q10 floods) since the major December 2010 flood (930m³/s or Q16).

Some concern was raised at the time of the 1990 flood that another flood might threaten to further undercut the stopbanks due to the dual factors of bed degradation and erosion of the berms – in the areas between the stopbanks and active channel.

8.1.4 Riuwaka Delta Catchment

Riuwaka flood control is generally in poor a poor condition. The stop banks are very low and whilst is was designed for Q20 flood events, lower areas downgrade the facilities to a Q10 flood event. Horticulture is very close to the stop banks, and the stop banks themselves are close to the river channel which makes access for maintenance like mowing difficult. Landowners grazing the banks are an ongoing issue.

The Riuwaka and West Bank tributaries have had several high flow events recently with the Motueka River being largely unaffected (ie, Graham Valley stream, the Pokororo and Shaggery)

In June 2013, the Riuwaka River experienced a Q15 flood event (156m³/s) followed by a Q12 flood event in October 2013 and a Q9 flood event in May 2014.

The October 2013 event overtopped the left bank a few hundred metres upstream of the state highway bridge, contributing to surface flooding at properties near Cook's Corner and further along the road towards Kaiteriteri. This was due to vegetation being cleared because of a new hop garden stay. Fill has since been placed to raise this low spot.

8.1.5 Moutere Catchment

The catchment is essentially manmade drains rather than natural river way. The steep sides make the waterway prone to erosion and the narrow width make blockage from weeds a real risk. Ownership of land around the waterways are right up to the sides and are often fenced. This makes reducing the slope to prevent erosion difficult and this is evident in the upper part which has suffered severe erosion due to alignment. Rip rap has been added in multiple locations to mitigate this.

The river has experienced a flood event of 150m³/sec during the time that a recorder and gauging reach existed. This gauge site has been decommissioned.

The Upper Moutere area has experienced a spate of high flow events since 2011.

8.1.6 Aorere Catchment

The Aorere River has the largest flocs in the District. The Ferntown Delta is low lying land which is prone to flooding. It has the Districts largest rock structures due to flood events in 2010 in conjunction with intensification of the land use in the catchment. The catchment is predominately nature bush, eliminating a seed source for weeds. Council does not monitor the gravel levels in the river, but it is generally regarded as being fine.

In December 2010 the highest ever flow was recorded of 3561m³/s (1:187 year flood). This resulted in extensive damage to private property from approximately 2 km downstream of the Rockville Bridge. There was damage to existing bank protection and channel realignment. The remaining maintained river length sustained significant damage including damage to existing bank protection and further bank erosion. This event also took out the bridge on the James Road Right Branch.

Other significant flood events include July 1985 when a flow of 3067m³/s was recorded and October 1996 when around 2400m³/s was recorded. Both these floods caused significant damage in the lower catchment to existing river works and unprotected riverbanks.

Of particular significance is the potential for the river to take a completely new course to the sea over the last few kilometres of its catchment length.

8.1.7 Takaka Catchment

The Takaka River has no stop banks other than the unofficial McKenzie bank. This is not maintained by the Council. The river frequently floods with large inflows from the two major tributaries, Anatoki and Waingaro Rivers. The rivers have steep sides and high erosive forces. The lower reaches around the town have been extensively rock protected. Historical rock protection has been undergoing maintenance to return the armoring to the original levels of protection. Weeds are not a major issue for this catchment, although there are ongoing weed control works.

Prior to the 1960s severe flooding of the lower floodplain areas was frequent and there was extensive bank erosion along the Takaka, Waingaro and Anatoki because of the highly erosive nature of the alluvial soils.

In July 1983 a flood of over 2000m³/s was recorded past Takaka village (varying between Q30 and Q50 across the catchment) which caused extensive damage to surrounding land and property. Following this flood, a new channel was cut below the Waitupu bridge to re-align mouth in a direct line with the bridge.

The most recent large event was a Q17 flood in the Waingaro (780m³/s) in April 2014. The Takaka River (further downstream) only measured a Q7 flood event.

8.2 Operations and Maintenance

8.2.1 Key Maintenance and Operational Themes

8.2.1.1 Unintentional Damage

Landowners undertake activities that unintentionally threatens the integrity of the stopbanks. These activities include but are not limited to:

- Stock grazing
- Tree planting
- Installation of fences
- Driveways
- Gateways
- Construction of buildings
- Obstructions to maintenance

8.2.1.2 Maintenance Objectives

The major objective of river control and the associated drainage systems is to safely pass a given flow and protect land from erosion. The system can be broken down into component assets, with sub-objectives for each component and the identification of works required to maintain and upgrade that component.

8.2.1.3 River and Drainage Channels

These need to be sufficiently deep and wide enough to carry drainage flows and/or the majority of the flood flow and be kept clear of restrictions such as willows and aquatic weeds.

8.2.1.4 River and Drainage Bank Edge Protection

The edges of the channel require preventative maintenance where subject to erosion and/or slumping. The methods used largely include rock protection structures and willow tree layering. In the case of drainage systems eg, Swamp Road, Riwaka, timber structural walls have been used because of the restriction between road edge and the creek bank.

8.2.1.5 River Berms

Where stopbanks have been constructed, a physical buffer (land) between the main river channel and stopbanks is highly desirable. Careful management of the vegetation on the berm is required to facilitate slow non-scouring water velocities over them but without creating a restriction to flood flows in significant events. Guide banks, rock retards and berm shaping may also be used to control velocities.

8.2.1.6 Stopbanks

These are usually earthen banks of sufficient height to prevent flood overflow most of the time and of adequate structural integrity and requiring a good grass surface to inhibit erosion.

8.2.1.7 Flow Control and Miscellaneous Structures

These are culverts, floodgates, control gates, pipe headwalls, spillways, weirs (eg. Wai-iti River), drop structures, bridges, etc.

8.2.2 Maintenance Contracts

Council currently contracts out the day-to-day operation and maintenance of the X and Y classified river works. Council's operation and maintenance contracts are let through competitive tendering following the Procurement Strategy to ensure a true market value.

The rivers activity is currently maintained under Contract 1064. This contract sets out the operations and maintenance requirements for X and Y rated areas over a seven year period and which must also be operated in accordance with the Global Riverworks Consent. Taylors Contracting Co Ltd was awarded Contract 1064 in 2016; the contract is a 3+2+2 format.

The maintenance contract includes.

- The maintenance and renewal of existing protection works and the construction of new works as necessary to maintain the specified sections of rivers.
- Existing protection works includes stopbanks, rock protection, flood and tide gates, selected willow cutting and layering, riparian management and any other structures or plantings that affords protection to river banks and channels.

The key aspects of the rivers contract are.

- Maintain the river system to a consistent standard in accordance with this Activity Management Plan (AMP).
- Construct new assets that will form part of the protection system for the rivers network.
- Develop and maintain working relationships with adjacent and affected landowners which foster a partnership with Council.
- Be respectful of the landowners, their property, stock and pastures where access is required to complete the contract works.

The implementation of maintenance work is currently undergoing change. The rivers engineers and contractors aim to follow the maintenance programme listed below.

- Some maintenance items are undertaken on a regular or seasonal basis, for example:
 - stopbank mowing;
 - flapgate inspections;
 - native planting, site preparation;
 - willow sprawling;
 - fairway spraying.
- Some maintenance items are on an ad-hoc basis, for example:
 - responding to urgent erosion or flooding;
 - clearing fairways of debris;
 - responding to fly tipping.
- Other work is planned over a longer time frame (that may also be undertaken on a seasonal basis), for example:
 - major in-stream works such as gravel extraction or re-location;
 - non-critical work such as weed control outside the fairway;
 - improvement of access for river maintenance and/or recreational purposes;
 - discouragement of fly tipping;
 - restoration of riparian vegetation.

Longer timeframe works are undertaken on a limited and opportunistic basis in order to preserve sufficient budget to deal with future potential flood events and reactive requirements.

Operations and maintenance works are provided in Table 12. The completion of these activities is required to meet the assets minimum service potential. Historically budgetary constraints impact on the ability of the rivers contractors to consistently meet the objectives.

Table 12: Operations and Maintenance Activities

Work Type	Maintenance Activities	Maintenance Objectives
Stopbank Maintenance (Class X only)	<ul style="list-style-type: none"> grading of access tracks and bank tops; gravelling access tracks; battering, sowing and top dressing; mowing and slashing; removal of scrub/trees; reconstruction of damaged banks; maintenance of drainage culverts and flap gates under stopbanks. 	<ul style="list-style-type: none"> to prevent significant obstruction to flow along the banks; to maintain drainage through and/or around the stopbanks; to maintain good access; to ensure controlled overflow from rivers; to ensure minimum damage if overflows; for appearance.
Lengths of Damaged Stopbanks	<ul style="list-style-type: none"> rectify the decline in standard of stopbanks from stock use by ensuring large stock are excluded. 	<ul style="list-style-type: none"> to ensure that stopbanks meet their design capacity.
Floodgates and Culverts	<ul style="list-style-type: none"> ongoing cleaning, repair, replacement. 	<ul style="list-style-type: none"> To ensure fully functional during exceptional events e.g. closed; at replacement stage floodgates need to provide for fish passage.
Rock / Gabion	<ul style="list-style-type: none"> repair, restacking and replenishment. 	<ul style="list-style-type: none"> to prevent lateral erosion and breakout of rivers.
Willow Planting/ Layering	<ul style="list-style-type: none"> willow trimming; willow release cutting, spraying or swabbing; partial severance to encourage new growth along felled trunks. 	<ul style="list-style-type: none"> to prevent significant obstruction in the main channel; to maintain willows in good height; to protect willows against weeds such as old man's beard.
Flood Damage Repair	<ul style="list-style-type: none"> required following flood damage; replacement/replenishment of part of all of the flood protection assets. 	<ul style="list-style-type: none"> to maintain the asset and remedy damage after flood events.
Channel Maintenance	<ul style="list-style-type: none"> removal of trees and other obstructions and growth from the river or stream bed/fairway; berm and bank vegetation clearance and reduction; 	<ul style="list-style-type: none"> to prevent significant obstruction to flow along the main channel; to increase the capacity of the channel.
Drain Cleaning	<ul style="list-style-type: none"> cleaning via machine excavation, spraying or by hand. 	<ul style="list-style-type: none"> to maintain hydraulic efficiency of drains.
Channel Realignment	<ul style="list-style-type: none"> channel alignment after erosion of a section of bank or secondary channel forming after flood. 	<ul style="list-style-type: none"> to provide a stable channel; to reduce/eliminate back channels created by flood overflow.
Native Riparian Revegetation	<ul style="list-style-type: none"> responsible land management to exclude weeds that can spread to private land; restore wildlife and biodiversity values; enhance amenity of conspicuous areas. 	<ul style="list-style-type: none"> site preparation: fencing, slashing, spraying; new planting; maintenance of existing plantings.

Work Type	Maintenance Activities	Maintenance Objectives
Fencing, Gates, Access Tracks	<ul style="list-style-type: none"> stopbank and berm control measures. 	<ul style="list-style-type: none"> to provide Council access to carry out its work; to control public recreational use; to provide control of animal grazing.

8.2.3 Maintenance Strategies

8.2.3.1 Rivers Z General Works

In addition to the operations and maintenance works carried out under Contract 1064, Council annually allocates funds for Z rated areas. The majority of works in these areas are carried out on a part funding basis (ie, a combination of land user and rivers account funding). Some of the River Z rates collected are spent in the River Z classified area with the majority of the funding being proportioned to the X and Y classified area as a regional benefit factor. The decision on which works are carried out is constrained by the annual budget and the following criteria.

- Is there a “community” benefit different from a benefit to the landowner/occupier only?
- Is what the owner/occupier wants to do “sound”? Will it achieve a desirable outcome, will it work and is it cost effective?
- Is the proposed work achievable under the river works consent?
- Is it possible that by not offering financial support, work of a standard not desirable or outside the river works consent could eventuate?
- Will the work encourage upstream and downstream neighbours to be more proactive with their stream maintenance or drainage?
- Is there a direct benefit to Council in terms of its assets and services?
- Is it necessary to involve neighbours at an early stage to be proactive to achieve a desirable outcome?
- Is the property owner/occupier happy to enter into a cost share arrangement and complete the standard form - Application for Assistance for River Protection Works?
- Is there anything left in the budget to give financial support, if so, this would normally be up to 50%?

8.2.3.2 Effect of Gravel Extraction on Operation and Maintenance

This will be based on a gravel envelope approach allowing Council to extract gravel only if current Mean Bed Levels (MBLs) are above historical MBLs for any particular site in the fully maintained river network. This will ensure sustainable extraction is achieved to limit bed degradation, which could otherwise lead to loss of groundwater and headward erosion that could threaten upstream bank protection and structures such as bridges.

Flood conveyance in the stopbanked scheme areas will also provide an upper limit that will trigger extraction.

A sediment transport analysis has been carried out in order to provide independent information on the typical quantity this entails on our main rivers with a view to including other rivers over the life of the consent as appropriate.

8.2.3.3 Riparian Management

Council staff manage a yearly programme of maintaining and creating new plantings to exclude weed species within the X and Y rated river network. In places this may include improving access and amenity for the public. Landowners in River Z areas wishing to undertake native riparian planting (or planting of other suitable non-commercial species) are supported under the River Z policy with a subsidy available for plant supply and weed control and other protection or preparation works as appropriate.

8.2.4 Forecast Operations & Maintenance Expenditure

Figure 11 details the project operations and maintenance expenditure for the next 30 years.

