Stormwater Activity Management Plan 2018

Quality Assurance Statement		
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Tasman District Council	Status:	For Adoption
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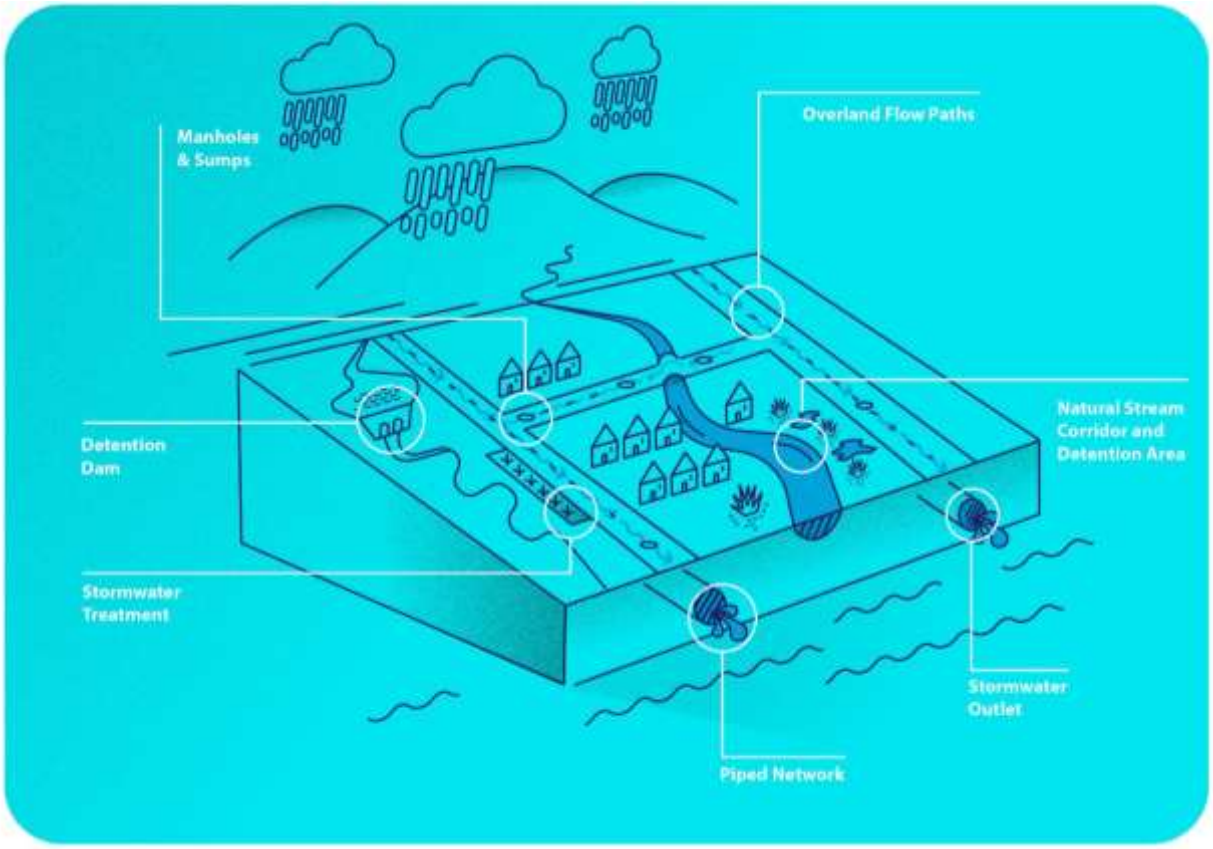
Contents

1 Executive Summary

1.1 What We Do

The stormwater activity encompasses the provision of stormwater collection, reticulation, and discharge systems in Tasman District. The assets used to provide this service include drainage channels, piped reticulation networks, tide gates, detention or ponding areas, inlet structures, discharge structures and quality treatment assets.

The stormwater sumps and road culvert assets are generally owned and managed by Council's transportation activity or by the New Zealand Transport Agency (NZTA), depending upon whether they are located on local roads or state highways. This stormwater activity does not include land drains or river systems, which are covered under Council's Rivers activity. Nor does it cover stormwater systems in private ownership.



Council manages its stormwater activities primarily within 15 Urban Drainage Areas (UDAs). Systems that are outside the UDA's include small communities with stormwater systems that primarily collect and convey road run-off to suitable discharge points.

1.2 Why We Do It

We aim to provide cost-effective and sustainable stormwater systems that reduce flooding and meet environmental standards.

Council undertakes the stormwater activity to minimise the risk of flooding of buildings and property from surface runoff and small urban streams. Council enables the safe and efficient conveyance and disposal of stormwater from the urban drainage areas, this improves the economic and social well-being of the District by protecting people and property from surface flooding.

Council has a duty of care to ensure that the effects of any runoff from its own properties is remedied or mitigated. Because most of its property is mainly in the form of impermeable roads in developed areas, this generally means that some level of reticulation system is constructed. The presence of this system means it also becomes the logical network for dealing with private stormwater disposal.

1.3 Our Levels of Service

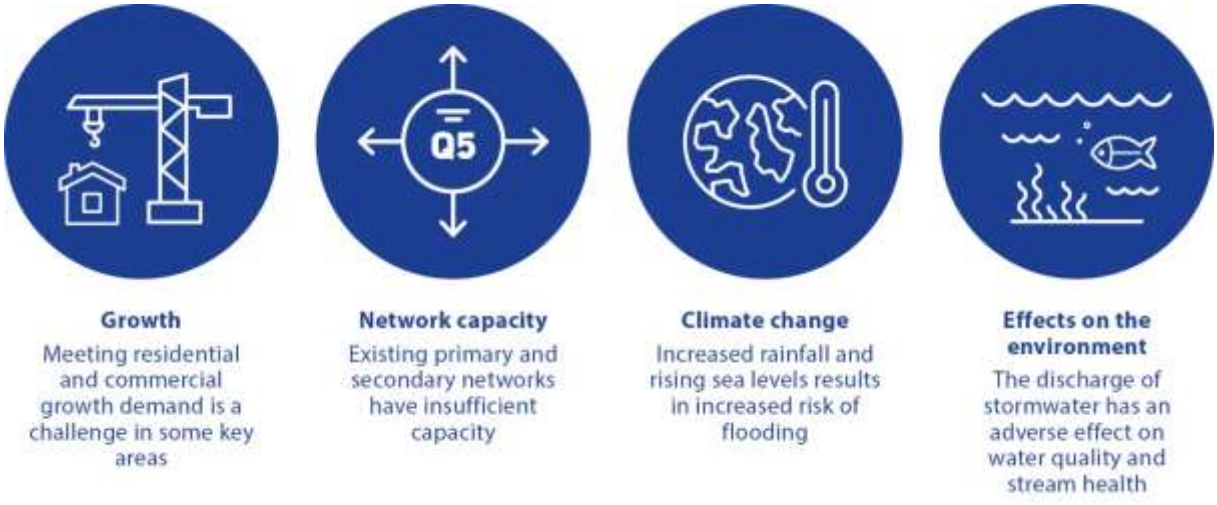
Council aims to provide the following levels of service for the Stormwater activity:

Stormwater Flooding	Strategic Planning	Customer Satisfaction	Environment
We have measures in place to respond to and reduce flood damage from stormwater to property and risk to the community	We have strategies in place to manage our stormwater systems efficiently to ensure that our community receives best value for money	Our stormwater activities are managed at a level which satisfies the community	Our stormwater systems do not adversely affect or degrade the receiving environment

Council has planned investments to improve the capacity of its primary and secondary networks as well as stormwater treatment to protect the receiving environment. In the short term, Council plans to develop stormwater models and catchment management plans for all Urban Drainage Areas. Through these strategic plans Council will develop a better understanding of the current and future performance of its networks against the agreed levels of service, identify gaps in performance, and programme works to address these gaps.

1.4 Key Issues

The most important issues relating to the stormwater activity are described below.



1.5 Responding to the Issues

Catchment Management Planning

Catchment management plans (CMP'S) will assist Council in identifying integrated solutions for the key issues by taking a holistic approach on a catchment wide basis. CMPs will be developed for each Urban Drainage Area (UDA), providing an overview of the current state of the network, objectives, issues and integrated solutions.

Growth

A number of projects are planned that are driven fully or partially by the need to cater for future growth, such as Borck Creek and Poutama Drain in Richmond and Motueka West development area. In order to undertake some of the stormwater capital works planned over the next 10 years, Council will need to acquire land to enable the works to proceed.

Network Capacity

Many of Council's stormwater pipes and drains are too small to cope with the intense rainfall events experienced over the past few years. In response, Council has maintained a significant programme of works to improve stormwater management in Tasman. However, it is not affordable to improve all the existing pipes and drains, at least not in the short to medium term. A better option is to make some investment in the primary network (the pipes) alongside work to protect and improve secondary flow paths, so that when the intense rainfall events happen, the stormwater travels overland in areas where it does not damage property.

Climate Change

Rising sea levels and increased rainfall will put further strain on the already limited capacity of our networks. Especially our coastal communities will experience increased risk of flooding due to stormwater discharges being affected by high tides. Increased rainfall intensities, rising sea level and storm surges will make this increasingly more difficult in the future. The expected impact of climate change effects on flooding will be further investigated with the help of innovative flood modelling techniques. We will develop flood strategies to determine appropriate responses to these increased flood risks.

In some areas, especially low lying areas close to the coast, we have to accept that affordable and sustainable solutions may not be available. The focus in our flood strategies will be on avoiding damage to properties and hazard to life as well as acceptance and adapting to nuisance flooding.

Effects on the Environment

To address the effects of stormwater discharges on our receiving environment Council will adopt a water sensitive design approach that is based on the following principles:

- Protection and enhancing the values of our natural ecosystems
- Addressing the effects from stormwater as close to source as possible
- Mimicking natural systems and hydrological processes for stormwater management

Developers will be required to follow the same approach in accordance with the proposed Land Development Manual. The approach includes requirement for stormwater treatment and protecting stream health.

Council will obtain discharge consent through which the effects from stormwater discharges on the environment will be managed and controlled. A number of projects are planned to specifically address water quality issues.

1.6 Operational Programme

The operational programme covers all day to day activities that are required to manage the stormwater activity. Council has planned to spend approximately $32 million over the next 30 years to operate and maintain its stormwater systems efficiently.

Our operational programme over the next ten years covers the following key aspects and annual expenditure:

- Operation & Maintenance (routine and reactive) $408,000
- Asset costs (insurance, rates, electricity) $312,000
- Overland flowpath monitoring $50,000
- Consent monitoring $30,000
- Catchment management planning & stormwater modelling $180,000*

*reduced to $35,000 annually after first 5 years for updates and model maintenance

1.7 Capital Programme

Council plans to invest approximately $78 million over the next 30 years on stormwater capital improvements. Below is a list of the key projects and investments that are planned:

1.8 Key Changes

Table 1 summarises the key changes for the management of the stormwater activity since the 2015 Activity Management Plan.

Table 1: Key Changes

Key Change	Reason for Change
Focus on catchment management planning to better prioritise projects and identify opportunities for integrated solutions that address multiple issues.	Better information is required to support major investments in our stormwater network. Stormwater modelling, monitoring and catchment management planning will help us understand better how our networks work as a whole. This will enable us to prioritise projects and create better value for money through integration of solutions that address multiple issues.
Projects that are known not to address flooding of habitable floors or create a hazard to people have been removed from the programme. **In some cases, projects have been removed, because there is insufficient evidence or background information to support the investment.**	Council's inability to control all stormwater was acknowledged in the previous AMP. Major rain events that exceed pipe capacity will result in flooding of roads and properties. Upgrading pipe capacity to address nuisance flooding is in most cases not considered to be a cost effective stormwater management approach. Council will focus its efforts and capital expenditure on managing secondary flow paths so that they do not create a hazard for people or damage to property. Further investigation through stormwater modelling and catchment management planning is required to support large investments in our networks.

Key Change	Reason for Change
Projects that are known to have a major effect on flooding of habitable floors or hazards have been brought forward.	A number of projects have been prioritized and brought forward in the programme because they provide good value for money in terms of addressing a relatively large area and multiple habitable floors that are flooded. Another reason for prioritizing a project is where the flooding creates a hazard to people.

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.

- Extreme rainfall events and associated flood impacts can happen at any time and their occurrence may differ from what can be expected based on the statistics. Council develops stormwater management strategies, plans and designs for events that have a 1% and 10% probability of occurring in any one year. When large events happen more frequently, this may trigger higher expectations from the community to provide a higher level of service. Providing a higher level of service will come at a higher cost and require more funding than has been budgeted for in this Strategy.
- Council has planned to undertake stormwater modelling to gain a better understanding of the flood risks in the District. Stormwater models represent a simplification of the reality and are based on a large amount of assumptions and input parameters that may vary, meaning Council cannot be certain of the outputs. Council considers all modelling results together with local knowledge and monitoring data where available. If the conclusions drawn from the model are incorrect, Council may need to reconsider the scope of projects included in its stormwater programme.
- Council has prepared the stormwater programme of works based on the information that was available at the time. Over the next few years, Council has planned to undertake more modelling and prepare catchment management plans. This will provide new and up-to-date information. It is likely that this information will highlight the need for additional intervention by Council, and Council may need to programme further improvements requiring additional funding.
- Timing of growth related projects is based on current assumptions within the growth model. However, the actual rate of development in the District will determine when projects and upgrades are required to meet demand. The uncertainty around timing of growth related project is a risk especially for development in Richmond West and South, Motueka West and Mapua.

2 Introduction

The purpose of this activity management plan is to outline and to summarise in one place, Council's strategic management and long-term approach for the provision and maintenance of its stormwater activity.

2.1 Rationale for Council Involvement

The provision of stormwater drainage to urban areas is something that Council has always provided. The service provides many public benefits and it is considered necessary and beneficial to the community that Council undertakes the planning, implementation and maintenance of the stormwater services within the urban areas.

Council has no statutory obligation to provide for private stormwater runoff, just as it has no obligation to provide protection against wind or other natural events. This is clear in the Local Government Act (LGA) 2002 where it states that councils do not have to take responsibility for stormwater systems which service only private properties.

Council does have a duty of care to ensure that any runoff from its own properties is remedied or mitigated. Because most of its property is mainly in the form of impermeable roads in developed areas, this generally means that some level of reticulation system is constructed. The presence of this system then becomes the logical network for private stormwater disposal.

2.2 Description of Assets & Services

2.2.1 Asset Overview

The table below provides an overview of the key stormwater assets that are owned and operated by Council throughout the entire District.

Table 2: Assets Overview

Stormwater		Replacement Value	Depreciated Value (April 2017)
	14,139 property connections	$ 12.9M	$ 9. 3M
	187 km of piped stormwater network	$ 113 M	$ 86.8M
	29 km of maintained open drains and streams	$5.4M	$5.4M
	2467 manholes	$12.4 M	$10.4M

Stormwater		Replacement Value	Depreciated Value (April 2017)
	928 sumps (an additional 2428 sumps and catchpits are located in the road reserves and managed through the transportation activity)	$1.9M	$1. 3M
	10 detention dams	$1.1M	$1.1M
	Other stormwater assets (i.e. culverts, inlets and outlets)	$8. 3M	$6.6M
TOTAL VALUE OF WATER SUPPLY ASSETS AS AT 1 APRIL 2017		$154.8M	$120.9M

2.2.2 System overview

There are 15 stormwater Urban Drainage Areas (UDA) within the Tasman District and the residual non-urban area. A system overview describing the key aspects of each UDA is provided in Table 3.