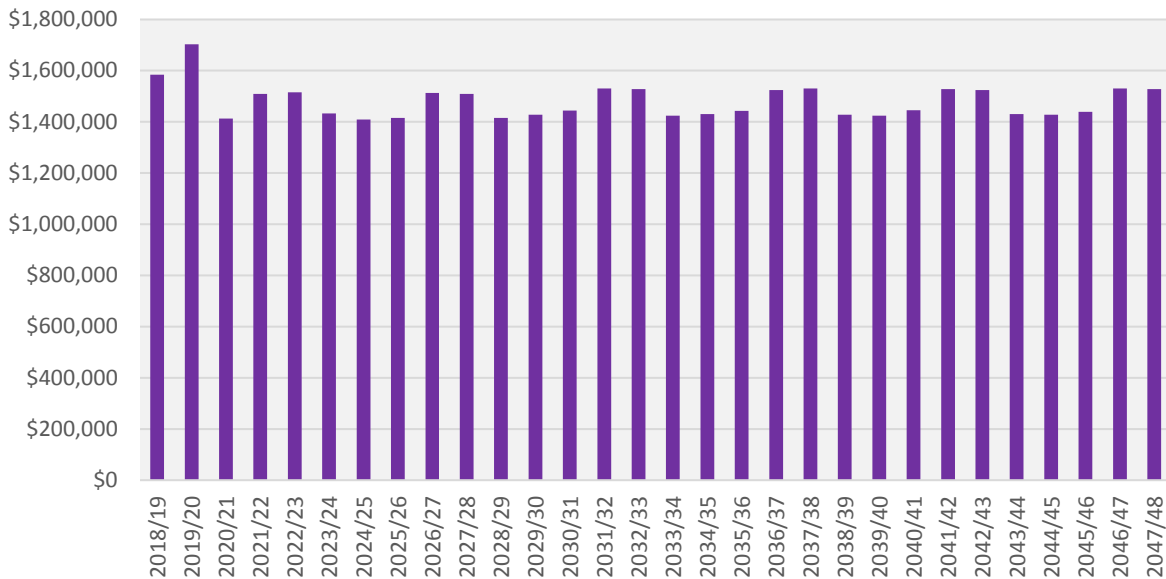


Figure 11: Direct Rivers 30 Year Operating and Maintenance Expenditure Excluding Inflation

8.3 Asset Renewal/Replacement

Renewal expenditure is major work that does not increase the asset’s design capacity but restores, rehabilitates, replaces or renews an existing asset to its original capacity. Work over and above restoring an asset to its original capacity is classed as new works expenditure.

8.3.1 Key Renewal Themes

Rivers has very little in renewals as the stop banks and erosion control tend to have unlimited life if maintenance is undertaken appropriately.

The only rivers assets that are renewed are a flood and tidal gates, walls and gabion baskets. These assets have not been added to the renewals programme but will be undertaken before the next AMP.

8.3.2 Deferred Renewals

Deferred renewals is the shortfall in renewals required to maintain the service potential of the assets. This can include:

- renewal work that is scheduled but not performed when it should have been, and which has been put off for a later date (this can often be due to cost and affordability reasons)
- an overall lack of investment in renewals that allows the asset to be consumed or run-down, causing increasing maintenance and replacement expenditure for future communities.

The extent of deferred renewals can be identified by comparing the accumulated investment in renewals with accumulated annual depreciation. This information then forms the basis of a renewals strategy. **Error! Reference source not found.** Figure 12 compares the cumulative investment in renewals and cumulative depreciation.

Most of Council’s rivers and flood control assets are not depreciated. Council only depreciates tide gates/outfalls, gabion baskets and railway iron structures. The expected useful life of these assets ranges from 30 to 60 years. Council has not planned to undertake renewal of any of these assets within the next 30 years. This is the cause of the divergence between renewal investment and depreciation.

Council is yet to complete a strategic review of this information for this activity and hence it has been included in the improvement plan.

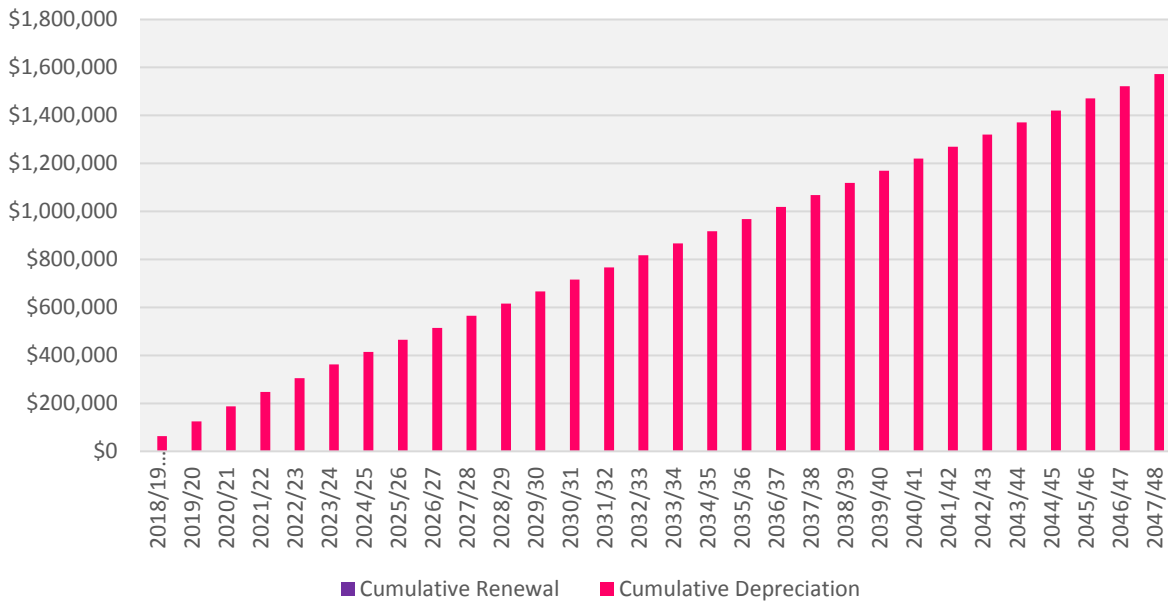


Figure 12: Cumulative Capital Expenditure and Depreciation Comparison Including Inflation

8.4 Asset Development

New capital expenditure is used to create new assets, expand or upgrade existing assets, or increase the capacity of existing assets beyond their original design capacity or service potential. This section summarises future new capital work requirements for this activity

8.4.1 Key Asset Development Themes

A number of locations in the District have a lower tolerance for risk following high rainfall events. These areas have previously been investigated and solutions have been rejected by the community due to cost. Some of these areas will be studied to determine if the correct solution is not to prevent flooding but to mitigate the consequences when flooding happens.

8.4.2 Projects to Support Increasing Levels of Service

The projects that will increase level of service are:

- Brightwater Flood Mitigation Works
- Riwaka Flood Mitigation Works
- Takaka Flood Mitigation Works

8.4.3 Projects to Support Growth

There are no projects that are proposed to support growth. See section 7.2.3 for further information.

8.4.4 Forecast New Capital Expenditure

The capital programme that has been forecast for this activity (as seen in Figure 13 where the primary driver is classed as new works (i.e. growth or levels of service). The expenditure is 100% driven by an increase in the level of service; there is no growth projects included within the 30 year forecast.

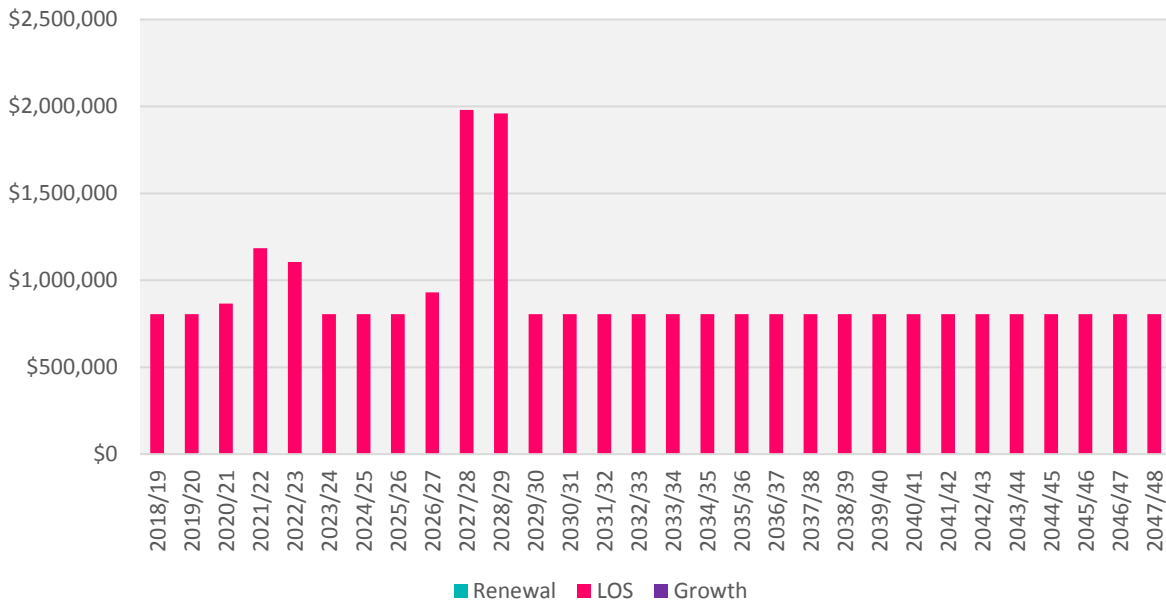


Figure 13: Rivers 30 year New Capital Expenditure Excluding Inflation

8.5 Asset Disposal

Council does not have a formal strategy on asset disposals. It will treat each asset individually on a case-by-case basis when the asset reaches a state that disposal needs to be considered.

Asset disposal is generally a by-product of renewal or upgrade decisions that involve the replacement of assets.

Assets may become redundant for any of the following reasons:

- under utilisation;
- obsolescence;
- provision of the asset exceeds the required level;
- uneconomic to upgrade or operate;
- policy change;
- the service is provided by other means (e.g. private sector involvement); and
- potential risk of ownership (financial, legal, social, vandalism).

Depending on the nature, location, condition and value of an asset it is either:

- made safe and left in place;
- removed or disposed of;
- removed and sold;
- ownership is transferred to other stakeholders by agreement.

In most situations, assets are replaced at the end of their useful life and are generally in poor physical condition. In some situations, an asset may require removal or replacement prior to the end of its useful life. In this circumstance, Council may hold the asset in stock for reuse elsewhere. If this is not appropriate, the asset could be sold off, transferred or disposed of.

When asset sales take place, Council aims to obtain the best available return from the sale and any net income will be credited to that activity. Council follows practices that comply with the relevant legislative requirements for local government when selling of assets.

Disposal of river assets is not a common occurrence. Probably the most significant item which may be considered for disposal is flood protection works eg, stopbanks. Council must consider liability issues which may flow from its ability to discontinue such works.

Following a request from a West Coast community to stop works in their areas, the West Coast Regional Council sought legal advice regarding the implications. The assessment was carried out against the Local Government Amendment Act 1996, Soil Conservation and Rivers Control Act 1941 and the Resource Management Act 1991. In short, the legal advice obtained stated the following.

- Under the financial management provisions of the LGA it is open to Council to prioritise its activities and determine which it can/cannot afford to maintain.
- There is no express statutory authority for discontinuing an existing river protection scheme under the Soil Conservation and Rivers Control Act 1941.
- Statutory provisions relating to the discontinuance of other activities include elaborate procedural requirements, and sometimes provisions as to future liability. There is some unresolved risk relating to the discontinuance of river schemes.
- In the absence of an express procedure, any decision to discontinue a river scheme must follow some process which specifically sought the informed views of affected ratepayers.
- While there is no guarantee that the decision will ultimately be immune from challenge (judicial review or private action) the risk of a successful review can be moderated by reasonableness of the process.
- A claim for damages is unlikely to succeed under s145 of the 1941 Act (failure). Section 148(1) of the 1941 Act also offers significant protection for a council from the failure of unmaintained works given applicable considerations (omission to maintain).

Based on the summary above, it is reasonably likely that should the ratepayers wish to dispose of a scheme and Council takes all reasonable steps to advise them of the consequences, then Council will have limited liability concerns. However, this matter is yet to be tested by judicial review or private action in New Zealand. In any case, no disposal is planned within the next 30 years.

9 Financials

Prudent fiscal management of the coastal activity requires wise investment in areas that ensure sustainability whilst providing services that matter to the community.

9.1 Funding Sources

This activity is funded through a mixtures of sources as shown in Figure 14. Rivers expenditure is predominately funded by targeted rates with the second largest funding source being the 'Other' category made up of the following sources:

- berm rental income;
- gravel royalty;
- non-lump sum rates;
- loans (where future capital works are required).

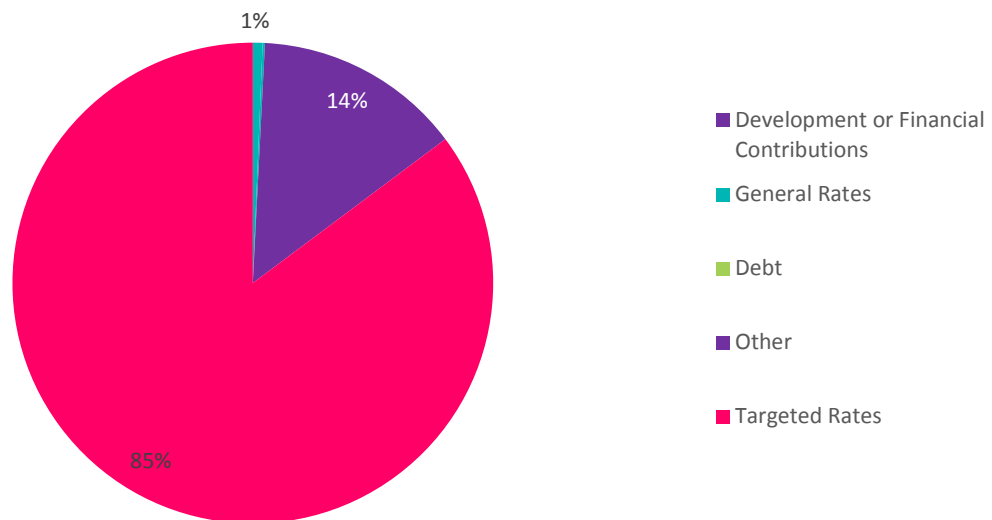


Figure 14: Sources of Rivers Funding

The rivers assets are funded in the main from a targeted rate depending on the area of river classification that property lies in. The rivers asset is therefore predominantly funded by any general rate appropriation. The rivers account also attracts some sundry income (dividends, berm rental etc).

Major capital projects may be loan funded. When loans are made, the loan is taken for a fixed period, usually 20-30 years.

9.2 Asset Valuation and Depreciation

The Local Government Act 1974 and subsequent amendments contain a general requirement for local authorities to comply with Generally Accepted Accounting Practice ("GAAP").

Council requires its infrastructure asset register and valuation to be updated in accordance with Financial Reporting Standards and the AMP improvement plan.