Table 3: Urban Drainage Area System Overview

Urban Drainage Area	System Overview
Richmond	Richmond UDA is the most developed and densely populated UDA in the Tasman District. Much of the stormwater flows originate from the Richmond foothills, which slope up from the developed areas towards an elevation of approximately 600m. Significant areas of the foothills are forested and subject to periodic harvesting. There are a number of gullies which route through stormwater flows into the urban area. The UDA has three major drainage catchments: 1. Borck Creek 2. Jimmy Lee Creek (CBD) draining into Beach Road Drain 3. Reservoir Creek. Much of the stormwater system within the developed area is piped. The major piped stormwater systems convey stormwater along Oxford Street, Queen Street, Salisbury Road and Gladstone Road. Much of the stormwater flows in a northerly direction from its source of origin into the town centre. In many places the existing piped stormwater system is under capacity, which is a result of the continuous development of Richmond originating from the town centre outwards towards the foothills. In some places, detention dams have been constructed to 'control' stormwater flows in strategic places to reduce peak flows and the severity/likelihood of flooding risk further downstream.

Urban Drainage Area	System Overview
Brightwater	Brightwater is positioned between the Wai-iti and Wairoa Rivers, three kilometres upstream from their confluence. It is situated on a very flat floodplain with a number of old, shallow river and stream channels crossing it. Brightwater's urban stormwater network is positioned in the centre of these surrounding rivers and stream catchments. The Mt Heslington Stream passes through the Brightwater School then turns eastward to join the Wairoa River. The main urban areas of Brightwater discharge into piped systems either into one of the three streams or into the old river channels that lead into the Wairoa or Wai-iti Rivers.
Wakefield	Wakefield is a mixture of rural and urban development and lies between two waterways; the Wai-iti River and the Pitfure Stream. All the drainage systems in Wakefield eventually drain to one of these rivers. Most of the stormwater system was built during the late 1980s.
Murchison	The primary drainage system in Murchison consists of a network of open drains and creeks that drain to the Matakitaki River just south of Murchison. The area of piped stormwater systems is restricted to the central part of town and comprises of a number of small piped systems that collect highway drainage, most discharging into Ned's Creek which has flooded in recent years. Within the UDA, the majority of stormwater from residential dwellings is to ground soakage.
St Arnaud	St Arnaud is surrounded by the Nelson Lakes National Park and located on the shores of Lake Rotoiti. The steep, glacial terrain surrounding St Arnaud has high run off flows. While the majority of drainage within the built up area consists of small streams and roadside open channels, the more recent subdivisions have been developed with piped stormwater systems.
Tapawera	Tapawera was developed by NZ Forest Service as a forestry headquarters village. There are a limited number of piped stormwater systems within the urban drainage area that discharge into a series of open channels which flow into the Motueka River. A cut-off drain was constructed at the bottom of hills on the eastside of town to divert flows from this upper catchment. A stream passes through the UDA, crossing Main Road Tapawera and Tadmor Valley Road, before leaving the UDA and discharging into the Motueka River. This is the keystone of the Tapawera stormwater system which collects stormwater flows from open drain and the piped stormwater systems.
Motueka	Motueka is the second largest settlement in the District but is less densely developed than Richmond due to the size of the properties, mostly quarter-acre sections. Stormwater drainage in Motueka is characterised by its low lying nature, flat terrain, and alluvial gravels with high water table, proximity to the Motueka River and Tasman Bay. A considerable amount of stormwater drainage is by soakage to the underlying soils and gravels. The UDA drains to three main areas: 1. Motueka River in the north west via Staples Drain 2. Enclosed tidal lagoon through the Lammas Drains in the north east 3. Enclosed tidal lagoon in the south, through the Thorp and Woodlands Drains. The tidal lagoons are protected by tidal gates on Wharf Road and Old Wharf Road and are controlled via Council's telemetry system. The dominant piped drainage direction is from west to east. The bulk of the central area drains to either the Thorp or Woodlands Drains which run north to south between High Street and Thorp Street. The remainder of Motueka is drained via small piped stormwater systems discharging directly to sea or adjacent open channels. Recent developments between Thorp Street and Motueka Quay have included the construction of detention ponds to enable piped coastal outlets to operate against high tidal levels. Other recent developments have seen the use of soak pits as the primary stormwater discharge system, returning storm flows to ground.

Urban Drainage Area	System Overview
Mapua/Ruby Bay	Ruby Bay area is a coastal strip with relatively recent developed land with a piped network and stormwater detention systems. Mapua is a mixture of urban and semi-urban development with the majority of stormwater from earlier developments going to soakage. Only the more recent developments have included piped stormwater systems, which mostly discharge into open drains and into the Mapua estuary. A tidal gate at the end of the Aranui Road stormwater pipe protects the reticulated piped system from high tide backing up into the system. The catchment upstream of the Coastal Highway and Stafford Drive drains out through the Seaton Valley Stream. This passes through a culvert under Stafford Drive and discharges into the Toru Street inner estuary further downstream. The area draining into the Seaton Valley Stream accounts for 65% of the Mapua/Ruby Bay drainage area.
Tasman	Tasman is a small settlement with approximately 150 people, situated close to the south edge of the Moutere Inlet. Surface flows drain from south to north, discharging through the Marriages Stream, into the Moutere Inlet. The stream drains much of the catchment area and picks up open drains from rural land use. The stormwater system in the settlement is limited to some small piped systems although it is predominantly open drained.
Kaiteriteri	The Kaiteriteri UDA contains mostly residential and holiday type home development with two significant motor camps. Discharges from either small piped systems or drains are directed towards the beach or into the Kaiteriteri Inlet. Much of the catchment above Kaiteriteri is forested and present at risk of increased runoff flows from logging activities. The Separation Point Granites that locally occur erode easily when exposed and present a risk of creating debris flows.
Takaka	Takaka is situated in the flood plain of the Takaka River. Stormwater runoff from the township on the Takaka River side of Commercial Street is piped to the Te Kakau Stream. The areas around Motupipi Street and Abel Tasman Drive drain into the Upper Motupipi River. A large number of residential properties on soakage into the underlying river gravels and are affected by fluctuating groundwater levels. Lake Killarney is located within the centre of Takaka and the water level is controlled by surrounding groundwater levels.
Pohara	Pohara consists of two parts, the main Pohara settlement area and the Pohara Valley area. Both areas have been subject to significant recent development. A series of piped stormwater systems have been installed and extended where further development has occurred. Road drainage is mostly open drains in both parts of the UDA and combined with piped stormwater systems. A number of streams drain the large hill catchments above Pohara and are known to cause flooding. The Separation Point Granites that locally occur erode easily when exposed and present a risk of creating debris flows.
Ligar Bay and Tata Beach	Ligar Bay and Tata Beach are similar settlements, separated by a short distance of coastline. Both are popular holiday retreats and have grown considerably in recent years. The catchments are both covered by forestry and native bush and are steep with numerous gullies, rising to approximately 300m on the ridgeline. Most properties are self-draining into open road drains with a small number of piped systems in place. The main stormwater flows come from the catchment behind the UDA. The Separation Point Granites that locally occur erode easily when exposed and present a risk of creating debris flows.
Collingwood	Collingwood consists of a north facing high ridge bounded by the Aorere River and tidal inlet. This steep sided ridge discharges stormwater to both the east and west sides. Most of the discharge off the high ground is through small road drains and minor open ditches. A small peninsula accommodates the commercial area of Collingwood and the public motor camp on the northern tip. This area is low lying and several small pipe systems discharge to the east and west sides of the peninsula. The main open drain passes down Gibbs Road before discharging to sea. A number of piped systems discharge into this drain. The remainder of the catchment is mostly served by piped stormwater systems.

Urban Drainage Area	System Overview
Patons Rock	The Patons Rock UDA consists of small independent stormwater pipe systems which drain Patons Rock Road and are located at regular intervals along the length of the beach settlement. There are four beach outlets, and one new pipe system and outlet (2012) which drains to an open stream. Two of the beach outlet pipes have special fittings which help to prevent blockages from sand build-up.

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 provide cost-effective and sustainable stormwater systems that reduce flooding and meet environmental standards

3.2 Contribution to Community Outcomes

Council operates, maintains and improves the stormwater infrastructure assets on behalf of its ratepayers. Council undertakes the activity to meet the level of service that is required to enhance community well-being by reducing the risk of flooding of buildings and property from surface runoff. The stormwater activity contributes to the community outcomes as detailed below.

Table 4: Community Outcomes

Community Outcomes	Does Our Activity Contribute to the Community Outcome	Discussion
Our unique natural environment is healthy, protected and sustainably managed.	Yes	We manage stormwater so that the impact of the discharges does not adversely affect the health and quality of the receiving environment.
Our urban and rural environments are people-friendly, well-planned, accessible and sustainably managed.	Yes	We aim to convey stormwater without putting the public at risk or damaging property, businesses or essential infrastructure. New developments take a water sensitive design approach to integrate multiple values such as ecology, amenity and cultural aspects.
Our infrastructure is efficient, cost effective and meets current and future needs.	Yes	Stormwater is an essential service that is provided to properties within urban drainage areas in appropriate size and capacity. We aim to efficiently manage the provision of stormwater infrastructure so that it provides best value for rate payer's money.
Our communities are healthy, safe, inclusive and resilient.	Yes	We aim to safely transfer stormwater runoff through urban areas to minimise harm and property damage.
Our communities have opportunities to celebrate and explore their heritage, identity and creativity.	Yes	We protect natural waterways that have high cultural, recreational, and biodiversity interests.

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 take opportunities to provide multi-purpose facilities where possible. Often our stormwater corridors will incorporate cycle paths, footpaths and spaces for recreation.
Our Council provides leadership and fosters partnerships, a regional perspective, and community engagement	Yes	We engage with mana whenua iwi and other community groups with regards to enhancing our natural waterways and educational programmes.
Our region is supported by an innovative and sustainable economy.	Yes	Stormwater supports the economy by enabling homes and businesses to exist with a low exposure to flood risk and damage. We also allow for climate change in our designs to provide adequately for the future.

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

Council has identified key issues specific to the stormwater activity, which are discussed in Table 5 below. Each of these issues relate to Council's infrastructure priorities. Key issues are interrelated and often, investing in solutions will likely to help address other issues to varying degrees.

Table 5: Key Issues

Key Issue	Discussion
Growth Meeting residential and commercial growth demand is a challenge in some key areas	Growth is occurring faster than anticipated in the District and our existing networks have insufficient capacity to deal with increased stormwater runoff, restricting future residential and commercial development. A number of projects are planned that are driven fully or partially by the need to cater for future growth, primarily in Richmond West and South as well as the Motueka West development area. In order to enable growth and undertake some of the stormwater capital works that are required to increase runoff capacity, Council will need to purchase large amounts of land. Council applies development contributions to growth projects so that developers meet the cost of the growth component of projects, rather than ratepayers.

Key Issue	Discussion
Climate Change Increased rainfall and rising sea levels results in increased risk of flooding	NIWA has predicted the effects of climate change in the Tasman District for the years 2040 and 2090 (*Climate Change and Variability Tasman District*, NIWA, August 2015). The anticipated effects from climate change in Tasman District that affect the stormwater activity include: • A significant increase in rainfall, mainly in winter for the entire District. • Rising sea levels, increased wave height and storm surges. • Floods, landslides, droughts and storm surges are likely to become more frequent and intense The effects from climate change will put further strain on the already limited capacity of our networks. Discharging stormwater in our coastal communities will become increasingly difficult during high tide and may result in flooding more frequently. In other areas the increase in rainfall will lead to stormwater networks reaching their capacity sooner and the need to better manage overland flowpaths to avoid flooding of properties. The expected impact of climate change effects on flooding will be further investigated with the help of innovative flood modelling techniques. Providing solutions to appropriately address the effects of climate change will require significant investments that may not be affordable or cost effective. Due to the long-term nature of climate change predictions and different scenarios that are based on potential future greenhouse gas emissions the magnitude of the effects remain uncertain. The focus in our flood strategies will be on avoiding damage to properties and hazard to life as well as acceptance and adapting to nuisance flooding. In some areas, especially low lying areas close to the coast, we may have to accept that affordable and sustainable solutions may not be available.
Network Capacity Our existing primary and secondary networks have insufficient capacity	Some of Tasman's stormwater pipes and drains are too small to cope with the intense rainfall events experienced over the past few years and do not meet current design standards. In response, Council has planned a significant programme of works to improve stormwater management in Tasman. For the coming years some further investments in the primary network are planned to gradually upgrade pipe capacity over time. It is not affordable to improve all the existing pipes and drains to current design standards, at least not in the short to medium term. The main focus of the capital works is on protecting and improving secondary flow paths. The secondary network, also known as overland flowpaths, enables stormwater to flow overland, when capacity of the primary network has been exceeded, without causing hazards or damage to properties. It is important for the community to realise that overland flowpaths are an essential part of the stormwater network and that any structures within flowpaths may obstruct flows and lead to increased flooding and damage to property. Council will invest in establishing, protecting and enforcement of secondary flowpaths.

Key Issue	Discussion
Effects on the Environment The discharge of stormwater has an adverse effect on water quality and stream health	It has long been recognised that stormwater runoff is a predominant contributor to water quality and stream and coastal ecosystem health. The potential adverse effects associated with stormwater discharges can be divided into 'quality' and 'quantity' effects. The 'quality' effects stem from the fact that urban land uses such as roading, parking, industrial zones and certain building materials generate contaminants that are picked up by stormwater runoff and accumulate in fresh water and marine water receiving environments where they have an adverse effect on ecosystems. The main contaminants of concern are sediments, heavy metals and hydrocarbons. Urban runoff may also lead to increased water temperature which has an effect on stream life. Similarly, construction sites and associated earthworks have the potential to generate high sediment loads which can be discharged into waterways and physically disturb the beds of the waterways and effect aquatic habitat. The 'quantity' effects stem from the fact that urbanisation leads to increased areas of impervious surface which in turn leads to a decrease in groundwater recharge and increased stormwater runoff. The effect of reduced groundwater recharge leads to reduced base flows in streams especially during dry periods. On the other hand the increased runoff, leads to higher flow velocities that can cause scour and streambank erosion. In more extreme storm events the increased runoff will contribute to flooding issues. To address the effects of stormwater discharges on our receiving environment Council will adopt a water sensitive design approach that is based on the following principles: • Protection and enhancing the values of our natural ecosystems • Addressing the effects from stormwater as close to source as possible • Mimicking natural systems and hydrological processes for stormwater management Developers will be required to follow this approach in accordance with the proposed Land Development Manual. The approach includes requirement of stormwater treatment and protecting stream health through infiltration and detention requirements. Council will obtain resource consent through which the effects from stormwater discharges on the environment will be managed and controlled. A number of projects are planned to specifically address water quality issues.

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.

3.7 Catchment Management Plans

Integrated urban catchment management planning is an efficient way of co-ordinating efforts to address multiple stormwater issues i.e. flood management, freshwater management, aquatic habitat management and amenity values within urban stormwater catchments.

Catchment management plans (CMP) will assist Council in identifying integrated solutions to resolve existing issues and the ability to avoid or minimise risk for future issues. Once in place it will also assist in cross council alignment and efficiency improvements. Although the focus of the catchment management plans will be on the urbanised area, the catchment will have rural areas that need to be taken into account.