The valuations summarised below have been completed in accordance with the following standards and are suitable for inclusion in the financial statements for the year ending June 2017.

- NAMS Group Infrastructure Asset Valuation Guidelines – Edition 2.0
- New Zealand International Public Sector Accounting Standard 17; Property, Plant and Equipment (PBE IPSAS 17) and PBE IPSAS 21 (Impairment of Non Cash Generating Assets)

9.2.1 Latest Asset Valuation

The river assets were last re-valued in April 2017 and are reported under separate cover. Assets are valued every three years. Key assumptions in assessing the asset valuations are described in detail in the valuation report. Historic asset valuations reports are held with Council.

The majority of information for valuing the assets was obtained from Council's Confirm database. This is the first time the database has been used to revalue Council's assets. In the past, asset registers based on Excel spreadsheets have been used. The data confidence is detailed in Table 13 below.

Table 13: Data Confidence

Asset Description	Confidence	Comments
Rivers	B - Good	Council operates an operations and maintenance contract for the management of the river assets. Rates for rock protection were obtained from this contract. The unit used for rock protection in the contract is tonnes, whereas the asset data is in m3. The conversion rate of 2.1 from the 2015 valuation is used to convert from tonnes to m3, ie. it 2.1 tonnes of rock is 23 required for every cubic metre of rock protection. Other unit rates were indexed from the 2015 valuation

The Base Useful Lives for each asset type as published in the NZ Infrastructure Asset Valuation and Depreciation Guidelines Manual were used as a guideline for the lives of the assets in the valuation. Generally, lives are taken as from the mid-range of the typical lives indicated in the Valuation Manual where no better information is available. Lives used in the valuation are presented in Table 14 below.

Table 14: Asset Lives

Feature Type	Useful Life (years)	Minimum Remaining Useful Life (years)
Drainage/Tidal Outfall	60	5
Gabion Baskets	30	5
Native plantings (no.)	No Depreciation	
Railway Irons	50	5
Rock Protection	No Depreciation	
Stopbank Q20	No Depreciation	
Stopbank Q50	No Depreciation	
Weighted Felled Trees	No Depreciation	
Willow plantings M OLD	No Depreciation	
Willow plantings NEW (no.)	No Depreciation	

9.2.2 Depreciation

Depreciation of assets must be charged over their useful life. Council calculates depreciation on a straight line basis on most infrastructural assets at rates which will write off the cost (or valuation) of the assets to their estimated residual values, over their useful lives.

The optimised replacement value, optimised depreciated replacement value, total depreciation to date, and the annual depreciation of the waste management and minimisation assets are summarised in Table 15 below. However, the following river assets are not depreciated:

- stopbanks;
- willow planting / layering;
- wand / poles / posts;
- weighted felled trees;
- rock protection.

Table 15: River Protection Asset Valuation Summary

	Optimised Replacement Value (\$)	Optimised Depreciated Replacement Value (\$)	Total Depreciation to Date (\$)
Rivers 2015	62,997,033	61,964,936	37,082
Rivers 2017	73,198,526	72,089,533	37,795
% Increase	16.19%	16.34%	1.92%

Overall the river protection assets have increased in Optimised Replacement Value by 16.19% since the 2015 valuations. The increase in the replacement values is due to the following reasons:

- The cost of rock has increased by 20% in the latest contract
- Additional willow have been planted in the last two years

It must be noted that the Gabion Baskets have exceeded their useful life. During this valuation it was decided that the life would not be extended for those assets which had exceeded their useful life, therefore the gabion baskets are considered to be fully depreciated.

9.3 Financial Summary

9.3.1 Funding Impact Statement

Council's Funding Impact Statement (FIS) for this activity is included in Table 16 below. It summarises in one place how this activity will be funded and how those funds will be applied over the next 10 years.

Table 16: Funding Impact Statement

	2017/18 AP \$000	2018/19 Budget \$000	2019/20 Budget \$000	2020/21 Budget \$000	2021/22 Budget \$000	2022/23 Budget \$000	2023/24 Budget \$000	2024/25 Budget \$000	2025/26 Budget \$000	2026/27 Budget \$000	2027/28 Budget \$000
SOURCES OF OPERATING FUNDING											
General rates, uniform annual general charges, rates penalties	31	29	27	0	0	0	0	0	0	0	0
Targeted rates	2,281	2,611	2,803	2,561	2,921	3,027	2,836	2,878	2,968	3,334	4,746
Subsidies and grants for operating purposes	0	0	0	0	0	0	0	0	0	0	0
Fees and charges	20	21	21	22	22	23	24	24	25	26	26
Internal charges and overheads recovered	0	0	0	0	0	0	0	0	0	0	0
Local authorities fuel tax, fines, infringement fees, and other receipts	415	521	530	542	555	453	462	475	486	501	509
TOTAL OPERATING FUNDING	2,747	3,182	3,381	3,125	3,498	3,503	3,322	3,377	3,479	3,861	5,281
APPLICATIONS OF OPERATING FUNDING											
Payments to staff and suppliers	1,331	1,775	1,938	1,674	1,815	1,864	1,816	1,833	1,886	2,054	2,103
Finance costs	11	6	2	0	0	0	0	0	0	0	0
Internal charges and overheads applied	368	466	488	500	508	518	544	556	577	609	621
Other operating funding applications	0	0	0	0	0	0	0	0	0	0	0
TOTAL APPLICATIONS OF OPERATING FUNDING	1,710	2,247	2,428	2,174	2,323	2,382	2,360	2,389	2,463	2,663	2,724
SURPLUS (DEFICIT) OF OPERATING FUNDING	1,037	935	953	951	1,175	1,121	962	988	1,016	1,198	2,557
SOURCES OF CAPITAL FUNDING											
Subsidies and grants for capital expenditure	0	0	0	0	0	0	0	0	0	0	0
Development and financial contributions	0	0	0	0	0	0	0	0	0	0	0
Increase (decrease) in debt	(93)	(93)	(89)	0	0	0	0	0	0	0	0
Gross proceeds from sale of assets	0	0	0	0	0	0	0	0	0	0	0
Lump sum contributions	0	0	0	0	0	0	0	0	0	0	0
Other dedicated capital funding	0	0	0	0	0	0	0	0	0	0	0

TOTAL SOURCES OF CAPITAL FUNDING	(93)	(93)	(89)	0	0	0	0	0	0	0	0
APPLICATIONS OF CAPITAL FUNDING											
Capital expenditure											
- to meet additional demand	0	0	0	0	0	0	0	0	0	0	0
- to improve the level of service	920	821	839	922	1,290	1,231	918	940	964	1,142	2,498
- to replace existing assets	0	0	0	0	0	0	0	0	0	0	0
Increase (decrease) in reserves	24	21	25	29	(115)	(110)	44	48	52	56	59
Increase (decrease) in investments	0	0	0	0	0	0	0	0	0	0	0
TOTAL APPLICATIONS OF CAPITAL FUNDING	944	842	864	951	1,175	1,121	962	988	1,016	1,198	2,557
SURPLUS (DEFICIT) OF CAPITAL FUNDING	(1,037)	(935)	(953)	(951)	(1,175)	(1,121)	(962)	(988)	(1,016)	(1,198)	(2,557)
FUNDING BALANCE	0	0	0	0	0	0	0	0	0	0	0

9.3.2 Project Drivers

All expenditure must be allocated against at least one of the following project drivers.

- Operation and Maintenance: operational activities that do not involve the renewal or upgrade of assets, or work that is necessary in order to provide on-going services at the agreed levels.
- Renewals: significant work that restores or replaces an existing asset towards its original size, condition or capacity.
- Increase Level of Service: works to create a new asset, or to upgrade or improve an existing asset, beyond its original capacity or performance.
- Growth: works to create a new asset, or to upgrade or improve an existing asset, beyond its original capacity or performance to provide for the anticipated demands of future growth.

This is necessary for two reasons as follows.

- Schedule 13(1) (a) and section 106 of the Local Government Act require Council to identify the total costs it expects to have to meet relating to increased demand resulting from growth when intending to introduce a Development Contributions Policy.
- Schedule 10(2)(1)(d)(i)-(iv) of the Local Government Act requires Council to identify the estimated costs of the provision of additional capacity and the division of these costs between changes to demand for, or consumption of, the service, and changes to service provision levels and standards.

All new works have been assessed against these project drivers. Some projects may be driven by a combination of these factors and an assessment has been made of the proportion attributed to each driver.

9.3.3 Total Expenditure

The estimated expenditure needs for the rivers activity have been prepared for the next 30 years.

Figure 15 and Figure 16 show the total expenditure for the rivers activity for the first 10 and 30 years respectively.

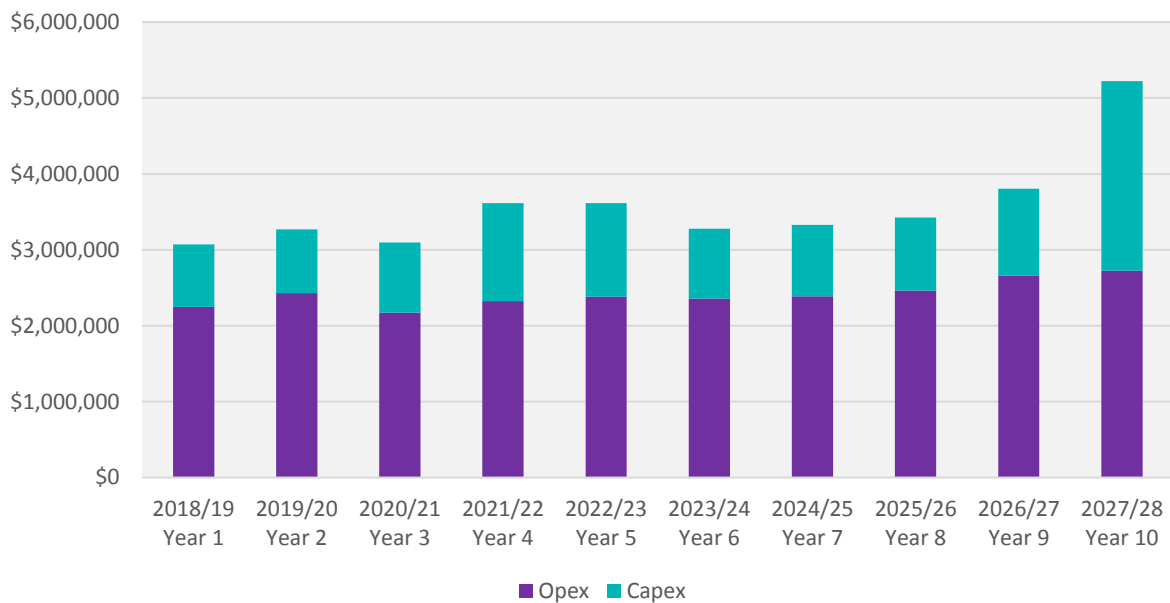


Figure 15: Total Annual Expenditure Years 1 to 10 Including Inflation

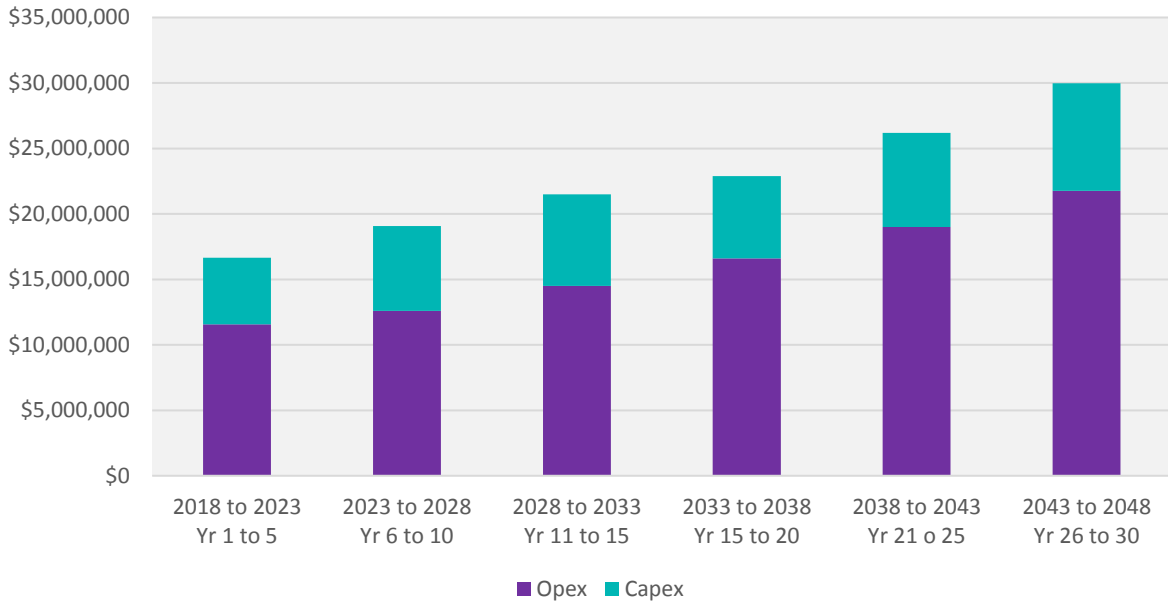


Figure 16: Five Yearly Total Expenditure Years 1 to 30 Including Inflation

9.3.4 Total Income

Figure 17 and Figure 18 show the total income for the rivers activity for the first 10 and 30 years respectively.