Council has a legal obligation to manage adverse effects from stormwater discharges from its network. The Catchment Management Plans will clarify how Council will manage these effects and form the basis for authorisation through a comprehensive global discharge consent.

3.7.1 Catchment Management Plan Framework

The Catchment Management Planning Framework consists of three key components:

- Stormwater strategy
- Catchment Management Plans
- District wide comprehensive discharge consent

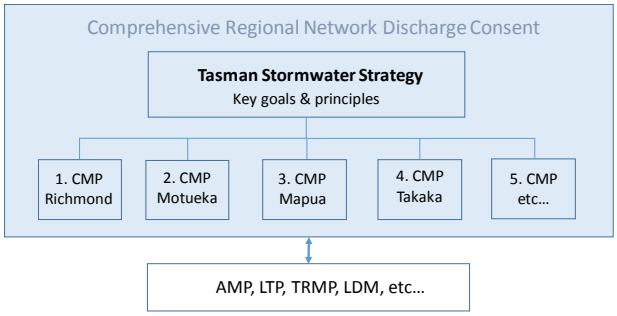


Figure 1: Catchment Management Plan Framework

Stormwater Strategy

Purpose of the stormwater strategy is to clearly articulate the vision for the District and provide a streamlined and consistent strategy. The Strategy will be concise and only address key goals and principles that apply to the entire District. The strategy will be used to direct the development of catchment management plans for each urban settlement and provides the basis for a District wide comprehensive discharge consent.

It is important that the Strategy and future CMPs are aligned with or give effect to other strategic documents at TDC and provide (additional) direction for the NPS Freshwater 2014 implementation and potential future TRMP plan changes.

Catchment Management Plans (CMP)

CMPs will be developed for each township, providing an overview of the current state of our network, objectives, issues and solutions. Each CMP will be developed around common stormwater themes or goals and shall be aligned with the Strategy to ensure consistency.

- Flooding
    - Collating and identifying issues (including geospatial data layers showing floodplains and overland flow paths)

    - Identifying concept options for mitigation and alleviating flooding issues from previous studies or gaps where solutions have not been identified to date
- Growth
    - Existing and future growth occurring in the catchment
    - Planning and management around new infrastructure required to service growth and manage the effects from changes in stormwater discharges
    - Watercourse management practices in new growth areas aiming to avoid or minimise effects from development
- Watercourse management
    - State of existing watercourses
    - Watercourse management process
    - Forward management including consideration of the NPS Freshwater Management 2014
- Contaminant discharge
    - Identifying locations of high contaminant discharge (to the extent available from previous studies)
    - Prioritising areas for receiving environment
    - Develop concept options and opportunities for stormwater quality improvement

The plans will be primarily developed on the basis of the information that currently exists across the District, which will enable CMPs to be developed more efficiently than has occurred in the past. Additional work may be required for the separate townships where basic information, necessary for the consent process, or flood modelling is not already available. The Richmond catchment will be the main focus in the first instance. Any work that can be done concurrently across the wider District will be considered to enable efficiency i.e. data collection, review and spatial integration.

The CMPs will establish key issues and a specific work programme for each township grouped around separate themes such as flooding, growth, water quality and stream health. The work programme is aimed at avoiding, remedying and mitigation of effects from stormwater discharges from our network in an integrated manner.
The CMPs shall be presented in a digital spatial format (ESRI Story Map format) with supporting documents. This application forms an interactive and user friendly tool with links to underlying data and documents where appropriate.

Richmond CMP and Motueka CMP are planned to be finalised in 2018 and 2019. Council plans to group CMP's of the remaining settlements. The prioritisation of these remaining CMP's may change depending on urgency.

Table 6: CMP Programme

	Planned Year of Completion
Richmond CMP	2017/2018
Motueka CMP	2018/2019
Tasman Bay CMP's (Mapua, Ruby Bay, Kaiteriteri)	2019/2020
Buller and Nelson Lakes CMP's (Murchison, St Arnaud)	2020/2021
Golden Bay CMP's (Takaka, Pohara, Ligar Bay / Tata Beach, Collingwood, Patons Rock)	2021/2022
Wakefield, Brightwater and Tapawera CMP's	2022/2023

4 Key Linkages

In preparing this AMP, we examined external national drivers that influence this activity including legislation, national polices, regulations, strategies and standards. Local or internal drivers that influence the AMP include Councils bylaws, polices, plans, strategies and standards.

Figure 2: Overview of Key Linkages

4.1 Key Legislation

4.1.1 Local Government Act

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.

The Local Government Act empowers District councils to provide public drains. It also empowers Council to cleanse, repair and maintain their drainage infrastructure as necessary for effective drainage. Council also has powers under the Land Drainage Act (1908), Rivers Boards Act (1908), and Soil Conservation and Rivers Control Act (1941). The Engineering Services Department takes on the service provider roles enabled through these Acts.

These statutes empower, but do not require, Council to provide drainage works. However, once Council does provide or take over control of systems, which enable and protect developments, there is an ongoing duty to continue this protection.

4.1.2 Resource Management Act

In relation to stormwater, the Resource Management Act (RMA) 1991 deals with:

- the control of the land use for the purpose of the maintenance and enhancement of the quality of water in water bodies and coastal water;

- discharges of contaminants into water and discharges of water into water;
- the control of the taking, use, damming and diversion of water, including:
- the setting of any maximum or minimum levels or flows of water;
- the control of the range, or rate of change, of levels or flows of water.

The RMA requires Council to sustain the potential of natural and physical resources to meet the reasonable foreseeable needs of future generations.

The Environment and Planning Department is responsible for the regulatory functions of a regional council to control the use, development and protection of land, discharges etc, and they do this through provisions and rules in the Tasman Resource Management Plan.

The Engineering Services Department is responsible for complying with those rules in the management of public stormwater systems.

The RMA also requires Council to take into account the principles of the Treaty of Waitangi.

4.1.3 Building Act

This Act requires that buildings and site works are constructed to protect people and other property from the adverse effects of surface water. The Environment and Planning Department is responsible for the enforcement of the Building Code which is enabled through the Building Act.

The Building Code requires that:

- urban runoff from a Q10 rain event is disposed of in such a way as to avoid likelihood of damage or nuisance to other property;
- surface water from a Q50 event does not enter residential and communal buildings;
- secondary flow paths are taken into account.

4.1.4 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.

4.2 Key Planning, Policies and Strategies

4.2.1 National Policy Statement: Freshwater Management 2014 (amended 2017)

National policy statements are issued by central government to provide direction to local government about how they carry out their responsibilities under the Resource Management Act 1991 when it comes to matters of national significance. The matter of national significance to which the National Policy Statement for Freshwater Management 2014 (Freshwater NPS) applies is the management of fresh water through a framework that considers and recognises Te Mana o te Wai as an integral part of freshwater management.

In a nutshell, the Freshwater NPS directs regional councils, in consultation with their communities, to set objectives for the state of fresh water bodies in their regions and to set limits on resource use to meet these objectives.

Some of the key requirements of the Freshwater NPS are to:

- consider and recognise Te Mana o te Wai in freshwater management
- safeguard fresh water's life-supporting capacity, ecosystem processes, and indigenous species
- safeguard the health of people who come into contact with the water
- maintain or improve the overall quality of fresh water within a freshwater management unit
- improve water quality so that it is suitable for primary contact more often

- protect the significant values of wetlands and outstanding freshwater bodies
- follow a specific process (the national objectives framework) for identifying the values that tāngata whenua and communities have for water, and using a specified set of water quality measures (called attributes) to set objectives
- set limits on resource use (eg, how much water can be taken or how much of a contaminant can be discharged) to meet limits over time and ensure they continue to be met
- determine the appropriate set of methods to meet the objectives and limits
- take an integrated approach to managing land use, fresh water and coastal water
- involve iwi and hapū in decision-making and management of fresh water.

4.2.2 Industry Guidelines and Standards New Zealand

The primary documents that guide standards for stormwater drainage management and flood protection services are (refer to http://www.standards.co.nz).

Table 7: New Zealand Standards

Number/Source	Title
NZS 4404	Land development and subdivision
AS/NZS 1254	PVC pipes and fittings for stormwater and surface water applications
AS/NZS1260	uPVC Pipes and fittings for drain waste and vent applications
NZS7643	CoP for the installation of unplasticised PVC pipe systems
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2566	Part 1:1998 Buried flexible pipelines – Structural design and Supp 1 Commentary Part 2 – Buried flexible pipelines - Installation
NZS 3109	Concrete construction
NZS 3121	Specification for water and aggregate for concrete
AS/NZS 3725	Design for installation of buried concrete pipes
AS/NZS 4058	Pre-cast concrete pipes for (pressure and non-pressure)
NZS 4442	Welded steel pipes and fittings for water, sewage, and medium pressure gas
NZS 7643	Plastic Pipe
Ministry of Business, Innovation & Employment AS/NZS 3917:2013 Fixed Term Contract Management	NZ Building Code – E1 and B2 and associated acceptable solutions and verification methods Specifies requirements intended for use when contracts are let for maintenance or other building or engineering works where the contract is intended to run for a defined period of time, as opposed to a contract for a defined scope of work.

4.2.3 Regional and Local Bylaws, Policies, Regulations and Strategies

Council also has several planning policy and/or management documents detailing its responsibilities under the legislative drivers listed above. Council has two key statutory planning documents implementing its responsibilities under the Resource Management Act 1991 being:

- Tasman Regional Policy Statement (TRPS) operative 2001

An overview of significant resource management issues with general policies and methods to address these.

- 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.

These documents guide the processing of resource consent applications for stormwater discharge to land and water bodies, and land disturbance or waterway interferences that may be associated with stormwater reticulation. They may impact on the location and method of stormwater disposal including quality requirements and the location, design and construction of reticulation networks. The plan also specifies requirements for onsite disposal.

The Wastewater Bylaw has a direct reference to stormwater where it sets out requirements to prevent inflow and infiltration of stormwater into the wastewater network. The Wastewater Bylaw (2015) applies to all users of the wastewater system and includes trade waste and protection of the wastewater infrastructure.

4.2.4 Assessment of Stormwater Systems in the District

Council is using stormwater models to assess the functionality of our primary and secondary stormwater networks. Output from these models is used for the development of catchment management plans.

4.3 Strategic Studies

A number of strategic studies and modelling reports have been prepared to investigate existing issues and design solutions. Existing and most relevant studies to date are listed below:

- Richmond Stormwater Modelling
- Stage 1 – scoping study, Stantec, September 2016
- Stage 2 - Model build, Validation and System Performance, AWA, August 2017
- Stage 3 – Future base case and option analysis, AWA/Stantec, December 2017 (being developed)
- Richmond Borck Creek Greenway Adaptive Plan, Tasman District Council, March 2017, Issue 1 for 2017/18 projects (working document)
- Motueka Stormwater Modelling, System Performance Report, MWH, May 2012
- Brightwater – Wakefield Flood Hazard Mapping, SKM, December 2013
- Ned's Creek Flood Modelling Murchison, MWH, November 2013
- Ellis Creek Modelling Model build and flood hazard mapping, Tonkin & Taylor, February 2014

5 Levels of Service

A key objective of this plan is to match the levels of service provided by this 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 or operational. They 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 (eg, 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 8 summarises the levels of service and performance measures for the Stormwater activity. Blue shaded rows are the levels of service and performance measures to be included in the Long Term Plan. Unshaded white rows are technical measures that are only included in the Activity Management Plan.

Table 8: Levels of Service and Performance Measures

Levels of Service	Performance Measure	Current Performance	Future Performance Targets			
			Year 1	Year 2	Year 3	By Year 10
			2018/19	2019/20	2020/21	2028/29
Stormwater Flooding We have measures in place to respond to and reduce flood damage from stormwater to property and risk to the community	a) The number of flooding events that occur in the District and; b) For each flooding event, the number of habitable floors affected. (Expressed per 1000 properties connected to the territorial authority's stormwater system.) Habitable floor refers to a floor of a building (including a basement) but does not include ancillary structures such as stand-alone garden sheds or garages. A flooding event means an overflow of stormwater from Councils stormwater system that enters a habitable floor. Target: <1 habitable floor flooded per event (expressed per 1000 properties connected) (Mandatory measure 1)	**Actual: Achieved** 2014/15: N/A 2015/16: Event 1 – 0.1 floors, Event 2 - 0.3 floors 2016/17: No flood events As measured through justified complaints recorded in the Confirm and NCS databases. Based on 14,139 connection	<1 habitable floor flooded per event (expressed per 1000 properties connected)	<1 habitable floor flooded per event (expressed per 1000 properties connected)	<1 habitable floor flooded per event (expressed per 1000 properties connected)	<1 habitable floor flooded per event (expressed per 1000 properties connected)
	The median response time to attend a flooding event, measured from the time that council receives notification to the time that service personnel reach the site. Target: <2 hours (Mandatory measure 3)	**Actual: Not Measured** The system required to record response times was implemented in 2016/17 and we will be able to report on a full set of data for 2017/18. We expect data for response times for calls received within office hours to be reliable. We expect data for response times for calls received outside of office hours to be less reliable and we plan to refine the data collection process to improve data reliability.	<2 hours	<2 hours	<2 hours	<2 hours

Levels of Service	Performance Measure	Current Performance	Future Performance Targets			
			Year 1	Year 2	Year 3	By Year 10
			2018/19	2019/20	2020/21	2028/29
	The percentage of total properties within urban drainage areas that is serviced by a primary network that is capable of discharging a storm event of 10% annual exceedance probability (AEP) Measured as an estimate obtained through stormwater modelling	**Actual: N/A** This is a new performance measure Actual: < 5% of properties (estimated) Further information need to be obtained to set future targets	Obtain information to set target	Obtain information to set target	Obtain information to set target	Obtain information to set target
Stormwater Flooding We have measures in place to respond to and reduce flood damage from stormwater to property and risk to the community	The percentage of habitable floors within urban drainage areas that are expected to flood as a result of a storm event with 1% annual exceedance probability (AEP) Measured as an estimate obtained through stormwater modelling	**Actual: N/A** This is a new performance measure	Obtain information to set target	Obtain information to set target	Obtain information to set target	Obtain information to set target
Strategic Planning We have strategies in place to manage our stormwater systems efficiently to ensure that our community receives best value for money	The number of Urban Drainage Areas that have Catchment Management Plans (CMP's) meets the target. Target: increasing from 1 to 15 over 10 years	**Actual: Not Achieved** CMP Richmond is being prepared, but no CMP's have been finalised	1 of 15	2 of 15	4 of 15	All 15

Levels of Service	Performance Measure	Current Performance	Future Performance Targets			
			Year 1	Year 2	Year 3	By Year 10
			2018/19	2019/20	2020/21	2028/29
Customer Satisfaction Our stormwater activities are managed at a level which satisfies the community	The number of complaints received by council about the performance of its stormwater system, expressed per 1000 properties connected to the stormwater system. Target < 20 (Mandatory measure 4)	**Actual: Achieved** 2014/15 – 9.3 2015/16 – 2.5 2016/17 – 6.9 As measured through confirm and NCS database Justified complaints about the performance of councils stormwater system Based on 14,139 connections	<20	<20	<20	<20
Customer Satisfaction Our stormwater activities are managed at a level which satisfies the community	Percentage of customers satisfied with the stormwater service Target: 80%	**Actual: Achieved** 2014/15 – 83% 2015/16 – 81% 2016/17 – 79% As measured through the annual resident survey.	80%	80%	80%	80%
	Percentage of faults restored within contract timeframes Target ≥ 90%	**Actual: N/A** As recorded through the Operations & Maintenance contract (July 2017)	≥ 90%	≥ 90%	≥ 90%	≥ 90%
The Environment Our stormwater systems do not	Council obtains comprehensive discharge consent and complies with the conditions of the consent. Target: compliance with conditions of consent	**Actual: N/A** Council is in the process of obtaining a comprehensive discharge consent.	Obtain consent	Compliant	Compliant	Compliant

Levels of Service	Performance Measure	Current Performance	Future Performance Targets			
			Year 1	Year 2	Year 3	By Year 10
			2018/19	2019/20	2020/21	2028/29
adversely affect or degrade the receiving environment	Compliance with Council's resource consents for discharge from its stormwater system, measured by the number of: a) abatement notices (target ≤1) b) infringement notices (target 0) c) enforcement orders (target 0) d) Successful prosecutions (target 0) (Mandatory Measure 2)	**Actual: N/A** Council is in the process of obtaining a comprehensive discharge consent	a) ≤1 b) 0 c) 0 d) 0	e) ≤1 f) 0 g) 0 h) 0	i) ≤1 j) 0 k) 0 l) 0	m) ≤1 n) 0 o) 0 p) 0

5.2 Level of Service Changes

Council reviews its levels of service every three years, as part of the Long Term Plan development. Table 9 below summaries the key changes Council has made during development of the Long Term Plan 2018 – 2028.