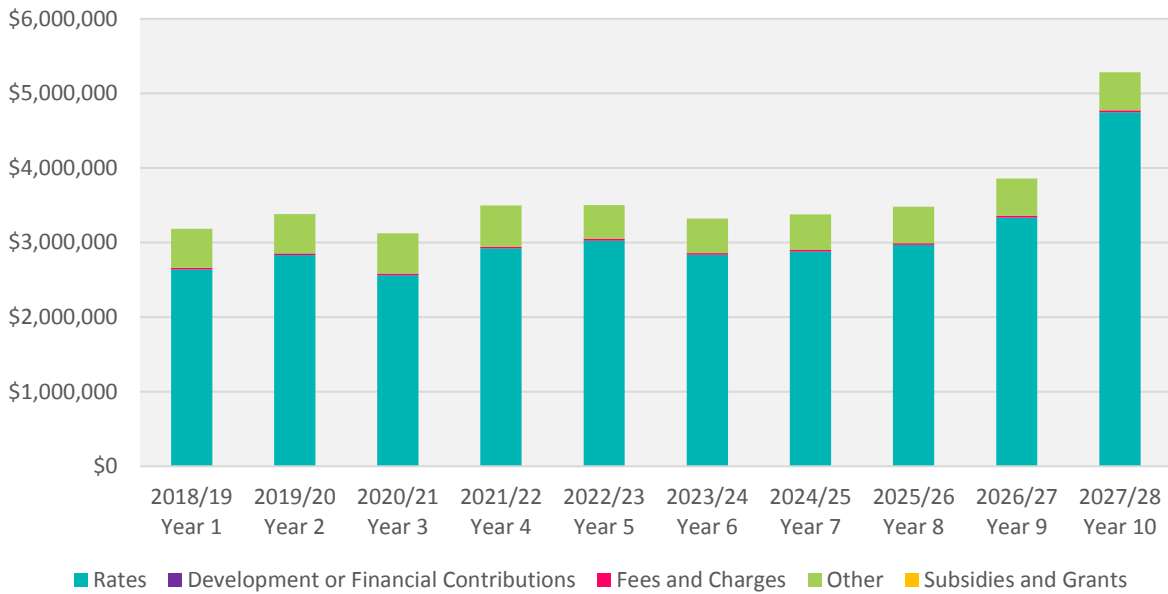


Figure 17: Total Annual Income Years 1 to 10

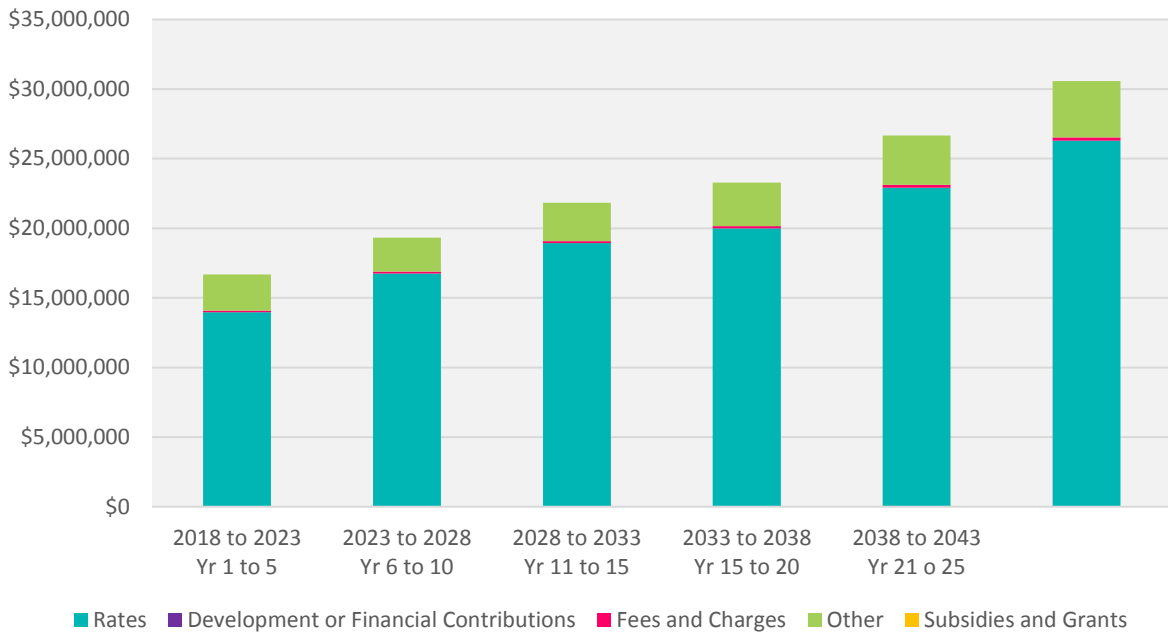


Figure 18: Five Yearly Total Income Years 1 to 30

9.3.5 Operational Costs

Figure 19 and Figure 20 show the total operating expenditure for the rivers activity for the first 10 and 30 years respectively.

Operational costs for the rivers and flood control activity are forecast to increase by around 3% per year for the first 10 years, and 4% per year over 30 years. Generally, operating expenditure is fairly static with the exception of gravel surveys. Long term increases are primarily due to inflation.

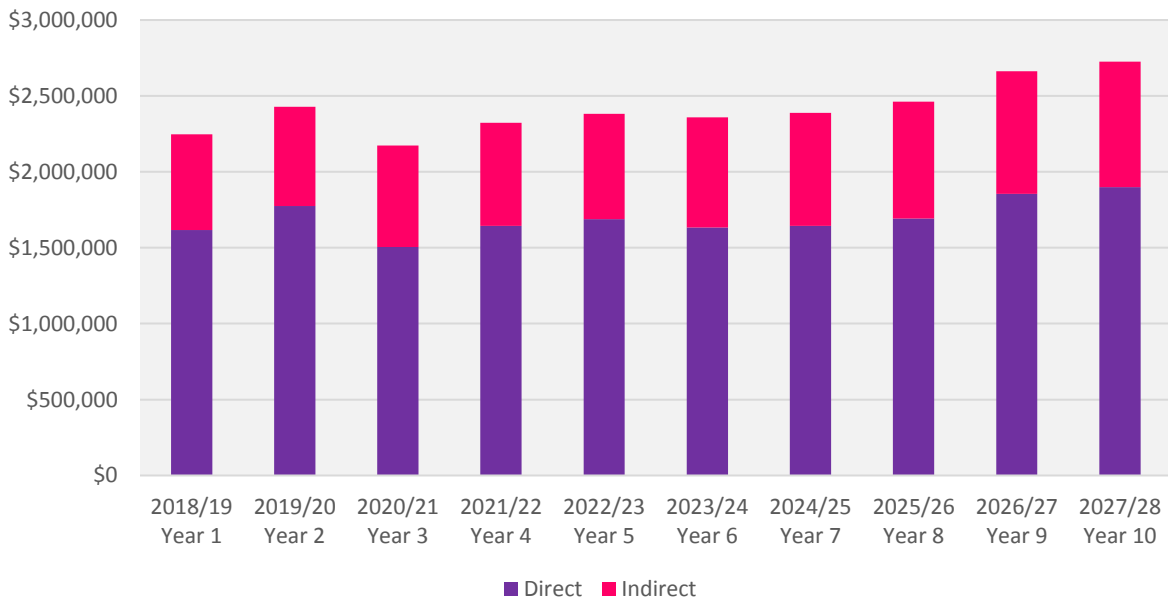


Figure 19: Annual Operating Costs Years 1 to 10 Including Inflation

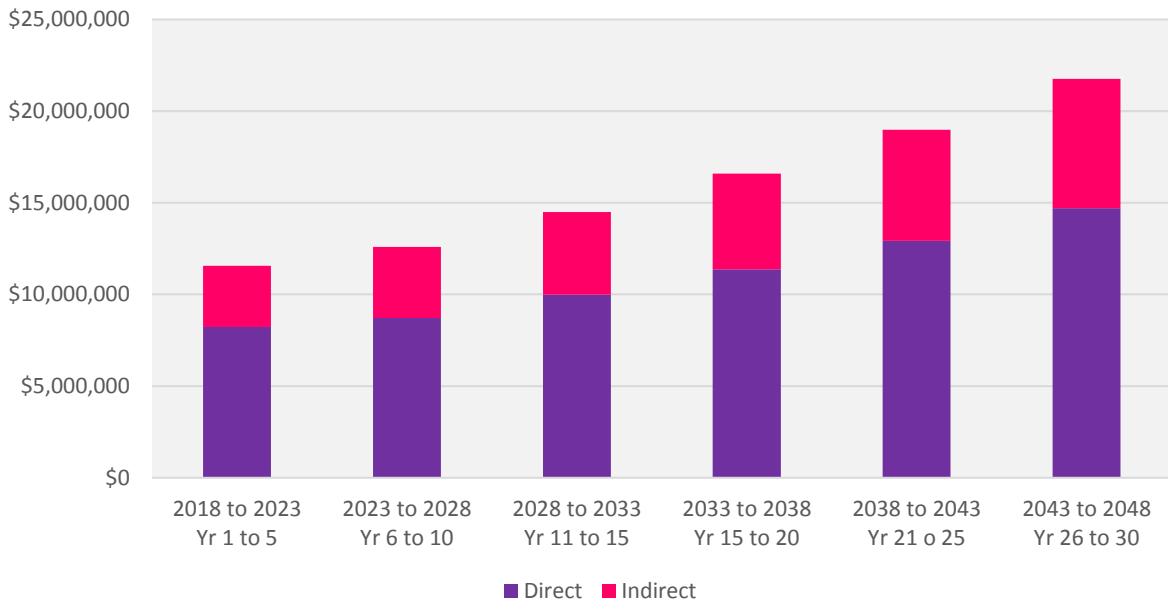


Figure 20: Five Yearly Operating Costs Years 1 to 30 Including Inflation

9.3.6 Capital Expenditure

Figure 21 and Figure 22 show the total capital expenditure for the rivers activity for the first 10 and 30 years respectively.

Council has planned to spend around \$11 million on capital improvements over the next 10 years, and \$40 million over the next 30 years. All of which is all attributed to level of service improvements. In Year 10, there is a notable increase in expenditure associated with the construction of the new Takaka stopbanks.

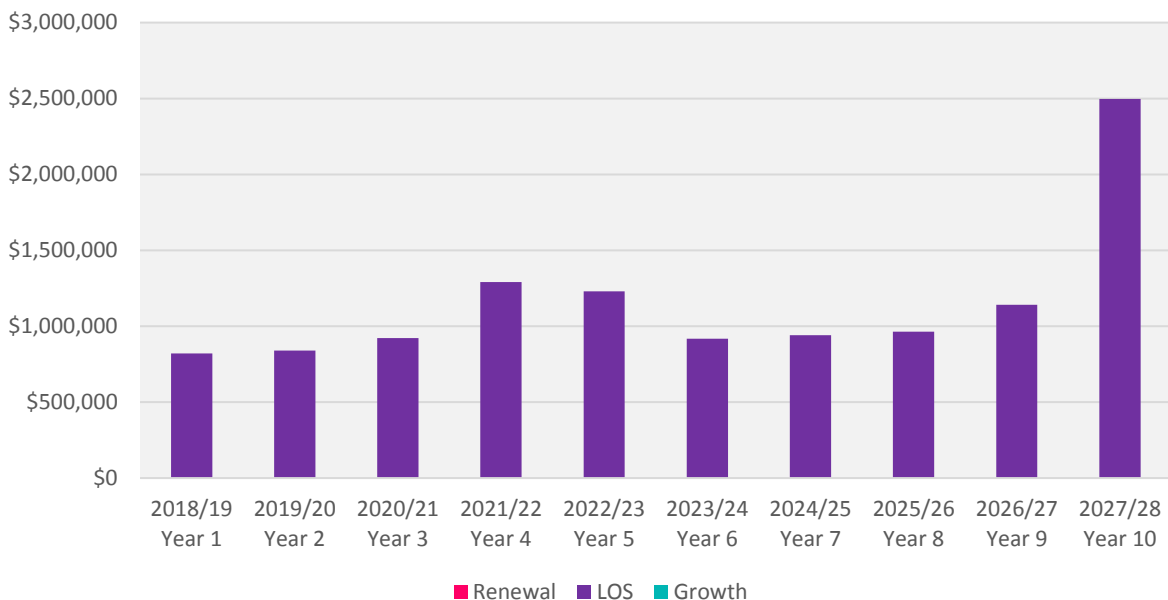


Figure 21: Annual Capital Expenditure Years 1 to 10 Including Inflation

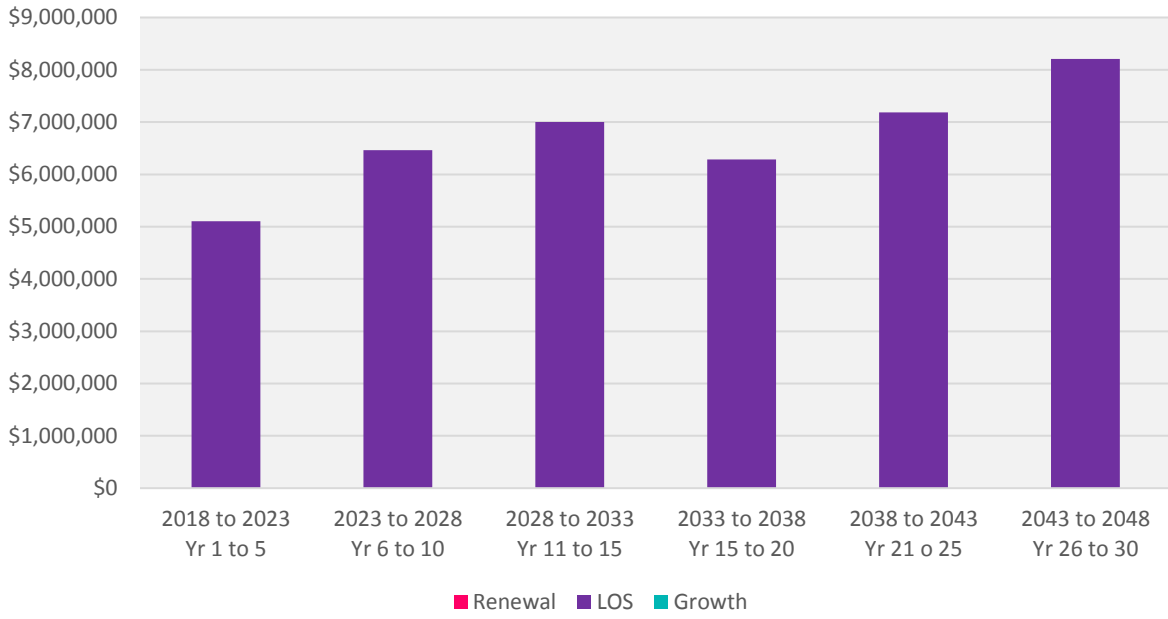


Figure 22: Five Yearly Capital Expenditure Years 1 to 30 Including Inflation

10 Sustainability

Sustainability means that we effectively balance the needs of present and future communities. From an asset management perspective, sustainability is critical, as many assets have a long lifespan and must be ‘future-proofed’. Council has a responsibility to manage this activity in way that supports the environmental, social, cultural and economic well-being of current and future generations. This section focuses on social, cultural and environmental sustainability.