Table 9: Summary of areas where Council made changes to levels of service

Performance Measure	Summary of change
Discharge consents	Council plans to obtain a single comprehensive discharge consent that covers the District, instead of having 15 separate discharge consents for each UDA.
Flooding of habitable floors	Council has increased the target from no more than 5 habitable floors flooded per 1000 properties in each storm event to no more than 1 habitable floor flooded per 1000 properties in each storm event. In recent years, Council has already met this increased target of no more than 1 habitable floor flooded per 1000 properties.
Response time	The target for median response time to attend a flooding event has been increased from within 3 hours of council being notified to within 2 hours and is aligned with the new operation and maintenance contract.

5.3 Level of Service Performance and Analysis

5.3.1 Stormwater Flooding

We have measures in place to respond to and reduce flood damage from stormwater to property and risk to the community.

There were significant rainfall events recorded between January 2014 and December 2017. The more intensive rainfall events occurred in Motueka and Collingwood. House floor levels were flooded in Motueka in March and May 2016. These two Motueka flood events both had a 2.5% annual exceedance probability (AEP). A significant rainfall event also occurred in Motueka in February 2017 with an AEP of 1.43%, but this was over a 6 hour period and had limited flooding effects. Flooding occurred at the Courthouse Café in Collingwood with the kitchen floor being flooded in May 2017 when 72.5mm of rain fell over a 2 hour period which is a 2.5%AEP.

Other areas experienced heavy rainfall events, but these did not result in the same extent of flooding that occurred in Motueka and Collingwood. Overall the rainfall events provide good evidential proof of the suitability or shortfalls in the stormwater network. The performance of the stormwater network for each town has largely been effective. However, provision of adequate overland flowpaths is still a concern.

A number of complaints with regards to flooding were recorded in Council's databases Confirm and NCS. However, the mandatory measure requires council to only measure events that have resulted in the flooding of habitable floors. The two rainfall events in Motueka in 2016 resulted in the flooding of habitable floors. The first event flooded one floor and the second flooded a total of four floors. This translates to 0.1 and 0.3 flooded floors per 1000 connections for those two events, which meets the target of less than 1 flooded floor per 1000 connections.

When a flood event occurs, Council's aim is for service personnel to attend and assess the flooding within 2 hours of notification. Council has not been able to measure this, because this is a new performance measure. Council has a plan in place to enable this in the future.

Council uses stormwater modelling to further investigate and predict the number of properties that may be affected by flooding during extreme storm events. Once Council has obtained sufficient information through modelling we will set specific targets for floods that occur as a result of storms with a 1% and 10% annual exceedance probability. Because Council aims to provide an affordable and cost effective stormwater service, it categorises the effects of flooding and priorities into the following three categories:

Hazard to people	Top priority
Damage to property as a result of flooding of habitable floors	High priority
Nuisance	Medium to low priority

The majority of Council's existing primary stormwater network (pipes) is designed to cater for rainfall events that have a 20% to 50% chance of occurring in any year. During bigger rainfall events the capacity of these pipes will be exceeded and stormwater will flow via overland flowpaths towards the nearest stream and further to the coast. Because upgrading pipes to a higher level of service is not cost effective in the short to medium term, Council's stormwater management will be focused on managing and protecting overland flowpaths through establishment of stormwater easements, as well as inspections and enforcement actions to ensure that protected flowpaths remain free of obstacles

Council will invest in minimising flood hazards and damage to property. This means that a level of nuisance flooding is acceptable, and that nuisance flooding may be experienced more frequently in the future as a result of increased rainfall. Council will still assist the community in dealing with nuisance flooding in some instances where it deems it necessary and appropriate.

5.3.2 Strategic Planning

We have strategies in place to manage our stormwater systems efficiently to ensure that our community receives best value for money.

The need for strategic planning on a catchment wide basis was identified in the 2015 Activity Management Plan. For various reasons the development of CMP's was delayed and the target of having CMP's for two Urban Drainage Areas in 2017 was not achieved. Council has reviewed and amended the process for the development of catchment management plans so that outcomes are achievable within reasonable timeframes. The process focusses on collating existing data and creating a clear overview of the current state of our catchments. The CMP's will be developed in a spatial and online format that can be easily updated over time when more information becomes available. CMPs will be developed for each township, providing an overview of the current state of the network, objectives, issues and solutions.

5.3.3 Customer Satisfaction

Our stormwater activity is managed at a level that satisfies the community

Most residents (79%) that have a connection to the network are satisfied with the stormwater service that is provided to them by Council. In 2013, a major rain event occurred, and satisfaction levels dropped significantly. In the last three years customer satisfaction has gone up and is now relatively stable at around 80%. This is the same or a similar level of satisfaction that customers experienced before the events in 2013. It is clear that customer satisfaction is driven by the big rain events and the flooding that occurred as a result of this. With the expected increase in rainfall as a result of climate change, it is important that Council raises awareness within the community that overland flowpaths are an important part of stormwater is managed, but that this may lead to some nuisance i.e. a flooded road or garden.

There is a notable difference in satisfaction levels between residents inside the UDA's where the service is provided and overall satisfactory levels. The overall satisfactory survey includes areas outside the UDA's where the service is not provided and where residents contribute significantly less through their rates than residents that are living within one of the UDA's. This may result in residents outside the UDA's being less satisfied with how Council manages stormwater than residents within the UDA's that directly benefit from the service.

The number of complaints that Council received meets the target of less than 20. Customers are generally satisfied with how Council manages its day to day operation. Most complaints relate to issues that are outside the control of council, relating for example to spills and nuisance that is experienced by birds such as ducks. In many instances Council relies heavily on local residents to inform us about these type of issues in order to provide an appropriate response. In some cases, it is known that members from the community go out and clean blocked culverts themselves in response to adverse weather forecasts.

5.3.4 The Environment

Our stormwater systems do not adversely affect or degrade the receiving environment

The need to obtain resource consents for discharges from Council's networks was identified in the 2015 Activity Management Plan. For various reasons consent applications were delayed and the target of having consents for two Urban Drainage Areas in 2017 was not achieved. Council has reviewed the process for obtaining resource consents and set new targets that can be achieved in the coming years.

Instead of obtaining separate resource consents for each urban drainage area, Council has planned to obtain a single global resource consent will be obtained for the entire District. An important condition of consent will be the development, monitoring and updating of catchment management plans. The discharge consent will authorise discharges based on the outcomes that are anticipated through the catchment management plans.

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 Community 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; and
- 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; and
- is an opportunity for a fully informed community to contribute to decision-making.

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

- elected members (Community Board members);
- iwi (council's Treaty partners);
- regulatory (consent compliance, Public Health);
- fisheries organisations;
- Public Health Service (Nelson-Marlborough District Health Board);
- Heritage New Zealand;
- Civil Contractors New Zealand (Nelson - Marlborough);
- service providers / suppliers (Network Tasman, power companies);
- affected or interested parties (when applying for resource consents);
- neighbours

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;
- other customer/user surveys, such as Yardstick visitor measures;
- levels of service consultation on specific issues;
- feedback from staff customer contact;
- ongoing staff liaison with community organisations, user groups and individuals;
- public meetings;
- feedback from elected members, advisory groups and working parties;
- analysis of customer service requests and complaints;
- consultation via the Annual Plan and Long-Term Plan processes.

Council commissions residents surveys on a regular basis (the National Research Bureau Ltd has provided this service since 2008). These NRB CommunitrakTM 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 most recent NRB Communitrak™ survey was undertaken in May 2017. This asked whether residents were satisfied with the stormwater system and included residents that had a Council service and some that were not on a Council service. The results from this survey are summarised in Figure 3 and Figure 4

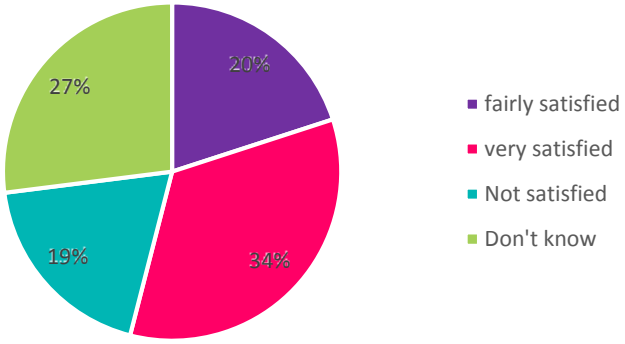


Figure 3: Overall customer satisfaction

54% of residents are satisfied with the stormwater services (61% in 2016), while 19% are not very satisfied and 27% are unable to comment (20% in 2016). The percent not very satisfied (19%) is on par with the Peer Group Average and slightly above the National Average.

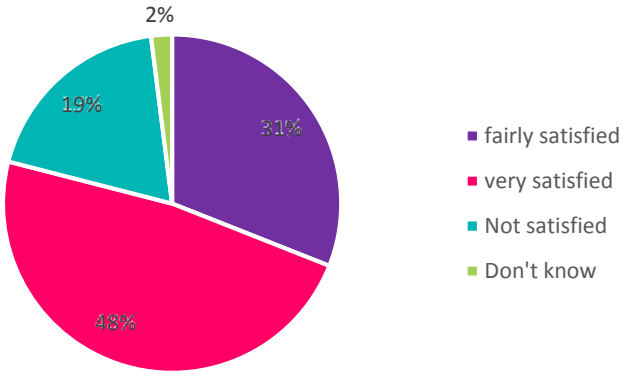


Figure 4: Customer satisfaction where service is provided (within urban drainage areas)

55% of residents are provided with a piped stormwater collection (58% in 2016) and, of these, 79% are satisfied and 19% not very satisfied.

Figure 5 shows that overall customer satisfaction levels with the stormwater service have been on a variable but slightly declining trend since 2009. It is important to note that this illustrates satisfaction overall (not satisfaction when a service is provided).

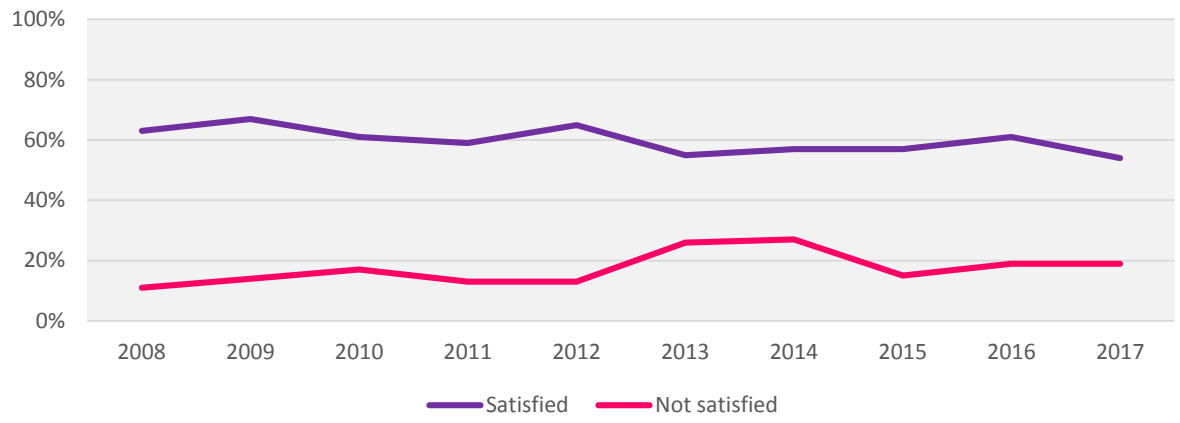


Figure 5: Overall satisfaction with Stormwater

Longer term residents, those residing in the District more than 10 years are more likely to be not very satisfied with the stormwater services, than shorter term residents. The main reasons residents are not very satisfied with the stormwater services are:

- flooding in street/area/surface flooding,
- drains/culverts blocked/need cleaning/maintenance,
- poor drainage/inadequate system/needs upgrading/improving.

When asked whether customers would like more to be spent, or less or about the same on water supply given that Council cannot spend more without increasing rates or user charges, most said they would like to see about the same or more as illustrated in Figure 6.

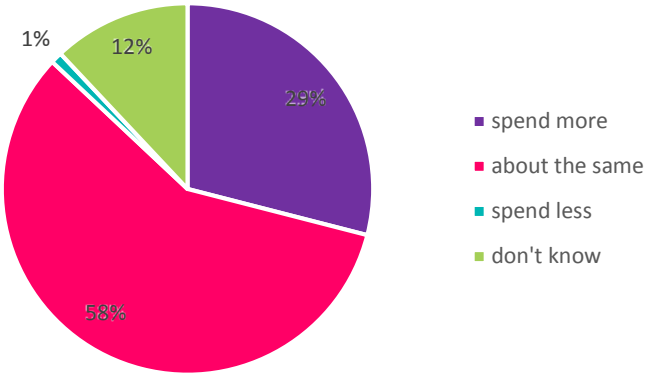


Figure 6: Summary of Customer Opinions on Stormwater Spending

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 and overview of key drivers of demand and what demand management measures Council has planned to implement.

7.1 Demand Drivers

The future demand for stormwater services will change over time in response to a wide range of influences, including:

- Population growth and associated urban development
- Climate change and the anticipated increased rainfall and sea level rise
- State of the Environment
- Changing national, regional and District legislation and planning requirements
- Changing community expectations

7.2 Assessing Demand

7.2.1 Population Growth

Population growth leads to intensification of development (infill housing) and new subdivisions. Urbanisation leads to increased levels of impervious surfaces, which in turn leads to quicker and higher runoff volumes from rainfall. A change in land use may also contribute to a decrease in water quality and stream health. Projections for future increases in stormwater flows must take into account additional flows not only from new developments but also from existing developed areas.

Potential effects from increased population growth on the stormwater systems are:

- Increased flooding due to urbanisation; faster and larger runoff flows which exceed system capacities;
- Decreased water quality due to change in land use and increasing urbanisation and;
- Decreased stream health and aquatic habitat due to change in land use and increasing urbanisation.

The anticipated population growth and associated future development is incorporated into our stormwater models. Our stormwater models help to predict and understand how growth affects stormwater flows and flooding and what response is required from Council as well as private developers.

Population growth is assessed through Councils growth modelling. The purpose of the growth model is to provide predictive information (demand and supply) for future physical development, to inform the programming of a range of services, such as network infrastructure and facilities, and District plan reviews. The model generates residential and business projections for 17 settlement areas and 5 ward remainder areas.

The key demographic assumptions affecting future growth are:

- Ongoing population growth over the next 30 years with the rate of growth slowing over time. The overall population of Tasman is expected to increase by 4,420 residents between 2018 and 2028, to reach 55,690.
- Higher growth in Richmond, Motueka, Mapua, Brightwater, and Wakefield for 2018-2028. For 2018-20208, Council has used Statistics New Zealand's high growth projections for Richmond, Brightwater, Wakefield, Motueka, and Mapua/Ruby Bay, and medium growth projections for the rest of the District. Medium growth projections have been used for the whole District for 2028-2048.
- An ageing population, with population increases in residents aged 65 years and over. The median age in the Tasman District in 2013 was 44. This is expected to increase to 53 (high projection) /54.1(medium projection) by 2043. The proportion of the population aged 65 years and over is expected to increase from 18% in 2013 to 36% (high projection)/ 37% (medium projection) by 2043.
- A decline in average household size, mainly due to the ageing population with an increasing number of people at older ages who are more likely to live in one or two person households.

The following provides a summary of the outputs from the growth model that have been determined by using the above input assumptions and parameters.

- Residential growth is measured in the number of new dwellings. Council has estimated demand for 2,955 new dwellings over the next ten years, and a further 3,040 dwellings between 2028 and 2048. This is based on population and household size projections, and also allow for demand for dwellings for non-residents, such as holiday houses or temporary worker accommodation. The growth model projects demand for new dwellings to be an average of 365 a year for Years 1-3 (2018-2021), dropping to 266 a year for 2021-2028. In recent years, Tasman has experienced increased growth in the number of new dwellings, with an average annual increase in the last three years of 365 new dwellings. The average over the last ten years was 291 new dwellings a year.
- Business growth is measured in the number of new business lots. Council has estimated demand for 243 new business lots in our settlements over the next ten years, and a further 212 new lots between 2028 and 2048. This is based on a business land forecasting model from Property Economics using medium population projections, national and regional economic trends, employment projections and employment to land ratios.

7.2.2 Climate Change

NIWA has predicted the effects of climate change in the Tasman District for the years 2040 and 2090 (Climate Change and Variability Tasman District, NIWA, August 2015). http://www.tasman.govt.nz/policy/reports/environmental/climate-change-and-variability-report/

The ministry of the Environment has published a report in December 2017 as a guidance for local government to prepare for Coastal changes as a result of 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) that represent different climate change mitigation scenarios with varying levels of CO2 emission (low – medium – high).

The anticipated effects from climate change in Tasman District include:

- An increase in seasonal mean temperature and high temperature extremes
- A significant 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

7.2.2.1 Projected Change in Mean Rainfall

The projected changes in rainfall for all scenarios are based on the average outcome from up to 41 different climate change models. The outcomes show a variety of rainfall predictions per season and for different regions in the District, however all models predict increased rainfall in winter throughout the entire District. There's a clear distinction between the Waimea plains (Appleby) and Golden Bay (Takaka) as shown in Table 10 and Table 11.

Table 10: Projected changes in winter mean rainfall (in %) for the Appleby grid point for 2040 and 2090. (Climate Change and Variability Tasman District, NIWA, August 2015)

Appleby / Waimea plans	Range of projected rainfall increase in winter
2040	3 – 4%
2090	3 - 9 %

Table 11: Projected changes in winter mean rainfall (in %) for the Takaka grid point for 2040 and 2090. (Climate Change and Variability Tasman District, NIWA, August 2015)

Takaka / Golden Bay	Range of projected rainfall increase in winter
2040	6 – 11%
2090	8 - 26 %

7.2.2.2 Projected Change in Extreme Rainfall

A warmer atmosphere can hold more moisture (about 8% more for every 1°C increase in temperature), so there is potential for heavier extreme rainfall with global increases in temperatures under climate change. Statistics for screening studies under mid-range temperature scenarios for 2100 show that total rainfall depths in millimeters (mm) may increase by approximately 15% based on a 2°C temperature increase.

New stormwater infrastructure is designed and sized to cater for 10% AEP events (primary networks) and for 1% AEP events (secondary network). Rainfall depth and duration details can be obtained from NIWA's High Intensity Rainfall Database (HIRDS) including climate change effects based on a 2°C temperature increase.

7.2.2.3 Projected Sea Level Rise

Sea levels will continue to rise over the 21st century and beyond, primarily because of thermal expansion within the oceans and loss of ice sheets and glaciers on land. Figure 7 shows a projected sea level rise in 2150 for New Zealand depending on the different RCP scenarios.

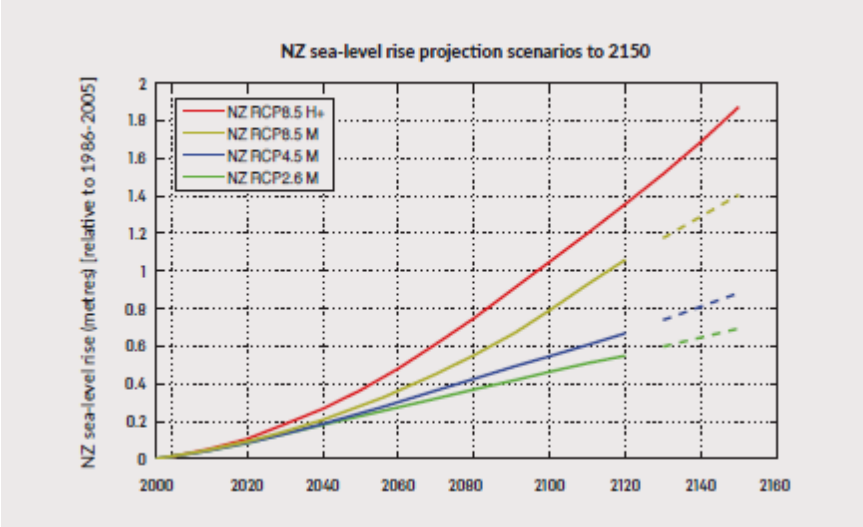


Figure 7: projected sea level rise in 2150 for New Zealand (Preparing for Coastal Change, A summary of Coastal hazards and climate change guidance for local government, MfE, December 2017))

7.2.3 Changing Legislation

National, regional and District legislation and planning requirements evolve over time and guide how Council manages the stormwater systems. Demand for new stormwater infrastructure has traditionally been driven by the capacity of our networks and ability to address flooding. Changing legislation requires us to take a wider and more holistic approach addressing multiple values such as water quality, ecology and amenity. It is expected that the demand for conventional solutions such as pipes and culverts will shift towards higher demand for solutions that are capable of addressing multiple values. This approach is also referred to as water sensitive design or low impact design and includes the implementation of stormwater treatment, stream restoration and management of riparian margins.

7.2.3.1 NPS Freshwater

The NPS Freshwater came into effect in 2014 and was amended in 2017. The policy statement requires Council to set objectives for the state of fresh water bodies in our District. A key requirement of the NPS Freshwater is to maintain or improve the overall quality of fresh water within freshwater management units. Without putting specific measures in place, the state of our freshwater environments will be adversely affected as a result of increased urbanisation and Council will not be able to comply with the NPS Freshwater. Council will determine an appropriate set of methods and measures to meet the objectives and limits that aim to maintain or improve the overall water quality.

The NPS Freshwater will require implementation of new forms of stormwater infrastructure. Traditionally, our stormwater infrastructure has addressed and dealt primarily with water quantity. In the future, in order to meet NPS policies, our infrastructure will have to address additional issues such as:

- Water quality (treatment)
- Stream health (erosion protection)
- Amenity and recreational values
- Tāngata whenua values

7.2.3.2 Stormwater Discharge Consent

Under the Tasman Resource Management Plan, Council is required to obtain resource consent and manage the discharge of contaminants including stormwater discharges. Effects on the environment from our stormwater discharges will be managed and controlled through the conditions of the discharge consent and will underpin the requirements of the policy statement.

7.2.3.3 Land Development Manual

Nelson City and Tasman District Councils are developing the Nelson Tasman Land Development Manual 2018 (NTLDM). The NTLDM is a document that provides minimum standards and guidance for network assets that are vested to council. The document will replace the former engineering standards. Parts of the NTLDM will be given effect through the Tasman Resource Management Plan and set specific requirements for stormwater management to meet the environmental.

Changing engineering and environmental standards will increase demand for specific stormwater infrastructure such as stormwater treatment devices as well as changing operation and maintenance requirements.

7.2.4 Community Expectations

Increasing demand for higher levels of flood protection and decreasing tolerance of flooding has become a topical issue in some areas due to the occurrence of several large storms. The Richmond town center has been badly impacted in the past and areas on the outskirts of UDAs (which do not contribute financially to the upkeep of the UDA) are demanding flood protection. Focused community consultation and network capacity assessments will be required prior to extending UDA boundaries further or allowing private assets to be vested in Council.

Higher environmental standards and greater community awareness are likely to require continued reductions in the environmental related effects of the operation of stormwater systems. This is expected to necessitate ongoing capital and operational expenditure to improve catchment management practices. Levels of service are reviewed every three years in association with the review of this Activity Management Plan and Council's LTP. Community expectations are taken into account and undergo community consultation in association with the LTP.

7.3 Demand Management

Demand management **includes** both asset and non-asset strategies to manage demand across the **stormwater** activity. The objective of demand management 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 Council's strategic objectives;
- deliver a more sustainable service; and
- respond to customer needs.

7.3.1 Council's Approach to Demand Management

7.3.1.1 Integrated Catchment Management Planning

Council efficiently manage demand through an integrated urban catchment management approach. The catchment management plans will assist Council in identifying integrated solutions and balance competing needs.

7.3.1.2 Water Sensitive Design (WSD)

'Hard' stormwater infrastructure, such as pipes and concrete channels, is a means to convey stormwater runoff in order to manage flood risk to property and people. However, these structural elements are often a source of adverse effects on the environment, by rapidly concentrating stormwater flows and their contaminants to the receiving environment. Their effectiveness is also limited by system capacity (e.g. pipe diameter). Water Sensitive Design approaches focus on reducing or eliminating stormwater runoff generation through source control, and utilising natural systems and processes to manage stormwater quantity and quality effects. WSD is inherently a context-specific approach which utilises a combination of conventional stormwater infrastructure, WSD devices (e.g. swales and raingardens), and enhanced natural systems to achieve the best practical stormwater management outcome. This includes the potential to utilise stormwater as a supply for potable water or irrigation. WSD is a design approach based on four guiding principles:

- Mimic natural systems and hydrological processes
- Address effects from stormwater as close to the source as possible
- Promote inter-disciplinary planning and design
- Protect and enhance the values and functions of natural ecosystems

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

Council needs to understand the current condition of its assets. Monitoring programmes should be tailored to consider how critical the asset is, how quickly it is likely to deteriorate, and the cost of data collection.

Condition assessment is not performed on individual reticulation assets; instead the reticulation systems as a whole is audited. The audits look at the condition of assets from site works or inspections. Manhole inspections are planned under the new contract C1065 over the next three years. Our network is relatively young, so condition is not yet an issue, other than the possible problems in Motueka with some poor quality pipes laid close to the surface.

Once critical assets are defined, these will be assessed for condition, especially those assets which are approaching the end of their theoretical useful life. Council is also looking at ways to make better use of current information that is gathered but not stored in the asset register. Condition rating of stormwater pipes is conducted via CCTV surveys. Pipes have been rated both on structural (condition) and service (performance) defects basis.

Where condition rating is done, a 1-5 scale is used, as per the NZQA Infrastructure Asset Grading Guidelines, as shown in Table 12.

Table 12: Asset Condition Rating Table

Condition Grade and Meaning	General Meaning
1 Very Good	Life: 10+ years. Physical: Fit for purpose. Robust and modern design. Access: Easy; easy lift manhole lids, clear access roads. Security: Sound structure with modern locks. Exposure: Fully protected from elements or providing full protection.
2 Good	Life: Review in 5 – 10 years. Physical: Fit for purpose. Early signs of corrosion/wear. Robust, but not latest design. Access: Awkward; heavy/corroded lids, overgrown with vegetation. Security: Sound structure with locks. Exposure: Adequate protection from elements or providing adequate protection.
3 Moderate	Life: Review in 5 years. Physical: Potentially impaired by corrosion/wear, old design or poor implementation. Access: Difficult: requires special tools or more than one person. Secure: Locked but structure not secure, or secure structure with no locks. Exposure: Showing signs of wear that could lead to exposure.
4 Poor	Life: Almost at failure, needs immediate expert review. Physical: Heavy corrosion impairing use. Obvious signs of potential failure. Access: Restricted, potentially dangerous. Secure: Locks and/or structure easily breeched. Exposure: Exposure to elements evident e.g. leaks, overheating.

Condition Grade and Meaning	General Meaning
5 Very Poor	Life: 0 years – broken. Physical: Obvious impairments to use. Heavy wear/corrosion. Outdated/flawed design/build. Access: Severely limited or dangerous. Security: No locks or easily breeched. Exposure: Exposed to elements when not specifically designed to be.

8.1.1 Asset Condition and Performance

Council's piped network is at capacity in most of the UDA's and does not meet current design standards of 10% AEP (1 in 10 year) or more. Most of the existing pipe assets have a design capacity of 20% AEP (1 in 5 year) or 50% AEP (1 in 2 year). The performance of secondary flowpaths is potentially affected by blockages.

The following section provides a summary overview of the stormwater networks general condition.

Table 13: General Asset Condition

Urban Drainage Area	Asset condition
Richmond	All pipe assets and non-pipe assets were installed between 1950 and 2018. Generally, the assets in the Richmond UDA are relatively young and in good or very good condition There are no major condition problems that signal the need for renewal expenditure.
Brightwater	All pipe assets and non-pipe assets were installed between 1964 and 2018. A small stormwater pumping station operates in the Brightwater Underpass but is a Roading asset. Generally, the assets in the Brightwater UDA are relatively young and in good condition. There are no major condition problems that signal the need for renewal expenditure.
Wakefield	All pipe assets and non-pipe assets were installed between 1958 and 2018. Generally, the assets in the Wakefield UDA are relatively young and in good condition. There are no major condition problems that signal the need for renewal expenditure.
Murchison	All pipe assets and non-piped assets were installed between 1970 and 2018. Generally, the assets in the Murchison UDA are relatively young and in good condition. There are no major condition problems that signal the need for renewal expenditure.
St Arnaud	All pipe assets were installed between 2000 and 2018. The installation date of non-pipe assets is not recorded in Confirm but assumed to be of the same age. The assets in the St Arnaud UDA are very young and in good or very good condition. There are no major condition problems that signal the need for renewal expenditure.
Tapawera	All pipe assets and non-pipe assets were installed between 1973 and 2018. Generally, the assets in the Tapawera UDA are relatively young and in good condition. There are no major condition problems that signal the need for renewal expenditure.
Motueka	All pipe assets and non-pipe assets were installed between 1962 and 2018. While the stormwater systems in Motueka are older than many in the District, there is not a great deal of knowledge about the system's condition. From inspections carried out under the maintenance contract and local knowledge, it is thought likely that the condition of a number of the older assets is poor. Renewal work is typically preceded by CCTV investigations to identify works that need repair and to scope the severity and extent of the problems.
Mapua/Ruby Bay	All pipe assets and non-pipe assets were installed between 1971 and 2015. Generally, the assets in the Mapua/Ruby Bay UDA are relatively young and in good condition There are no major condition problems that signal the need for renewal expenditure.