The Local Government Act 2002 requires local authorities to take a sustainable development approach while conducting their business, taking into account the current and future needs of communities for good-quality local infrastructure, and the efficient and effective delivery of services.

Sustainable development is a fundamental philosophy that is embraced in Council’s Vision, Mission and Objectives, and is reflected in Council’s community outcomes. The levels of service and the performance measures that flow from these inherently incorporate the achievement of sustainable outcomes.

We measure sustainability against the triple bottom line framework that aims to create a balance between the three dimensions of performance, often referred to as people, planet and profit (3P’s).

People – The effects of the activity on the social and cultural wellbeing of our community

Council is guided by the Community Outcomes to assist in determining how our decisions affect the social wellbeing of our community. We undertake the activity to meet the level of service that is required to enhance community well-being by reducing the risk of flooding as well as integrating community values such as accessibility, amenity and biodiversity. We engage with mana whenua iwi and other community groups with regards to enhancing our natural waterways and provide educational programmes.

Planet – The effects of the activity on the environment

Our receiving environments are affected by river discharges from our rural and urban areas. Forestry and changes in land use have led to increased runoff that contribute to flooding. Water courses are not static and are constantly moving and changing. The temptation is to constrain the river to provide security to land owners. Wherever possible, Council will use natural processes and bank stabilisation techniques to mitigate the effects of high flow periods rather than constrain the flow. Council encourage community involvement in riparian planting to improve the waterway environment and control pest species.

Profit – The financial and overall long-term economic viability of the activity

Council operates, maintains and improves the rivers infrastructure assets on behalf of its ratepayers. Council uses its Financial Strategy to guide the development of an affordable work programme. Council’s finances are managed within the set debt limits and rates income rises to ensure economic viability for current and future generations.

10.1 Potential Negative Effects

Potential significant effects and the proposed mitigation measures are listed below in Table 17.

Table 17: Negative Effects

Effect	Description	Mitigation Measures
Gravel extraction	Over extraction of gravel in some areas has the potential to destabilise banks and change groundwater levels.	Gravel availability within the river berms is assessed on various factors, including the annual inspection process and Council’s environment and planning sustainable quota. Generally, the sustainable extraction rate of gravel from all rivers has been set at zero by Council’s Rivers Scientist. Gravel available for relocation or extraction is assessed using river cross-section data, river management purposes and resource consent criteria (NN010109). The lowering of groundwater levels has been mitigated using weir structures eg. Wai-iti River.

Effect	Description	Mitigation Measures
Burning of crack willow	<p>The burning of crack willow following removal can create an air pollution issue if suitable weather conditions are not present.</p> <p>A new pathogen may devastate willow plantings.</p>	<p>Council's contractor monitors weather conditions and undertakes burning of the crack willow when suitable weather conditions are present.</p> <p>This effect is mitigated by the use of a range of species and ongoing research by the Willow and Poplar Institute.</p>
Waste dumping	Inappropriate use of river berms can cause nuisance to the public, for example dumping of refuse and car bodies.	<p>Given the vast uncontrolled areas of river berm (predominately privately owned), there is unfortunately plenty of opportunity for waste dumping activities to occur. Council has undertaken to trial closing a section of the Waimea River berm (Appleby Bridge to Lower Queen Street, right bank) to determine what benefit this has on increasing the standard of recreational use in that area. This concept has been included in a proposal to develop a regional park from the estuary on the Waimea River up to the State Highway 6 Bridge at Brightwater. Refer to the Waimea River Park Management Plan, Items 9.1 and 9.2 for further information.</p>
Cost	The cost of providing the services.	Council uses competitive tendering processes to achieve best value for money for works it undertakes.
Stopbank condition	Poor condition of stopbank sections.	Improve education to owners and Council to gain better control of their use.
Cultural impacts	Potential to affect historic and Waahi tapu sites.	Council undertakes consultation with affected parties prior to undertaking works. Council also maintains a record of known heritage sites.

10.2 Potential Positive Effects

Potential positive effects are listed below in Table 18.

Table 18: Positive Effects

Effect	Description
Economic development	Provision and maintenance of flood control schemes allow for the development of land for high value uses (e.g. residential or horticultural purposes) thereby allowing economic growth and prosperity in the Tasman District.
Safety and personal security	Flood protection and river control works contribute to community well-being by improving protection of communities, life, property and livelihoods.
Environmental sustainability	<p>Council aims to achieve environmental sustainability whilst managing the rivers activity. This is generally managed by the resource consent process, the TRMP, and compliance with the Soil Conservation and Rivers Control Act.</p> <p>Examples of this approach include the native riparian planting programme, the use of less invasive willow species and preventative erosion plantings plus the consideration of less eco-toxic herbicide sprays.</p>

Effect	Description
Economic efficiency	Council's management of the rivers activity using best practice and competitive tendering to provide the best value for money for the ratepayers and provides jobs for contractors.
Gravel extraction	There is no additional lowering of ground water levels through decreased gravel extraction where river beds are already degraded.

10.3 Resource Management

The statutory framework defining what activities require resource consent is the Resource Management Act (RMA) 1991. The RMA is administered locally by Tasman District Council, a Unitary Authority, through the Tasman Resource Management Plan (TRMP).

10.3.1 Resource Consents

Resource consents for rivers activities held by Engineering are listed in Table 19 below. Note, the list may not be exhaustive, it is accurate at the time of compilation (January 2018), and is subject to change. Short term consents required from time to time are not included.

Table 19: Resource Consents relating to the Rivers Activity

Location	Consent No.	Consent Type	Expiry Date
District Wide	RM10085 1- RM10085 7	River Works	2036
District Wide	RM10085 1	Works in the Water	2036
District Wide	RM10085 2	Land Use Consent	2036
District Wide	RM10085 3	Water Permit	2036
District Wide	RM10085 4	Discharge to Water	2036
District Wide	RM10085 5	Coastal Permit	2036
District Wide	RM10085 6	Coastal Discharge	2036
District Wide	RM10085 7	Coastal Disturbance	2036
District Wide	RM14086 9	Discharge – river spraying (aerial)	2030
District Wide	RM14087 0	Discharge – river spraying (ground based)	2030
District wide	NN010109	Land Use – River protection & maintenance (Gravel extraction portion)	Expires upon the commencement of new resource consent (RM100362), currently being processed.

Council's annual works programme comprises a large number of small individual jobs at many different locations. Typically, 300-400 minor jobs are carried out during a non-flood event year. Immediately after a damaging flood a revised programme must be prepared involving new works at previously unidentified locations. Although there are many separately priced jobs in the Annual Operations and Maintenance Programme (AOMP), generally only a few different types of activity are involved. The "district wide" resource consents listed in Table 19 eliminate the need to apply for separate consents at each work site.

10.3.2 Resource Consent Reporting and Monitoring

Council aims to achieve compliance with all consents and/or operating conditions. A consent database (Bravegen) is maintained to allow for the accurate programming of all actions required by the consents, including renewal prior to consent expiry. The database is actively updated to ensure all consent conditions are complied with and that all relevant report requirements are adhered to.

10.3.3 Water Conservation Orders

10.3.3.1 Buller River

A Water Conservation Order exists for the Buller River. Gazetted in 2001, this order details the catchment areas covered and the restrictions placed on activities in that river. In particular this Conservation Order requires fish passage to be maintained, and generally restricts the granting of resource consents for activities that would exceed water quality standards such as turbidity.

The Order does not restrict or prevent the granting of consents for the purpose of the construction or maintenance of soil conservation and river protection works undertaken in accordance with the Soil Conservation and Rivers Control Act 1941. However, any discharge of sediment within the river should comply with the aim of maintaining for the outstanding natural features of the Buller River.

10.3.3.2 Motueka River

A Water Conservation Order exists for the Motueka River. Gazetted in 2004, this order details the catchment areas covered and the restrictions placed on activities in that river. The order extends down to "Woodman's Bend" in Lower Motueka. In particular this Conservation Order requires fish passage to be maintained, and generally restricts the granting of resource consents for activities that would exceed water quality standards such as turbidity.

The Order does not restrict or prevent the granting of consents for the purpose of the construction or maintenance of soil conservation and river protection works undertaken in accordance with the Soil Conservation and Rivers Control Act 1941. However, any discharge of sediment within the river should comply with the aim of maintaining adequate water quality for the outstanding brown trout fishery in the Motueka River.

11 Risk Management and Assumptions

This AMP and the financial forecasts within it have been developed from information that has varying degrees of completeness and accuracy. In order to make decisions in the face of these uncertainties, assumptions have to be made. This section documents the uncertainties and assumptions that Council considers could have a significant effect on the financial forecasts, and discusses the potential risks that this creates.

11.1 Our Approach to Risk Management

A risk is any event that has the potential to impact on the achievement of Council's objectives. The potential impact of a risk is measured by a combination of the likelihood it could occur, and the magnitude of its consequences on objectives.

Council adopted a Risk Management Policy in November 2017 and is in the process of improving our risk management processes. The main purpose of these improvements is to support better planning and decision-making, and to increase the chance of achieving Council's objectives.

Council's Risk Management Framework is still being developed but key components will be:

- Risk Categories:
 - Service delivery
 - Financial
 - Governance and Leadership
 - Strategic
 - Reputation
 - Legal
 - Regulatory
 - Health & Safety
 - Security
 - Business Continuity
- Table of Consequences which help set the Risk Appetite
- Enterprise Risk Register
 - identifying risks
 - measuring likelihood, consequence and severity
 - documenting controls, actions and escalation
- Monitoring and Reporting, including to Senior Management and Audit and Risk Committee as appropriate

Council has adopted an approach to risk management following the Australian/New Zealand Standard ISO 31000:2009 Risk Management – Principles and guidelines.

Refer to Council's Risk Management Policy for further information.

11.2 Activity Risks and Mitigation

11.2.1 Rivers Risks

In order to identify the key activity risks the asset management team has applied a secondary filter to the outcomes of the risk management framework. This is necessary to overcome the limitations of the framework. To apply this secondary filter the asset management team has used their rivers knowledge and engineering judgement to identify the key activity risks. The key risks relevant to the rivers activity are summarised in Table 20.

Table 20: Key Risks

Risk Event	Mitigation Measures
Access to stopbanks and rivers through private property	<p>Current</p> <p>Stakeholder management.</p> <p>Works entry agreements.</p> <p>Use of Council's property team to undertake land purchase negotiations.</p> <p>Public Works Act.</p>
Ineffective stakeholder engagement e.g. iwi, Historic Places Trust, community groups	<p>Current</p> <p>Council holds regular iwi meetings.</p> <p>Council's GIS software includes layers identifying cultural heritage sites and precincts. Council staff apply for Historic Places Trust authorities when these known sites are at risk of damage or destruction.</p> <p>Project management processes and Council's consultation guidelines are followed.</p> <p>Annual river care meetings are held in each catchment with stakeholders.</p>
Failure to adequately prepare infrastructure for climate change and resulting in unacceptable flood hazard	<p>Current</p> <p>Reactive inspections and maintenance/repairs following extreme weather events.</p> <p>Proposed</p> <p>Development of Council's 'holistic' river care management policy.</p> <p>Development of Flood Response Plans</p>
Customer perception of Council not doing enough to protect private property and public assets	<p>Current</p> <p>Introduction of the interim coastal policy statement.</p> <p>Regular contact with communities.</p> <p>Management of resource consents and CSRs.</p>

11.2.2 Flood Response Plans

Whilst many communities have some form of protection from river floods, the protection works do not cater for all flood events and there is always a risk of overtopping or a stop bank breaching. Flood events in Edgecumbe, in the Bay of Plenty in April 2017, shows that despite flood protection works, the town was flooded through a breach of the stop bank and destroyed 15 homes and badly damaged 250 others. Civil Defence gave the order to evacuate the town 20 minutes before that floodwall failed. A subsequent review identified that the evacuation plans were inadequate. In Tasman, Council has Motueka and Takaka that are exposed to a significant risk in the event of a stop bank failure or overtopping. Council are preparing flood response plans to ensure that flood events and Councils response to a number of stages within the event are considered and actioned.

The risk of failure of these schemes have been identified as high with bodies of work identified to be undertaken to quantify that risk and determine options. In the meantime, flood response plans will be developed to ensure there is a plan in place during high river flow events.

11.2.3 Natural Hazards and Resilience

The size and diverse nature of the Tasman landscape makes the region susceptible to a wide range of natural hazards. Tasman lies within a seismically active zone, has five major river catchments and a large coastal environment. As a result, Tasman residents have experienced the damaging effects of landslides, flooding and coastal inundation.

Some hazards have a slower onset period, for example sea level rise associated with the effects of climate change, and other hazards such as earthquakes can have little to no warning. Regardless of these timeframes, Council needs to plan for these hazards and determine whether adaption, mitigation, or retreat is appropriate.

Council's Infrastructure Strategy provides details of the relevant natural hazards in context to Council infrastructure and outlines how we intend to manage risk and improve resilience. In addition to this, the Regional Civil Defence Emergency Management Group Plan provides a risk profile that outlines and ranks these natural (and other) hazards. The risk assessment determines the likelihood and consequence of the hazard occurring ranges between low to very high likelihood and insignificant to catastrophic consequences. For example on the extreme end of the scale, an Alpine Fault earthquake is considered possible and would result in catastrophic consequences for both people and infrastructure.

Council needs to ensure it has robust planning in place and provides infrastructure that is resilient. Council is taking a long term strategic approach by undertaking risk, resilience and recovery planning to provide better information on infrastructure resilience requirements. This planning will cover Transportation and Three Waters activities and includes a total budget of \$160,000 over the next two years (2018-20). Council will also continue to focus on planning and managing its critical assets and lifelines networks to ensure that the appropriate level of effort is being made to better manage, maintain and renew them.

As well as ensuring its assets are resilient, Council has a range of financial provisions to assist with response to and recovery from major damaging events. These include:

- Annual emergency funding;
- An established Emergency Fund that Council aims to maintain to a value of \$12.8 million;
- Ability to reprioritise Council's capital programme;
- Insurance cover of 40% of the costs of a catastrophic disaster event, up to \$125m;
- Central Government support of up to 60% through the Local Authority Protection Programme;
- NZ Transport Agency subsidy of at least 51% for subsidies transportation asset reinstatement.

11.3 Assumptions and Uncertainties

Table 21 documents the uncertainties and assumptions that Council consider could have a significant effect on the financial forecasts, and discusses the potential risks that this creates.

Table 21: Generic Assumptions and Uncertainties

Type	Uncertainties	Assumption	Discussion
Financial	Unless stated it can be unclear whether financial figures include inflation or not, as well as whether GST has been included or not.	That all expenditure has been stated in 1 July 2017 dollar values and no allowance has been made for inflation and all financial projections exclude GST unless specifically stated.	The LTP will incorporate inflation factors. This could have a significant impact on the affordability of each activity if inflation is higher than allowed for. Council is using the best information practically available from Business and Economic Research Limited (BERL) to reduce this risk.

Type	Uncertainties	Assumption	Discussion
Asset Data Knowledge	Council has inspection and data collection regimes in place for assets. These regimes do not allow for entire network coverage at all times. Council's aim is to strike the right balance between adequate knowledge and what is practical.	That Council has adequate knowledge of the assets and their condition so that planned renewal works will allow Council to meet the proposed levels of service.	There are several areas where Council needs to improve its knowledge and assessments, but there is a low risk that the improved knowledge will cause a significant change to the level of expenditure required.
Growth Forecasts	Growth forecasts are inherently uncertain and involve many assumptions. Council uses Stats NZ projections as the basis for its growth planning, but these will vary depending on actual birth and death rates as well as net migration.	That the district will grow or decline as forecast in its Growth Model.	Growth forecasts are used to determine infrastructure capacity and when that capacity will be required. If actual growth varies significantly from what was projected, it could have a moderate impact on Council's plans. If higher, new or additional infrastructure may be required quicker than anticipated. If lower, Council may be able to defer the delivery of new or additional infrastructure.
Project Timing	Multiple factors affect the actual timing of projects e.g.: <ul style="list-style-type: none"> • Consents • Access to land • Population growth • Timing of private developments 	That projects will be undertaken when planned.	The risk of the timing of projects changing is high due to factors like resource consents, third party funding, and land acquisition and access. Council tries to mitigate these issues by undertaking the investigation, consultation and design phases sufficiently in advance of when construction is planned. If delays occur, it could have an impact on the levels of service and Council's financing arrangements.
Project Funding	Council cannot be certain that it will receive the full amount of anticipated subsidy or contribution. It depends on the funder's decision making criteria and their own ability to raise funds.	That projects will receive subsidy or third party contributions at the anticipated levels.	The risk of not securing funding varies and depends on the third party involved. If the anticipated funding is not received it is likely that the project will be deferred which may impact levels of service.

Type	Uncertainties	Assumption	Discussion
Accuracy of Cost Estimates	Project scope is often uncertain until investigation and design work has been completed, even then the scope can change due to unforeseen circumstances. Even if the scope has certainty there can be changes in the actual cost of work due to market competition or resource availability.	That project cost estimates are sufficiently accurate enough to determine the required funding level.	The risk of large underestimation is low; however, the importance is moderate as Council may not be able to afford the true cost of the project. Council tries to reduce this risk by undertaking reviews of all estimates and including an allowance for scope risk based on the complexity of the project.
Land Access and Acquisition	Land access and acquisition is inherently uncertain. Until negotiations commence, it is difficult to predict how an owner will respond to the request for access or transfer.	That Council will be able to secure land and/or access to enable completion of projects.	The risk of delays to projects or changes in scope is high due to the possibility of delays in obtaining access. Where possible, Council undertakes land negotiations well in advance of construction to minimise delays and scope change. If delays do occur, they may affect the level of service that Council provides.
Legislation Changes	Often Central Government changes legislation in response to events where the need for change is identified. It is difficult to predict what events may occur and the associated response. Election of a new Government also introduces uncertainty as to what policies they will implement.	That there will be no major changes in legislation or policy.	The risk of major change is high due to the changing nature of the Government and its policies. If major changes occur, it is likely to have an impact on the required expenditure. Council has not planned expenditure to specifically mitigate this risk.
Emergency Reserves	It is impossible to accurately predict when and where a natural hazard event will occur. Using historic trends to predict the future provides an indication but is not comprehensive.	That the level of funding reserves combined with insurance cover will be adequate to cover reinstatement following emergency events.	Funding levels are based on historic requirements. The risk of requiring additional funding is moderate and may have a moderate effect on planned works due to reprioritization of funds.

Type	Uncertainties	Assumption	Discussion
Network Capacity	Council uses a combination of as built data, network modelling and performance information to assess network capacity. The accuracy of the capacity assessment is based on the accuracy of asset and performance data.	That Council's knowledge of network capacity is sufficient enough to accurately programme works.	If the network capacity is higher than assumed, Council may be able to defer works. The risk of this occurring is low; however, it should have a positive impact on the community because the level of service can be provided for longer before requiring additional capital expenditure. If the network capacity is lower than assumed, Council may be required to advance capital works projects to provide the additional capacity sooner than anticipated. The risk of this occurring is low; however, it could have a significant impact on expenditure.
Climate Change	Continued emissions of greenhouse gases will cause further warming and changes in all parts of the climate system. The International Panel on Climate Change (IPCC) has developed four scenarios named RCPs (Representative Concentration Pathways). They represent different climate change mitigation scenarios with varying levels of CO2 emission (low – medium – high). The likelihood of any of the scenarios occurring as predicted is uncertain and depends on many different factors.	<p>Council uses the latest climate predictions that have been prepared by NIWA for New Zealand and more specifically for the Tasman District.</p> <p>The anticipated effects from climate change in Tasman District include:</p> <ul style="list-style-type: none"> • An increase in seasonal mean temperature and high temperature extremes • An increase in rainfall in winter for the entire district and varying increases of rainfall in other seasons in different areas. • Rising sea levels, increased wave height and storm surges. • Floods, landslides, droughts and storm surges are likely to become more frequent and intense 	<p>It is likely that risk of low lying land being inundated from the sea, and damage to Council property and infrastructure from severe weather events, will increase.</p> <p>Council will need to monitor the level of sea level rise and other impacts of climate change over time and review its budgets, programme or work and levels of service accordingly.</p>

Table 22: Rivers Specific Assumptions and Uncertainties

Type of Uncertainty	Description
Natural Hazard Events	Natural hazard events are increasing around the region. This means that the occurrence of flood events are increasing and the magnitude of the events are also increasing. This trend is able to be contained through continuous improvements to the river systems. This AMP assumes this trend continues. If the number of large events significantly increases or there is a catastrophic event, funds will not be available to reinstate the assets to a similar condition.
Flood Performance Protection Tool	Council have assumed that the Flood Protection Tool will not identify any flood works that require substantial change to bring the scheme up to minimum levels.
Legislative Changes	The flood in EdgeCumbe in April 2017 was followed by an independent review of the scheme which was released in October 2017. The review does not make any recommendations to change legislation and Council have assumed that there will be no change in legislation following this flood.
Flood Subsidy Removal	In April 2017, Treasury and Local Government NZ signaled that there was a proposal to remove the 60% subsidy from central government to assist in remediating from a significant storm event. With the change in government, this proposal has been put on hold and Council have assumed that the subsidiary will remain for the next three years.

12 Asset Management Processes and Practices

Good quality data and asset management processes are the heart of effective planning. This section outlines our approach to asset management, our processes, and provides an overview of our data management systems and strategies that underpins the rivers activity.

12.1 Appropriate Practice Levels

The Office of the Auditor General (OAG) has chosen to use the International Infrastructure Management Manual (IIMM) as the benchmark against which New Zealand councils measure their activity management practices. There are five maturity levels in the IIMM; Aware, Basic, Core, Intermediate and Advanced. The IIMM sets out what the requirements are for each level against each area of the activity management system.

In 2017, Council reviewed its Activity Management Policy and adopted an updated version. The Policy sets out Council's activity management objectives and appropriate levels of practice. For the Rivers activity Council has determined that the appropriate level of practice is core with intermediate practice identified for asset management policy and asset register data.

12.2 Service Delivery Reviews

12.2.1 Activity and Asset Management Teams

Council has an organisational structure and capability that supports effective asset management planning. Multiple teams across Council are responsible for the different aspects of activity and asset management. The focus of the teams ranges from a strategic focus at the Long Term Plan/Infrastructure Strategy level which involves a cross-Council team, through to detail/operational focus at the Operational team level.

Within the Engineering Services department, the asset management planning function is managed by the Activity Planning team. Operations are the responsibility of the Utilities and Transportation teams, while Projects and Contracts are managed by the Programme Delivery team.

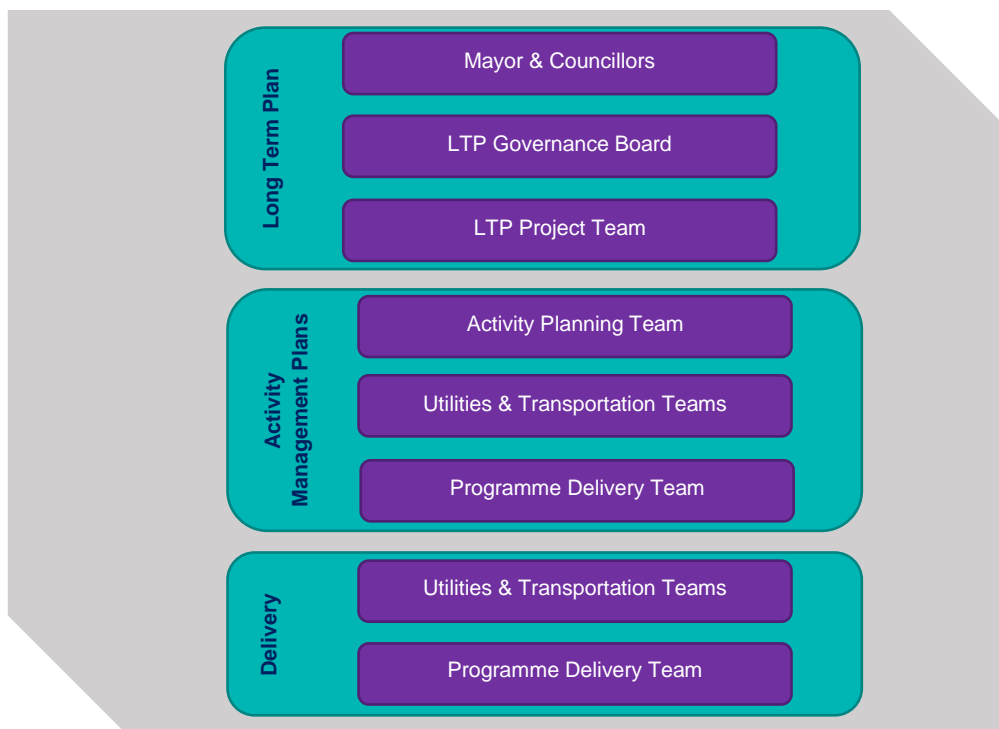


Figure 23: Teams Involved in Activity and Asset Management

The Activity Planning Team is responsible for the update of the activity management plans every three years, as well as implementation of the improvement plan. Each plan is assigned to the respective Activity Planning Advisor who is responsible for updating it. The Activity Planning Advisor works in with the activity's Asset Engineer to ensure that the current and future operating and maintenance aspects of the activities are adequately incorporated into the document. All activity management plans are reviewed by the Activity Planning Programme Leader who holds a National Diploma in Infrastructure Asset Management. The quality assurance process for the Engineering Services activity management plans is provided below.

- Preparation Activity Planning Advisor
- Check Utilities or Transportation Manager, and relevant Asset Engineer
- Review Activity Planning Programme Leader
- Approve Engineering Services Manager
- Adopt Full Council

12.2.2 Staff Training

Council maintains an annual budget for staff training that is managed by the Engineering Services Manager for the Engineering Services department. This budgets allows for continued development of staff to ensure that best practice is maintained and that Council retains the skills needed to make improvements in asset management practices. This includes on-going technical and professional training as well as specific asset management training.

12.2.3 Professional Support

The Engineering Services Department has a need to access a broad range of professional service capabilities to undertake investigation, design and procurement management in support of its significant transport, utilities, coastal management, flood protection and solid waste capital works programme, as well as support with activity management practice. There is also a need to access specialist skills for design, planning and policy to support the in-house management of Council's networks, operations and maintenance.

To achieve this Council went to the open market in late 2013 for a primary professional services provider as a single preferred consultant to undertake a minimum of 60% in value of Council's infrastructure professional services programmes. The contract was awarded to MWH New Zealand Ltd (now Stantec NZ), beginning on 1 July 2014 with an initial three-year term and two three-year extensions to be awarded at Council's sole discretion. In 2017, the first of these discretionary three-year extensions was granted, with the proportion of Council's professional services programmes reduced to 50%. In addition to this, a secondary professional service panel was also appointed through an open market tender process for a period of three years, to provide professional services that will not be supplied by Stantec.

12.2.4 Procurement Strategy

Council has a formal Procurement Strategy that it follows in order to engage contractors and consultants to assist the Engineering Services department. This strategy has been prepared to meet NZ Transport Agency's requirements for expenditure from the National Land Transport Fund, and it describes the procurement environment that exists within the Tasman District. It was developed following a three-year review of the strategy and was approved in November 2013. It principally focuses on Engineering Services activities but is framed in the NZ Transport Agency procurement plan format, which is consistent with whole-of-government procurement initiatives. A review of the strategy was commenced in 2017/18.

12.2.5 Service Delivery Reviews

In 2014, Section 17A was inserted into the Local Government Act which requires Council to review the cost effectiveness of its current arrangements for providing local infrastructure, services, and regulatory functions at regular intervals. Reviews must be undertaken when service levels are significantly changed, before current contracts expire, and in any case not more than six years after the last review. In addition to the regular reviews, the Act requires Council to complete an initial review of all functions by August 2017.

The table below summarises the reviews that have been completed to date and when the next review is required for this activity.

Table 23: Summary of Reviews

Scope of Review	Summary of Review	Review Date	Next Review
River maintenance works	An initial review found that the greatest opportunities for cost-savings in the current process come from sending the contract out for tender whereby the market can compete to deliver the best price for providing the service. Staff recommended that a full s.17A review not be undertaken for the delivery of rivers works.	April 2016	2022

In addition to the Section 17A reviews, the Engineering Services department reviewed its current capability and capacity against the requirements of the future programmes of work set out in its activity management plans. To enhance the department’s ability to deliver the capital works programme the following actions have been taken:

- undertaken a detailed review of the capital programme for the next five years to better understand project complexities and delivery requirements;
- implemented Planview a new project management system to track and report project delivery progress;
- increased the number of Project Managers from 4 to 5.5 full time equivalent staff resources;
- introduced enhanced performance requirements for our lead technical consultant for delivery of technical advice and engineering design;
- tendered for a new supporting professional services paned with enhanced performance requirements.