Urban Drainage Area	Asset condition
Tasman	All pipe assets were installed between 1980 and 2006. Generally, the assets in the Tasman UDA are relatively and in good condition. There are no major condition problems that signal the need for renewal expenditure.
Kaiteriteri	All pipe assets were installed between 1963 and 2018. Generally, the assets in the Kaiteriteri UDA are relatively young and in good condition. There are no major condition problems that signal the need for renewal expenditure.
Takaka	All pipe assets were installed between 1970 and 2018. Generally, the assets in the Takaka UDA are relatively young and in good condition. There are no major condition problems that signal the need for renewal expenditure.
Pohara	All pipe assets were installed between 1990 and 2018. Generally, the assets in the Pohara UDA are relatively young and in good condition. There are no major condition problems that signal the need for renewal expenditure.
Ligar Bay and Tata Beach	All pipe assets were installed between 1986 and 2018. Generally, the assets in the Ligar Bay and Tata Beach are relatively young and in good condition. There are no major condition problems that signal the need for renewal expenditure.
Collingwood	All pipe assets were installed between 1980 and 2015. Much of the residential developed area has piped stormwater systems. The condition of the existing stormwater infrastructure is not known.
Patons Rock	All pipe assets were installed between 1970 and 2012. Generally, the assets in the Patons Rock UDA are relatively young and in good condition. There are no major condition problems that signal the need for renewal expenditure.

8.2 Operations and Maintenance

8.2.1 Key Operational and Maintenance Themes

Council's operation and maintenance efforts for the next 10 years is focused on the following key themes:

- Inspection, unblocking and repairs of the stormwater reticulation system.
- Regular inspection and control of vegetation in drains and creeks.
- Removal of deposited gravels or sediment in drains and creeks and erosion protection when required.
- Inspection and general maintenance of detention dams.
- Response to storm events and flooding.
- Operate the tidal control gates in Motueka.

8.2.2 Maintenance Contracts

The operation and maintenance of the water supply systems has been incorporated into a performance-based contract. The current maintenance contract was awarded to Downer New Zealand Ltd in 2007 and extended in 2013. Council extended it again through to mid-2018 to allow for the procurement of a new contract. The key outcomes of the new contract include:

- A high degree of reliability of all services, systems, network and supply.
- Best value to the ratepayer.
- Consistently meeting regulatory requirements – no breaches of resource consents.
- High levels of customer satisfaction.
- Assets sustainably maintained to meet asset condition ratings.
- Innovations introduced that add value.
- Accurate and timely reporting to meet statutory requirements and contract targets.
- Up-to-date and accurate asset information.

8.2.3 Maintenance Strategies

The following maintenance strategies are in place to ensure that all aspect of the stormwater network are operating efficiently and in accordance with contract requirements:

- Inspection of stormwater assets – obtaining asset information during reactive works or from CCTV and other inspections.
- Pre-storm checks – Ensuring that the more critical and visible components of the stormwater system have been checked and are in good condition ahead of forecast storm events.
- Weather and tidal monitoring – Monitoring of weather forecasts/storm warnings and related tidal levels. In order to predict tidal control requirements and requests for pre-storm checks and checking availability of additional resources.
- Water quality – monitoring and treatment for stormwater quality and prevention and response to illegal discharges.
- Removal of sediments and gravels – checking for and removal of sediments and gravels in detention dams and drains.
- Open watercourses – Open watercourses are in general maintained by property owners apart from the major drains that are maintained on a regular basis by Council. However, when there has been a significant impact to the watercourse from flooding events then Council will consider undertaking restoration work.
- Overland flowpaths – Improvement to the provision for and maintenance of overland flowpaths.

8.2.4 Forecast Operations and Maintenance Expenditure

The 30 year forecasts for operations and maintenance costs are shown in Figure 8. For a more detailed programme see Appendix A.

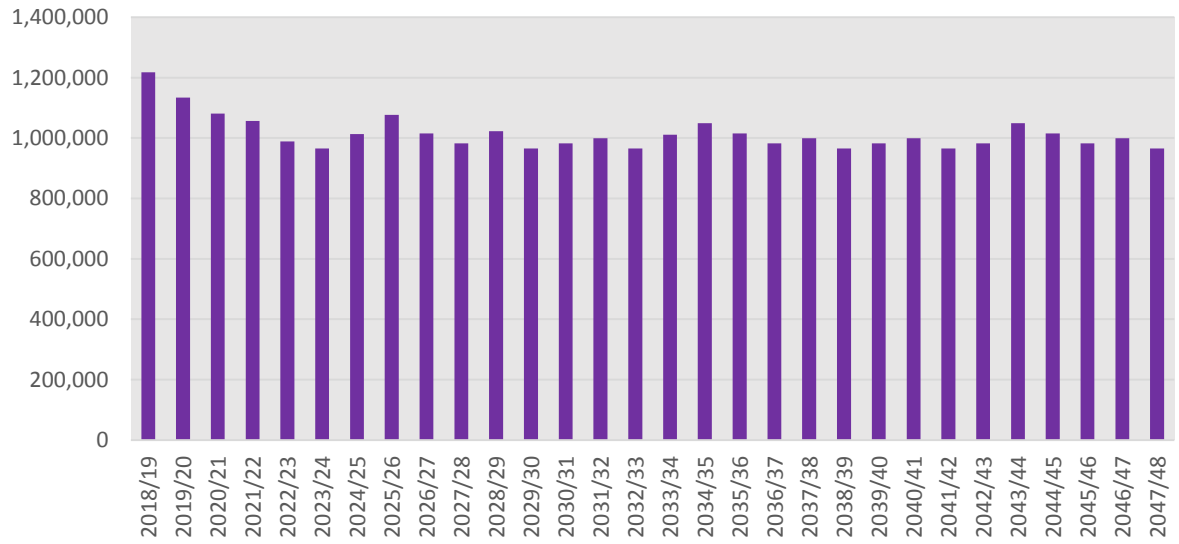


Figure 8: 2018 – 2048 Direct Operations and Maintenance Expenditure Excluding Inflation

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. Funding of work over and above restoring an asset to its original capacity is considered to be new capital works expenditure.

8.3.1 Key Renewal Themes

Council has planned negligible asset renewals for the first 10 years, however some annual renewals are programmed for outlets, inlets and valves. Pipes and manhole renewals are programmed to commence from year 11 onwards.

Within the new maintenance contract starting in July 2018 there is a requirement to assess the condition of each stormwater manhole over a three year period. Pipe inspections are usually undertaken using CCTV. Some CCTV records of stormwater pipes have been done and renewal works can be determined from condition and performance ratings of the stormwater pipe.

Pipe condition can also be obtained from specific site works where stormwater pipes are exposed and found to need replacing. A recent example of this has been in Greenwood Street in Motueka where the pipes were found with minimal cover and had little to no reinforcement and were very brittle. They would have likely collapsed if the surface had been re-laid without replacement of the pipe.

8.3.2 Renewal Strategies

Assets are considered for renewal when:

- they near the end of their effective useful life;
- the cost of maintenance becomes uneconomical and the whole-of-life costs are less to renew the asset than keep up maintenance;
- the risk of failure of critical assets is unacceptable.

The renewal programme has generally been developed by the following:

- Taking asset age and remaining life predictions, calculating when the remaining life expires and converting that into a programme of replacements based on valuation replacement costs.
- Reviewing and justifying the renewals forecasts using the accumulated knowledge and experience of asset operations and asset management staff. This incorporates the knowledge gained from tracking asset failures and performance through the asset management system.
- The renewal programme is reviewed in detail every three years, by planning advisors, asset engineers and engineering management; and crossed referenced with other activities to determine if other projects are occurring in the same location. Timings may be tweaked to optimise overall programme to minimise disruptions to the public and realise potential costs saving in the reinstatement and preliminary and general works where possible.
- Every year the annual renewal programme is reviewed and planned with the input of the maintenance contractor.

Minor renewal projects are typically carried out by the relevant operation and maintenance contractor. Contracts for larger value renewal projects are tendered in accordance with the Procurement Strategy. Prior to the asset being renewed, the operations and maintenance contractor will inspect these assets to confirm whether renewal is actually necessary. In the event it does not need to be renewed, a recommended date of renewal is then entered back into the Confirm database. This new date will then be included in the next AMP update.

8.3.3 Deferred Renewals

Deferred renewal 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.

Figure 9 compares Council's cumulative renewal expenditure and cumulative depreciation for this activity. If the renewals expenditure starts falling behind the accumulative depreciation it can indicate that the assets may not be being replaced or renewed at the rate at which they are being consumed. If this continues unchecked for too long, future communities will inherit a run-down asset, high maintenance costs and high capital costs to renew failing infrastructure.

Council has planned negligible asset renewals for the first 10 years. This creates a significant divergence between renewal investment and depreciation from Year 1, increasing through to Year 30. This divergence is due to the age profile of Council's current asset base. Most of Council's stormwater pipes are due for renewal beyond Year 30. Council has undertaken a simple exercise to compare indicative renewal requirements for 100 years with depreciation over the same time. This exercise showed that the gap between renewal and deprecation is closed as the bulk of the assets reach the end of their useful life. Another factor driving this divergence is that the new assets that Council has planned to build over the next 30 years have been incorporated into the depreciation forecasts but not the renewal forecasts.

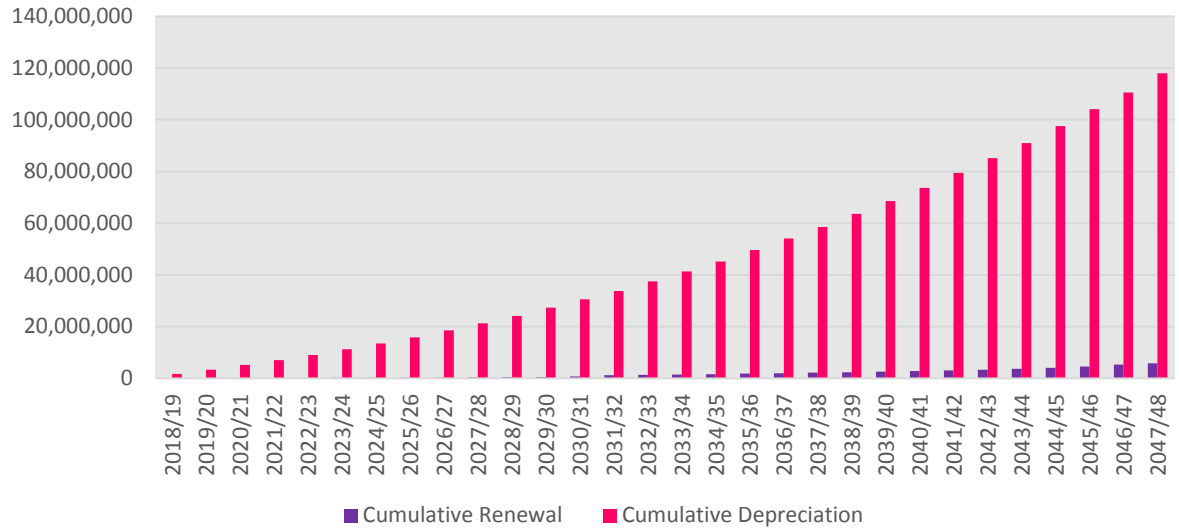


Figure 9: Cumulative Depreciation and Renewal Expenditure Comparison Including Inflation

8.3.4 Forecast Renewal Expenditure

Figure 10 below shows a summary of the expenditure forecast for renewals over the next 30 years.

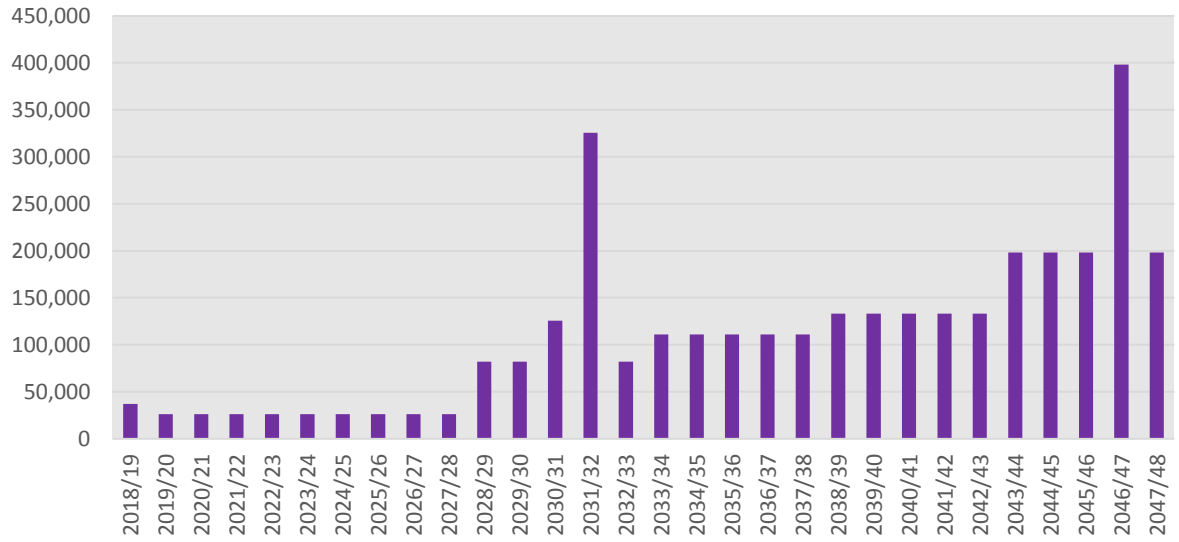


Figure 10: 2018 – 2048 Direct Renewals Expenditure Excluding Inflation

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

Growth is occurring faster than anticipated in some settlements and where capacity is not available, or if the infrastructure does not exist, Council will need to provide upgraded or new infrastructure to enable growth. Council plans to improve its primary and secondary network to meet levels of service in areas that are prone to flooding.

8.4.2 Projects to Support Increasing Levels of Service

Council is planning the following key projects to increase the levels of service:

- Collingwood – Gibbs Road stormwater diversion
- Murchison – Ned's Creek, stage 1
- Takaka - Stormwater Improvements Lake Killarney
- Richmond Central - Washbourn bypass Pipeline and associated projects
- Mapua/ Ruby Bay – Stafford Drive Stormwater Pipe Extensions
- Motueka West Discharge System (including High Street/ Wratt Street)

8.4.3 Projects to Support Growth

Council is planning the following key projects to address growth:

- Motueka West Discharge System (Woodlands)
- Borck Creek widening and associated projects
- Poutama drain widening

8.4.4 Forecast New Capital Expenditure

The capital programme that has been forecast for this activity where the primary driver is classed as New Works (ie, growth or levels of service) is summarised in Figure 11 below.