12.3 Asset Management Systems and Data

12.3.1 Information Systems and Tools

Council has a variety of systems and tools that support effective operation and maintenance, record asset data, and enable that data to be analysed to support optimised life-cycle management. These are detailed below in Figure 24. There is a continual push to incorporate all asset data into the core asset management systems where possible; where not possible, attempts are made to integrate or link systems so that they can be easily accessed.

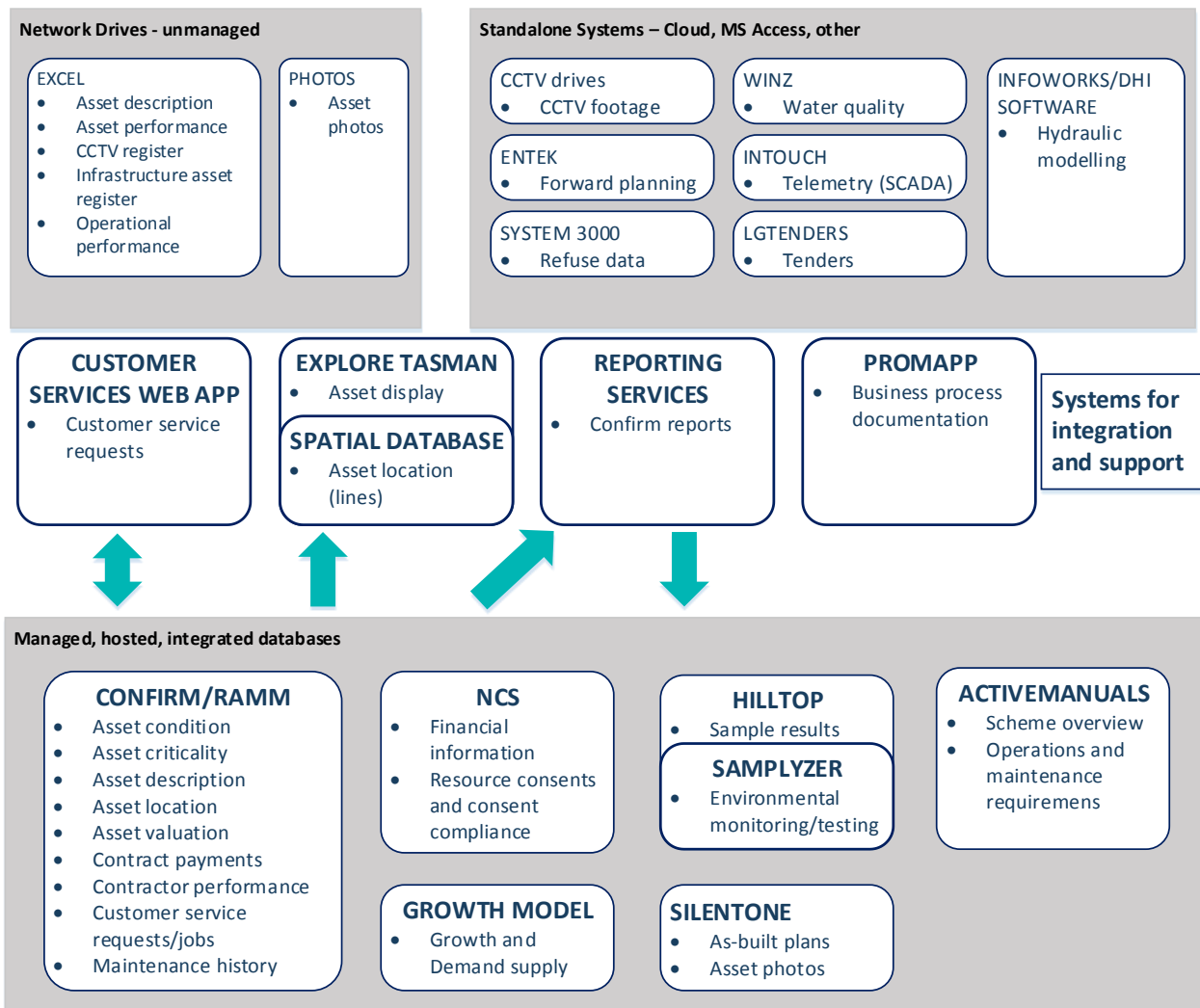


Figure 24: Systems Used for Asset Management

12.3.2 Asset Data

Table 24 summarises the various data types, data source and how they are managed within Council. It also provides a grading on data accuracy and completeness where appropriate.

Table 24: Data Types and Information Systems

Data Type	Information System	Management strategy	Data Accuracy	Data Completeness
As-built plans	SilentOne	As-built plans are uploaded to SilentOne, allowing digital retrieval. Each plan is audited on receipt to ensure a consistent standard and quality.	2	2
Asset condition	Confirm	Assets are inspected by a consultant or staff and the inspection information is entered directly into Confirm using the Connect mobile application.	N/A	N/A

Data Type	Information System	Management strategy	Data Accuracy	Data Completeness
Asset criticality	Confirm	When a new asset is created, the activity planner and engineer will make an assessment on criticality. Criticality of asset can be modified by authorized users should circumstances change.	N/A	N/A
Asset description	Confirm / spreadsheets	All assets are captured in Confirm's Site and Asset modules, from as-built plans and maintenance notes. Hierarchy is defined by Site and three levels of Asset ID (whole site, whole asset or asset). Assets are not broken down to component level except where required for valuation purposes. It is also possible to set up asset connectivity, but this hasn't been prioritised for the future yet. Detail on some datasets held in spreadsheets relating to Utilities Maintenance Contract 688; work is in progress to transfer this detail to Confirm as resourcing allows.	2	2
Asset location	Confirm (point data) / GIS (line data)	Co-ordinates for point data completely (NZTM) describe spatial location. Line data links to GIS layers that describe the shape.	2	2
Asset valuation	Confirm	Valuation of assets done based on data in Confirm and valuation figures stored in Confirm.	2	2
Contract payments	Confirm	All maintenance and capital works contract payments are done through Confirm. Data on expenditure is extracted and uploaded to NCS.	N/A	N/A
Contractor performance	Confirm	Time to complete jobs is measured against contract KPIs through Confirms Maintenance Management module.	N/A	N/A
Corporate GIS browser	Explore Tasman	Selected datasets are made available to all Council staff through this internal GIS browser via individual layers and associated reports.	N/A	N/A
Customer service requests	Customer Services Application / Confirm	Customer calls relating to asset maintenance are captured in the custom-made Customer Services Application and passed to Confirm's Enquiry module or as a RAMM Contractor Dispatch.	N/A	N/A

Data Type	Information System	Management strategy	Data Accuracy	Data Completeness
Environmental monitoring / testing	Hilltop / spreadsheet	Laboratory test results performed on monitoring and testing samples (from treatment plants and RRCs) are logged direct into Hilltop via an electronic upload from the laboratories. Due to historical difficulties in working with Hilltop data, it is duplicated in spreadsheets.	2	2
Financial information	NCS	Council's corporate financial system is NCS, a specialist supplier of integrated financial, regulatory and administration systems for Local Government. Contract payment summaries are reported from Confirm and imported into NCS for financial tracking of budgets. NCS also holds Water billing information, while asset details and spatial component are recorded in Confirm and cross-referenced.	N/A	N/A
Infrastructure Asset Register	Spreadsheet	High level financial tracking spreadsheet for monitoring asset addition, disposals and depreciation. High level data is checked against detail data in the AM system and reconciled when a valuation is performed.	2	2
Forward planning	Spreadsheets, GIS Mapping	Forward programmes for Council's activities are compiled in excel, These are loaded onto GIS based maps for information and in order to identify clashes and opportunities.	N/A	N/A
Growth and Demand Supply	Growth Model	A series of linked processes that underpin Council's long term planning, by predicting expected development areas, revenues and costs, and estimating income for the long term.	2	2
Hydraulic modelling	Infoworks / DHI Software	Models have been developed for a number of schemes and catchments. Copies of the models are held on Council's network drives.	2	4
Maintenance history	Confirm	Contractor work is issued via Confirms Maintenance Management module. History of maintenance is stored against individual assets. Prior to 2007 it was logged at a scheme level.	2	2

Data Type	Information System	Management strategy	Data Accuracy	Data Completeness
Photos	Network drives / SilentOne	Electronic photos of assets are mainly stored on Council's network drives. Coastal Structures and Streetlight photos have been uploaded to SilentOne and linked to the assets displayed via Explore Tasman.	N/A	N/A
Processes and documentation	Promapp	Promapp is process management software that provides a central online repository where Council's process diagrams and documentation is stored. It was implemented in 2014 and there is a phased uptake by business units.	2	5
Resource consents and consent compliance	NCS	Detail on Resource Consents and their compliance of conditions (e.g. sample testing) are recorded in the NCS Resource Consents module.	2	2
Reports	Confirm Reports	Many SQL based reports from Confirm and a few from RAMM are delivered through Confirm Reports. Explore Tasman also links to this reported information to show asset information and links (to data in SilentOne and NCS).	N/A	N/A
Tenders	LGTenders	Almost all New Zealand councils use this system to advertise their tenders and to conduct the complete tendering process electronically.	N/A	N/A

Table 25: Data Accuracy and Completeness Grades

Grade	Description	% Accurate
1	Accurate	100
2	Minor Inaccuracies	+/- 5
3	50 % Estimated	+/- 20
4	Significant Data Estimated	+/- 30
5	All Data Estimated	+/- 40

Grade	Description	% Complete
1	Complete	100
2	Minor Gaps	90 – 99
3	Major Gaps	60 – 90
4	Significant Gaps	20 – 60
5	Limited Data Available	0 – 20

12.4 Critical Assets

Knowing what's most important is fundamental to managing risk well. By knowing this, Council can invest where it is needed most, and it can tailor this investment at the right level. This will avoid over investing in assets that have little consequence of failure, and will ensure assets that have a high consequence of failure are well managed and maintained. For infrastructure, this is knowing Tasman's critical assets and lifelines. These typically include:

- Arterial road links including bridges
- Water and wastewater treatment plants
- Trunk mains
- Main pump stations
- Key water reservoirs
- Stopbanks
- Detention dams

During 2016, Council in partnership with Nelson City Council, the Regional Civil Defence Emergency Management Group and other utility providers, prepared the Nelson Tasman Lifelines Report. This report summarises all lifelines within Nelson and Tasman. Within the report there was a number of actions identified to improve the Region's infrastructure resilience.

Over the next three years, as part of Council's risk, resilience and recovery planning work, it will focus on the identification, planning and management of its critical assets and lifelines. This will help to ensure that the appropriate level of effort is being made to manage, maintain and renew them, and will extend to ensuring that Council has adequate asset data to enable robust decisions to be made regarding the management of those assets.

12.5 Quality Management

Council has not implemented a formal Quality Management system across the organisation. Quality is ensured by audits, checks and reviews that are managed on a case by case basis. Table 26 outlines the quality management approaches that support Council's asset management processes and systems.

Table 26: Quality Management Approaches

Activity	Description
Process documentation	Council uses Promapp software to document and store process descriptions. Over time, staff are capturing organisational knowledge in an area accessible to all, to ensure business continuity and consistency. Detailed documentation, forms and templates can be linked to each activity in a process. Processes are shown in flowchart or swim lane format, and can be shared with external parties.
Planning	The Long Term Plan and associated planning process are formalised across Council. There is a LTP project team, LTP governance team, and AMP project team that undertakes internal reviews prior to Council approval stages. Following completion of the AMPs, a peer review is done, and the outcomes used to update the AMP improvement plans.
Programme Delivery	This strictly follows a gateway system with inbuilt checks and balances at every stage. Projects cannot proceed until all criteria of a certain stage have been completely met and formally signed off.
Subdivision Works	Subdivision sites are audited for accuracy of data against the plans submitted. CCTV is performed on all subdivision stormwater and wastewater assets at completion of works and again before the assets are vested in Council. If defects are found, Council requires that they are repaired before it will accept the assets.
Asset Creation	As-built plans are reviewed on receipt for completeness and adherence to the Engineering Standards and Policies. If anomalies are discovered during data entry, these are investigated and corrected. As-built information and accompanying documentation is required to accompany maintenance contract claims.

Activity	Description
Asset Data Integrity	Monthly reports are run to ensure data accuracy and completeness. Stormwater, water, wastewater, coastal structures, solid waste and streetlight assets are shown on the corporate GIS browser, Explore Tasman, and viewers are encouraged to report anomalies to the Activity Planning Data Management team.
Operations	Audits of a percentage of contract maintenance works are done every month to ensure that performance standards are maintained. Failure to comply with standards is often linked to financial penalties for the contractor.
Levels of Service	Key performance indicators are reported annually via Council's Annual Report. This is audited by the Office of the Auditor General.
Reports to Council	All reports that are presented to Council by staff are reviewed and approved by the Senior Management Team prior to release.

13 Improvement Planning

The activity management plans have been developed as a tool to help Council manage their assets, deliver on the agreed levels of service and identify the expenditure and funding requirements of the activity. Continuous improvements are necessary to ensure Council continues to achieve the appropriate level of activity management practice along with delivering services in the most sustainable way while meeting the community’s needs.

Establishment of a robust, continuous improvement process ensures that Council is making the most effective use of resources to achieve an appropriate level of asset management practice.

13.1 Assessment of our Activity Management Practices

In 2017, Council undertook an assessment of its current asset management practices for the rivers activity. This was a self-assessment with the targets developed in consultation with Waugh Infrastructure Management Ltd to ensure they were appropriate for the activity given:

- Criticality of the Assets;
- Value of the Assets;
- Value spent on maintaining the assets.

The maturity levels were based on the IIMM definitions.

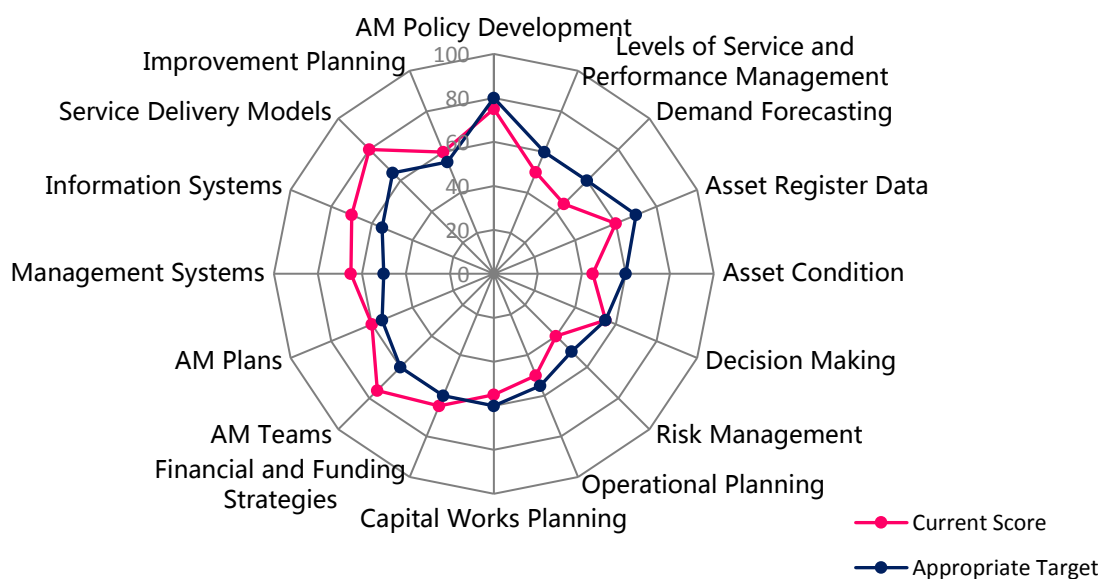


Figure 25: Rivers Assets Maturity Levels

Figure 25 shows that overall Council’s current practice is near appropriate targets or in some cases exceeding targets. Where negative gaps exist, the actions required to close these gaps have been included in the Improvement Plan.

13.2 Peer Reviews

In early 2018, Council engaged Waugh Infrastructure Management Ltd to undertake a peer review on the consultation version of this activity management plan. The peer review considered all Engineering Services activities and included the following analysis:

- Overview analysis and consideration of AMP progress completed since the Waugh Infrastructure detailed 2011 AMP Compliance Report (in summary not detail)
- Review of AMPs against general industry practice as observed by Waugh Infrastructure in the past 12 months
- Review and commentary on the adequacy of the AMP structure against current industry practice and requirements, as set out in IIMM 2015, ISO 55000
- Analysis of AMP individual section strengths and emphasis, including analysis of overall AMP ‘message’ verses issues identified
- Overview analysis of AMP status against appropriate asset management practice levels adopted in Council’s Activity Management Policy (summary not detail)
- Analysis of the AMPs against Local Government Act 2002 amendment requirements, both 2012, and 2014 – identification of any issues or ‘misses’
- Provide review comments of AMP strengths and weaknesses identified, with commentary on any suggested priority changes to be completed before LTP 2018

It is important to note that the peer review only considered what was included in the consultation version of this activity management plan. There are aspects of the Council’s asset management processes that are not discussed in this activity management plan and are therefore not incorporated into the scoring.

The overall findings of the Peer Review were that the Council’s AMPs are well developed to support the Council’s Long Term Plan. Some of the AMPs had sections that required completion, but overall missing elements noted were relatively minor.

The AMP template has been updated to incorporate recent Local Government Act changes. The AMP template developed and used by Council has allowed clear, concise presentation of information in a logical manner.

The overall compliance status is shown below in Figure 26.

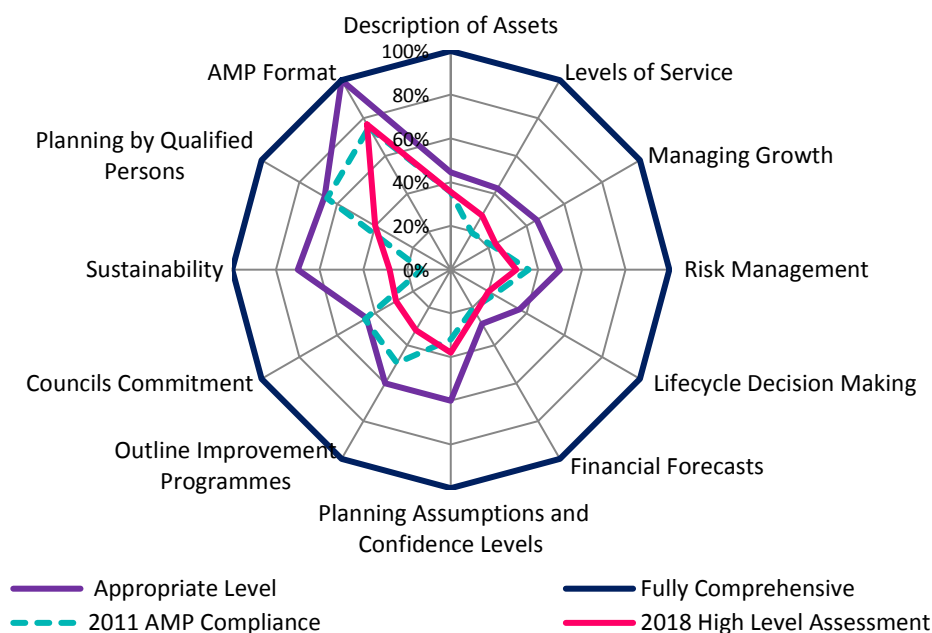


Figure 26: 2018 Peer Review Compliance Status Summary

Council staff have reviewed and prioritised the feedback received in the peer review report. Improvements that could be made immediately have been incorporated into the final version of this activity management plan. Other improvements have been ranked and included in the Improvement Plan.

There has been a noticeable decrease in scores for Outline Improvement Programmes, Council’s Commitment, and Planning by Qualified Persons. This is not due to a change in Council’s practice or performance, but due to a change in the activity management plan template. After receiving the peer review feedback, additional discussion has been included in Section 12 and Section 13 to address these issues.

13.2.1 Other Feedback

In 2017, a report by consultants Tonkin & Taylor titled 'Overview of state management and value proposition for New Zealand's river control, flood protection and drainage schemes.,' for the River Managers Forum the following comment was made on Council's management of the Rivers activity.

"Amongst the cohort of councils managing smaller asset bases (less than \$100M replacement value) asset management maturity scores varied more widely, with Tasman being the only council to nearly achieve a 'core' rating. We expect this is due to their broader asset management responsibilities (e.g. for three waters and transport) resulting in a stronger internal capability to document their activities in AMPs."

13.3 Improvement Plan

Establishment of a robust, continuous improvement process ensures that Council is making the most effective use of resources to achieve the appropriate level of asset management practice. The continuous improvement process includes:

- Identification of improvements
- Prioritisation of improvements
- Establishment of an improvement programme
- Delivery of improvements
- On-going review and monitoring of the programme

All improvements identified are included in a single improvement programme encompassing all Engineering Services activities and is managed by the Activity Planning Programme Leader. In this way opportunities to identify and deliver cross-activity or generic improvements can be managed more efficiently, and overall delivery of the improvement programme can be monitored easily.

13.3.1 Summary of Recent Improvements

Based on the peer review by Waugh Infrastructure Management Ltd and internal evaluations and reviews, Council has made improvements to its activity management plan and specific asset management processes. The key improvements and areas of strengths of the current activity management plan include our asset descriptions, Levels of Service, financial forecasting and Council's Infrastructure Strategy.

Some of Council's key achievements in the asset management processes over the previous three years include:

- New levels of service to define the activities that are undertaken
- Identification of key issues and responses to address these issues
- Well-defined 10 year plan including individual cost centres, highlighting the operational, renewal and capital costs.

13.3.2 Summary of Planned Improvements

A list of the current Rivers activity specific improvement items is given in

Table 27: Rivers Specific Improvement Items

Improvement Item	Further Information	Priority	Status	Expected Completion Date	Team Responsible	Cost/Resource Type
Motueka Flood Response Plan: create a response plan to heavy rainfall events	Undertake the creation of a flood response plan for Motueka/Riwaka to detail the responses by Council to elevated water levels in Motueka and Riwaka Rivers.	High	Not started	June 2021	Activity Planning team	Staff time
Takaka Flood Response Plan: create a response plan to heavy rainfall events	Undertake the creation of a flood response plan for Takaka to detail the responses by Council to elevated water levels in Takaka, Anatoki and Waikoropupu Rivers	High	Not started	June 2021	Activity Planning team	Staff time
Bylaw: Review the need for a land drainage bylaw.	Review alongside the Soil Conservation and River Control act 1941 and the Drainage Act 1905. May require collaboration with Stormwater and Transportation activities.	Medium	Not started	June 2021	Activity Planning team	Staff time
Asset Condition data: detail how asset condition is monitored and reported for key asset types.	Requires the development of a process around how asset condition is measured.	Medium	Not started	June 2021	Activity Planning team	Staff time

Improvement Item	Further Information	Priority	Status	Expected Completion Date	Team Responsible	Cost/Resource Type
Rating System Review: Review the current rivers rating strategy to address the inconsistencies between the River X, Y and Z rating levels and re-assess the rating areas.	While Corporate has put this review on hold as they consider the current rating policy accurate, the Transportation team consider this improvement a priority as the anomalies in the system are open to be challenged.	Low	Not started	June 2022	Corporate Services	Staff time and budgets
Asset Management System Development: Continue to develop Council's asset management system and integration with related systems	Ensure unofficial and unmaintained stop banks are in GIS systems and can be viewed on Council's ET2	Low	Not started	June 2022	Asset Data Management	Staff time and budgets
Improved Stopbank Health	Work with landowners to make land use changes that will lead to improvements to the stopbank networks	High	Not Started	June 2021	Transportation	Staff Time

A list of general across activity improvement items is given in Table 28.

Table 28: General Activity Management Improvement Items

Improvement Item	Further Information	Priority	Status	Expected Completion Date	Team Responsible	Cost / Resource Type
Create Critical Asset Framework	Describe in AMP how it is used to prioritise asset information and condition assessments, adjust economic lives (renewal profiles) prioritise renewals and expenditure, operation and maintenance	High	In Progress	June 2020	Activity Planning	Staff Time

Improvement Item	Further Information	Priority	Status	Expected Completion Date	Team Responsible	Cost / Resource Type
Provide data confidence ratings for groups of assets within the valuation for each activity.	In the valuation reports data confidence is only assessed across the activity and not for the different types of asset groups. It is likely that data confidence varies considerably between buried assets and above ground assets and this is not reflected in the reports.	Medium	Not started	June 2020	Data Analyst – Utilities	Consultants and staff time Budget \$33,500 in 2019/20"
Consider how levels of service options are presented to the community	Consider how to better engage the community in agreeing appropriate levels of service through specific work streams (e.g. Risk, Resilience, Recovery Planning).	Medium	Not started	June 2021	Activity Planning	Staff Time

Appendix A: Detailed Operating Budgets

ID	Name	Description	Total Budget	Financial Year Budget (\$)										Total Budget	
			2018-48	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028-38	2038-48
32001	Activity Management Plan	Update of activity management plan	138,000	2,000	6,500	5,300	2,000	6,500	5,300	2,000	6,500	5,300	2,000	47,900	46,700
32002	New Maintenance Contract	Developing, tendering and letting a new contract to undertake maintenance	85,000	0	0	0	0	0	20,000	0	0	0	0	35,000	30,000
32003	Resource Consent Procurement & Professional Services	Professional fees for consents and expert advice	2,700,000	50,000	50,000	50,000	150,000	150,000	50,000	50,000	50,000	150,000	150,000	900,000	900,000
32004	Rivers Asset Insurance		959,310	31,977	31,977	31,977	31,977	31,977	31,977	31,977	31,977	31,977	31,977	319,770	319,770
32005	Rivers General Z	All operational costs with class Z rivers	12,000,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	4,000,000	4,000,000
32006	Class Y Operations	Operational costs for class Y rivers	24,690,000	823,000	823,000	823,000	823,000	823,000	823,000	823,000	823,000	823,000	823,000	8,230,000	8,230,000
32007	RIVER BERM RATES		382,260	12,742	12,742	12,742	12,742	12,742	12,742	12,742	12,742	12,742	12,742	127,420	127,420
32008	Takaka Flood Mitigation Study	Study and investigation of flood hazard risks to Takaka and identification of potential mitigation measures	100,000	0	100,000	0	0	0	0	0	0	0	0	0	0
32011	Class X Operations	Operational costs for class X rivers	2,985,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	1,035,000	1,050,000
32013	Asset Revaluation	Determination of asset value for asset management	10,000	0	1,000	0	0	1,000	0	0	1,000	0	0	4,000	3,000
32014	Motueka Flood Mitigation Study	Study and investigation of flood hazard risks to Motueka and identification of potential mitigation measures	350,000	175,000	175,000	0	0	0	0	0	0	0	0	0	0
	Feasibility Studies	Feasibility Studies	13,200	0	13,200	0	0	0	0	0	0	0	0	0	0

Appendix B: Detailed Capital Budgets

ID	Name	Description	Project Driver %			Total Budget	Financial Year Budget (\$)										Total Budget		
			Growth	InclOS	Renewals	2018-48	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028-38	2038-48	
36001	Class Y Capital Works	Capital works on class Y rivers	0	100	0	20,550,000	685,000	685,000	685,000	685,000	685,000	685,000	685,000	685,000	685,000	685,000	685,000	6,850,000	6,850,000
36006	Class X Capital Works	Capital works on class X rivers	0	100	0	3,600,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	1,200,000	1,200,000
36009	Takaka Flood Mitigation Works	Implementation of flood mitigation works	0	100	0	2,455,000	0	0	0	0	0	0	0	0	125,000	1,175,000	1,155,000	0	
36010	Riwaka Flood Mitigation Works	Undertake works to protect residential property against flooding	0	100	0	660,000	0	0	60,000	300,000	300,000	0	0	0	0	0	0	0	0
36011	Brightwater Flood Mitigation Works	Undertake flood mitigation works to reduce flood risk to Brightwater	0	100	0	80,000	0	0	0	80,000	0	0	0	0	0	0	0	0	0