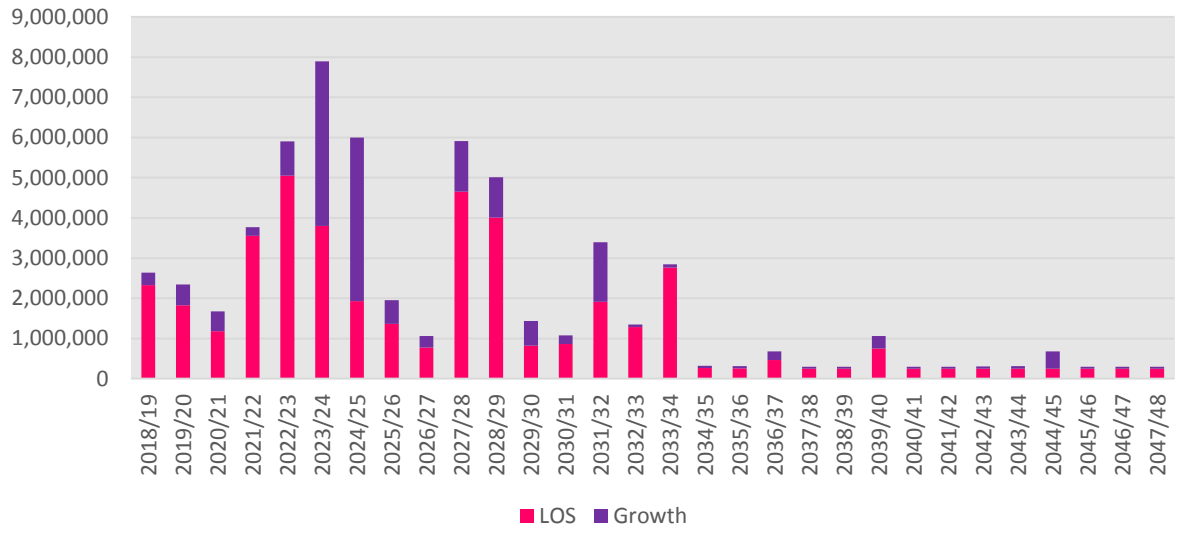


Figure 11: 2018 – 2048 New Capital Expenditure Excluding Inflation

8.5 Asset Disposal

Council does not have a formal strategy on asset disposal and as such it will treat each asset individually on a case-by-case basis when it 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 also become redundant for any of the followings reasons:

- underutilisation;
- obsolescence;
- provision of the asset exceeds the required level of service;
- uneconomic to upgrade or operate;
- policy change;
- the service is provided by other means (e.g. private sector involvement);

- potential risk of ownership (financial, environmental, legal, social, vandalism).
- Depending on the nature, location, condition and value of an asset it is either:
- made safe and left in place;
- removed and disposed of;
- removed and sold;
- ownership 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. Consequently, the asset with be disposed of to waste upon its removal. 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 on the network. Otherwise, if this is not appropriate it could be sold off, transferred or disposed of.

When assets 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 off assets.

There are currently no significant stormwater assets programmed for disposal.

9 Financials

Council has planned a prudent financial approach to managing its assets and services. This section provides a summary of the total value of the activity and the investment that Council has planned to make over the next 30 years.

9.1 Funding Sources

This activity is currently funded through a mixture of the sources as shown in the figure below.

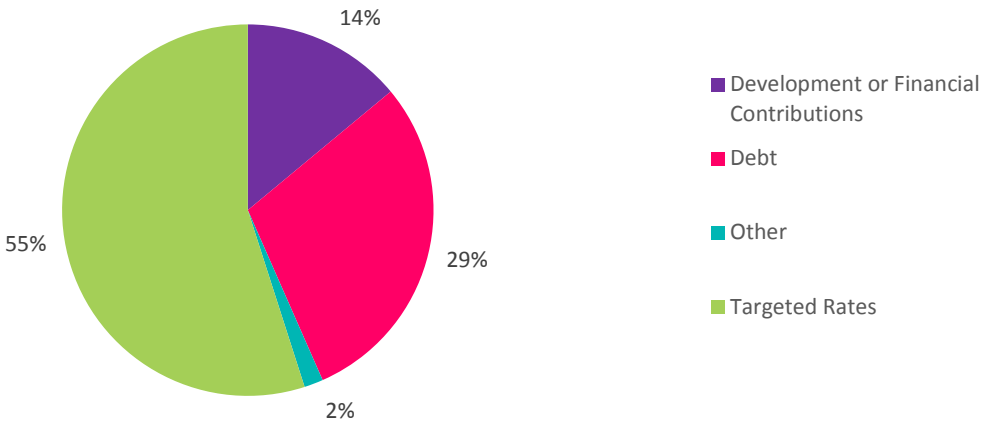


Figure 12: Funding Sources

9.1.1 Development Contributions

Council's Development and Financial Contributions Policy can be found on our website at: www.tasman.govt.nz/policy/policies/development-contributions-policy.

The Policy will be adopted in conjunction with Council's Long Term Plan and will come into effect on 1 July 2018.

The Policy sets out the development contributions payable by developers, how and when they are to be calculated and paid, and a summary of the methodology and rationale used in calculating the level of contributions. The key purpose of the Policy is to ensure that growth, and the cost of infrastructure to meet that growth, is funded by those who cause the need for and the benefit from the new or additional infrastructure, or infrastructure of increased capacity. There are three water supply development contributions in place. Which charge is applicable depends on what catchment the development is located in.

Table 14: Stormwater Development Contribution Charges as at 1 July 2018

Catchment	Development Contribution per HUD $ (incl GST)*
Waimea	$ 6,374
Motueka	$ 9,300
Golden Bay	$ 1,091
Rest of District	Nil

HUD = Household Unit of Demand

* The value of the Development Contribution shall be adjusted on 1 July each calendar year using the annual change in the Construction Cost Index.

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

Assets are valued every three years. The stormwater assets were last re-valued in April 2017 and are reported under separate cover1. Key assumptions in assessing the asset valuations are described in detail in the valuation report.

The majority of information for valuing the assets was obtained from Council's Confirm database. The data confidence is detailed in Table 15 below:

Table 15: Data Confidence

Asset Description	Confidence	Comments
Stormwater Assets	B - Good	The asset registers provide all the physical assets that make up each scheme. However, attribute information could be more detailed such as pipe and manhole depths, surface types etc.

*Based on NZ Infrastructure Asset Valuation and Depreciation Guidelines – Edition 2, Table 4.3.1: Data confidence grading system.

The Base Useful Lives for each asset type as published in the NZIAVDG 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 16 below.

Table 16: Asset Lives

Item	Life (years)	Minimum Remaining Life (years)
Pipelines		
AC, EW pipe	60	5
Concrete pipe	120	5
CI, DI, PE, PVC, Steel pipe	80	5
Miscellaneous pipework & fittings associated with treatment plants and pump stations	15	2
Valves	50	5

[1] Tasman District Council Valuation of Non-Roading Infrastructure Assets as at 1 April 2017

Item	Life (years)	Minimum Remaining Life (years)
Manholes	120	5
Non Pipe Assets		
Concrete structures	80	5
Soakpits	80	5
Stormwater channel (open drain)	Not depreciated	
Control cabinets, electrical, telemetry	15	2

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 and the annual depreciation of the stormwater assets are summarised in Table 17 below:

Table 17: Stormwater Asset Valuation Summary 30 June 2017

	Optimised Replacement Value ($000)	Optimised Depreciated Replacement Value ($000)	Annual Depreciation ($000/yr)
Stormwater Pipes	116,665	89,798	1,041
Stormwater Channels	5,418	5,419	0
Stormwater Surface features	32,753	25,670	341
Total	154,836	120,887	1,382

9.3 Financial Summary

9.3.1 Funding Impact Statement

Council's Funding Impact Statement (FIS) for this activity is included in the table 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 18: 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	0	0	0	0	0	0	0	0	0	0	0
Targeted rates	4,426	4,661	4,700	4,725	4,909	5,213	5,420	5,573	5,723	5,753	5,847
Subsidies and grants for operating purposes	0	0	0	0	0	0	0	0	0	0	0
Fees and charges	15	0	0	0	0	0	0	0	0	0	0
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	129	168	178	184	153	156	156	153	155	142	138
TOTAL OPERATING FUNDING	4,570	4,829	4,878	4,909	5,062	5,369	5,576	5,726	5,878	5,895	5,985
APPLICATIONS OF OPERATING FUNDING											
Payments to staff and suppliers	1,429	1,432	1,379	1,352	1,357	1,313	1,318	1,407	1,519	1,484	1,482
Finance costs	902	1,052	943	938	945	1,038	1,001	901	825	781	827
Internal charges and overheads applied	664	739	741	731	706	679	689	867	1,075	1,062	1,046
Other operating funding applications	0	0	0	0	0	0	0	0	0	0	0
TOTAL APPLICATIONS OF OPERATING FUNDING	2,995	3,223	3,063	3,021	3,008	3,030	3,008	3,175	3,419	3,327	3,355
SURPLUS (DEFICIT) OF OPERATING FUNDING	1,575	1,606	1,815	1,888	2,054	2,339	2,568	2,551	2,459	2,568	2,630
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	1,392	1,525	1,525	1,525	1,222	1,222	1,222	1,314	1,314	1,314	1,178
Increase (decrease) in debt	4,890	600	33	(656)	1,721	3,133	1,516	(617)	(1,076)	(1,795)	2,797
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	6,282	2,125	1,558	869	2,943	4,355	2,738	697	238	(481)	3,975
APPLICATIONS OF CAPITAL FUNDING											
Capital expenditure											
- to meet additional demand	0	26	26	163	214	246	4,888	5,953	983	80	124
- to improve the level of service	2,201	2,524	2,298	1,531	3,683	5,997	3,664	704	1,187	376	6,958
- to replace existing assets	8,383	38	27	28	28	29	30	30	79	818	32
Increase (decrease) in reserves	(2,727)	1,143	1,022	1,035	1,072	422	(3,276)	(3,439)	448	813	(509)
Increase (decrease) in investments	0	0	0	0	0	0	0	0	0	0	0
TOTAL APPLICATIONS OF CAPITAL FUNDING	7,857	3,731	3,373	2,757	4,997	6,694	5,306	3,248	2,697	2,087	6,605
SURPLUS (DEFICIT) OF CAPITAL FUNDING	(1,575)	(1,606)	(1,815)	(1,888)	(2,054)	(2,339)	(2,568)	(2,551)	(2,459)	(2,568)	(2,630)
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)(l)-(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 Scope Risk and Funded Capital Programme

When developing this work programme, Council needs to estimate how much to budget for each project. Often, Council cannot be certain what the actual costs or scope of the project will be because the design is yet to be completed. Typically, Council has more confidence in the cost and scope of projects that are planned within the first three years. After this, estimates are usually based on simple concept designs.

To address this uncertainty, Council has incorporated funding of scope risk into capital project budgets. The amount of scope risk included varies from 5% to 25% of the project estimate, depending on the expected complexity of the individual project. Based on history, it is unlikely that all individual projects will need the full amount of allocated scope risk funding, in reality there will be some under and over spending.

For the water, wastewater, and stormwater activities, Council has made an overall downward adjustment to the total capital programme of 5% per year. This adjustment acknowledges that Council is unlikely to use the full amount of scope risk in the programme for every project and enables Council to avoid over-funding the activities. We refer to this as the total funded capital programme.

9.3.4 Total Expenditure

Figure 13 and Figure 14 show the total expenditure for the Stormwater activity for the first 10 and 30 years respectively. Total expenditure is made up of operational costs, totaling $31.7 million over the first 10 years and capital costs, totaling $42.8 million over the first 10 years.

Council's total expenditure peaks in the years five to seven, which is caused by a number of large projects being programmed in these years, including:

- Motueka West Discharge System (Woodlands);
- Washbourn bypass pipeline

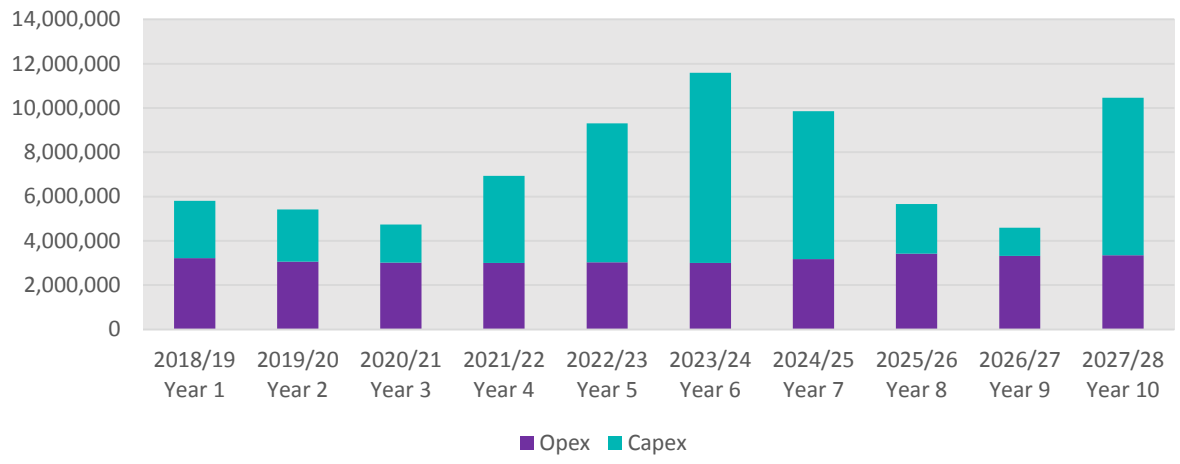


Figure 13: Total Annual Expenditure Years 1 to 10 Including Inflation

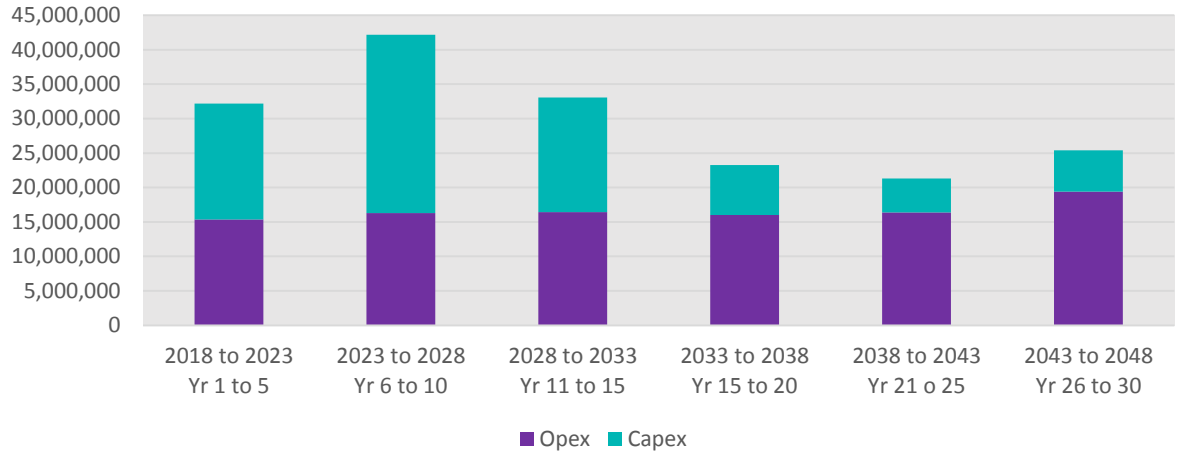


Figure 14: Five Yearly Total Expenditure Years 1 to 30 Including Inflation

9.3.5 Total Income

Figure 15 and Figure 16 show the total income for the stormwater activity for the first 10 and 30 years respectively.

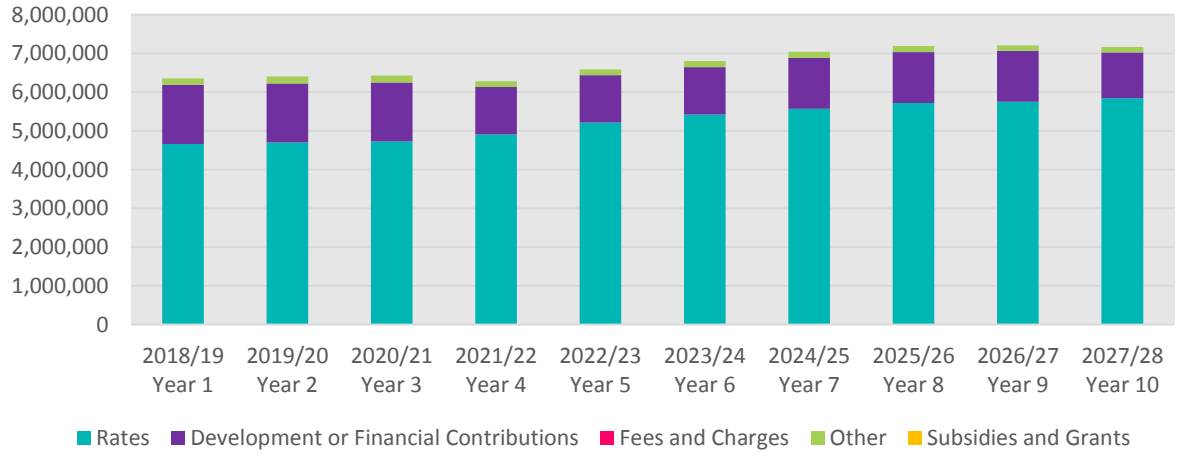


Figure 15: Total Annual Income Years 1 to 10

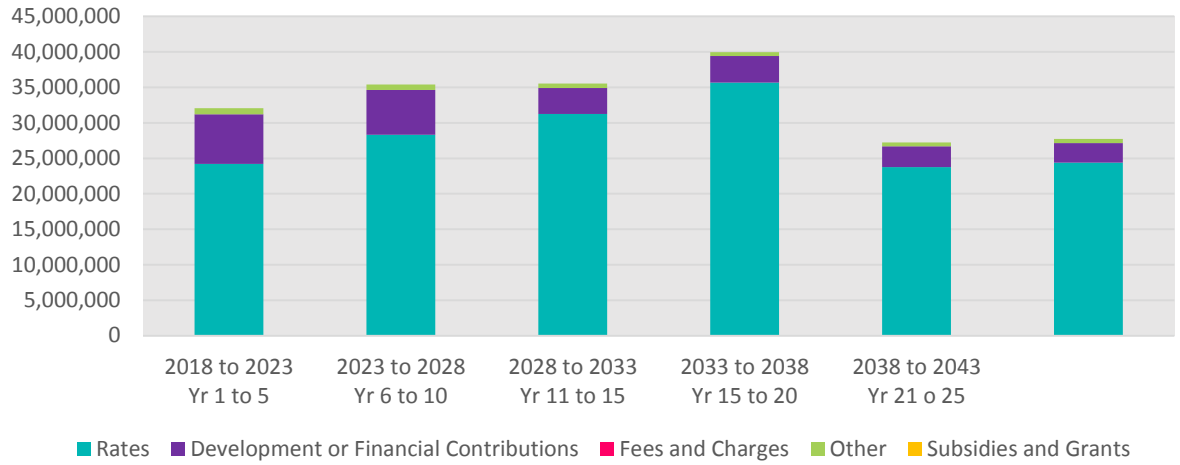


Figure 16: Five Yearly Total Income Years 1 to 30

9.3.6 Operational Costs

Figure 17 and Figure 18 show the total operating expenditure for the Stormwater activity for the first 10 and 30 years respectively.

Operational costs for the stormwater activity are forecast to increase by around 1% per year over 30 years. Direct operational costs are fairly static for the duration of the 30 years. Inflation largely accounts for the increase in total operational expenditure.

The majority of the operating costs are indirect costs and mainly made up of costs for staff, interest and depreciation.

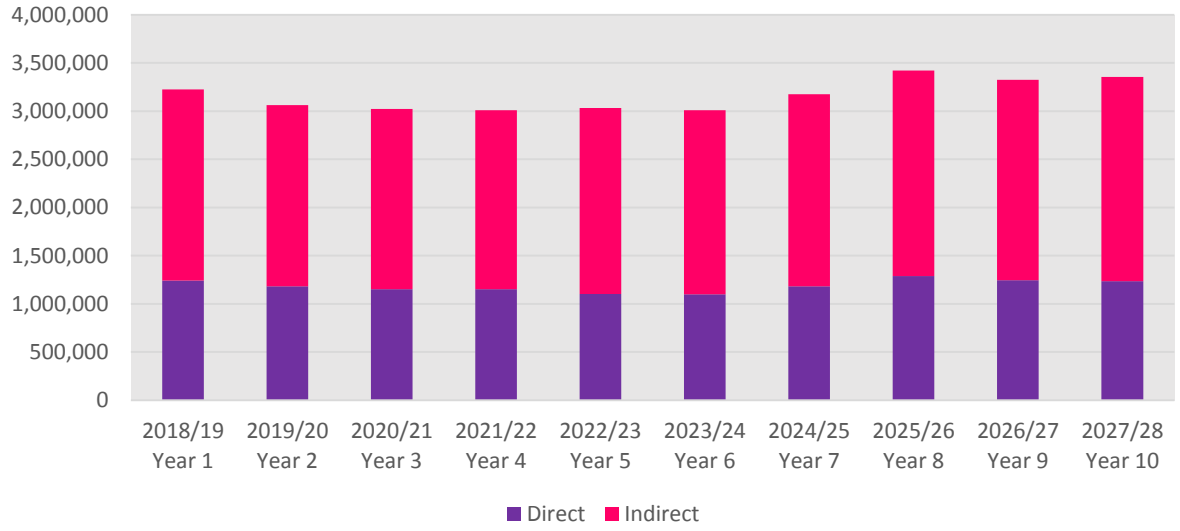


Figure 17: Direct and Indirect Annual Operating Costs Years 1 to 10 Including Inflation

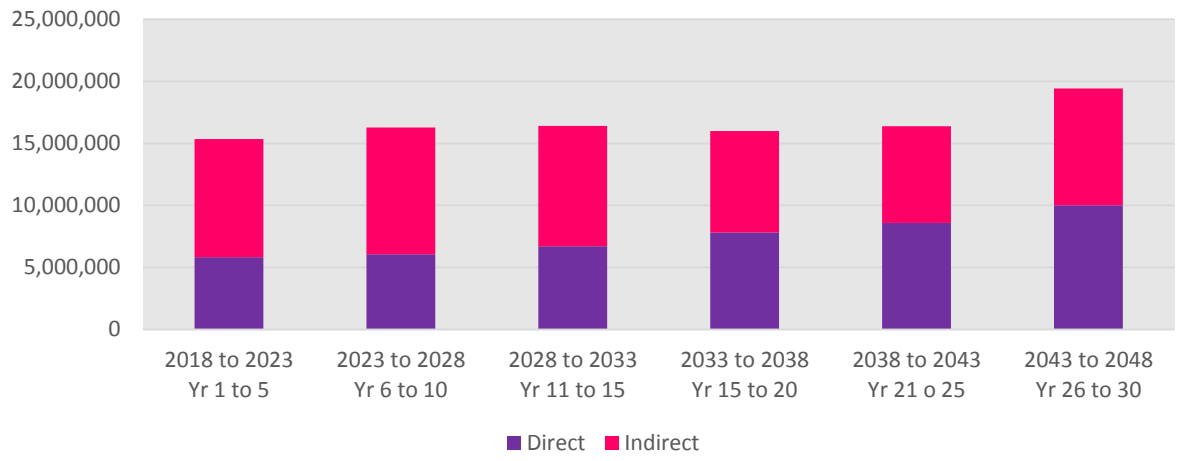


Figure 18: Direct and Indirect Five Yearly Operating Costs Years 1 to 30 Including Inflation

9.3.7 Capital Expenditure

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

Council has planned to spend around $43 million on capital improvements over the next 10 years. Of this 33% is attributed to growth, 67% for level of service improvements, and 1% for asset renewal. Council has a clear focus on reducing the impact of flooding on residents which accounts for the majority spend on levels of service. Council's stormwater assets are long life and are relatively young. This means that there is almost no asset renewal requirements over the next 30 years. Approximately $78 million of capital expenditure is forecast over the 30-year period for the total funded capital programme.

For the first 3 years, Council has planned to undertake stormwater improvements that provide clear benefits to residents without causing issues to other parts of the network, and to complete catchment management planning to confirm the scope of works planned beyond Year 3. There is a clear increase in capital expenditure during Year 4 to Year 7. This is due to the construction of the Washbourn by-pass pipeline and the Motueka West discharge system. There is also a notable increase in Year 10. This is due to the need to acquire land prior to property designations expiring.

Beyond Year 15, capital expenditure drops off significantly. Council expects to identify the need for further works through the catchment management plan process that have not been included in this Strategy. It is likely that these works will be added to the programme after completion of the catchment management plans.

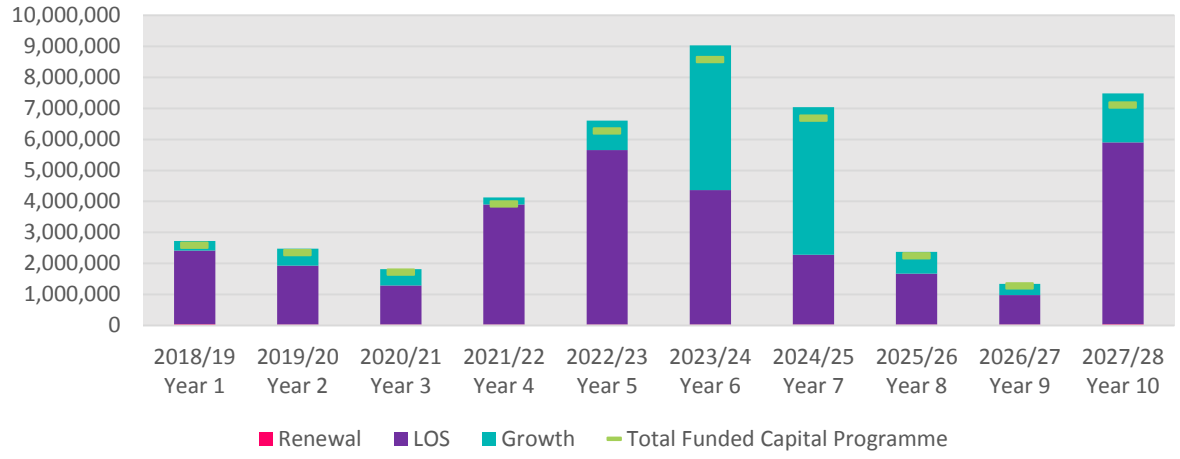


Figure 19: Annual Capital Expenditure Years 1 to 10 Including Inflation

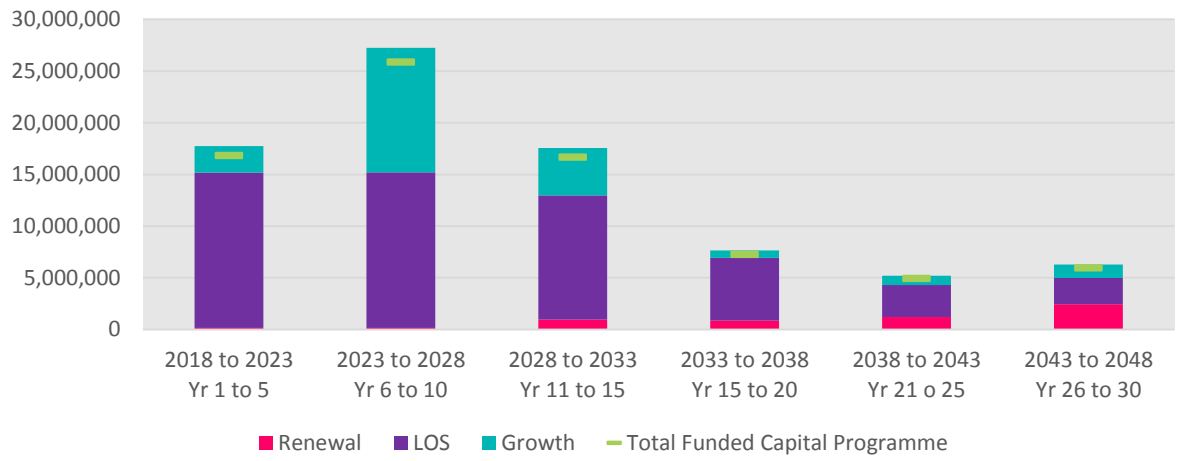


Figure 20: Five Yearly Capital Expenditure Years 1 to 30 Including Inflation

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.

Sustainability is measured 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 decisions affect the social wellbeing of the community. The activity is undertaken 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. Council engages 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

The receiving environments are affected by stormwater discharges from our urban areas. Urbanisation and other changes in land use have led to increased stormwater runoff that contribute to flooding, loss of aquatic habitat and water quality issues. It also impacts on the ability to utilise our natural resources for amenity and food gathering. Council controls its discharges through discharge consents that are required under the Tasman Resource Management Plan. Council will encourage and practice implementation of the proposed land development manual to protect and enhance the receiving environment.

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

Council operates, maintains and improves the stormwater 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

Schedule 10 of the Local Government Act (LGA) requires an outline of any significant negative effects that an activity may have on the local community. Potential negative effects associated with the stormwater activity are outlined in Table 19.

Table 19: Negative Effects

Effect	Description	Mitigation Measures
Flooding	Social/ cultural: Localised flooding may occur in residential areas due to under capacity of the stormwater system and affect the well-being of the community. Economic: Localised flooding can have significant immediate and ongoing economic consequences on local business. Environmental: Sediments, oils, greases, metals and organic material can be washed into natural water courses.	Catchment management planning Stormwater modelling Secondary flowpath mapping Capital works to increase network

Effect	Description	Mitigation Measures
		capacity and detention
Untreated stormwater discharges	Environmental: The discharge of untreated stormwater has an adverse effect on the quality of the receiving environment, eg, stormwater runoff from contaminant generating surfaces such as road and carparks contains contaminants such as metals, oils and sediment. Some building materials such as unpainted zinc or copper roofs can also be a source of contaminants. In rural areas, runoff may be contaminated with sediment, herbicides, pesticides, fertilisers and animal waste. Social / Cultural: Discharges have adverse effect on the quality of receiving environments and how these can be used by the community.	Catchment management planning. Resource consenting and compliance monitoring Capital works. Tasman Erosion and Sediment Control Guidelines (2014)
Erosion of streambanks and loss of aquatic habitat	Environmental: Increased stormwater flows can cause erosion of streambanks and loss of aquatic habitat. Social/ Cultural: Discharges have adverse effect on the quality of receiving environments and how these can be used by the community.	Proposed Land Development Manual
Impact to historic and wahi tapu sites.	Cultural: Physical works may have an adverse effect on sites. Uncontrolled stormwater may erode sites.	Consultation prior to works. Record of known heritage sites.

10.2 Potential Positive Effects

Potential positive effects are outlined in Table 20.

Table 20: Positive Effects

Effect	Description
Access and Mobility	The stormwater system maximises access during and after storm events. Stream corridors are widened and integrated with walk and cycle paths.
Amenity and recreation	Council's policies promote the enhancement of recreational and environmental amenity value when developing new assets through water sensitive design.
Economic Development	Council maintains stormwater collection to minimise damage to private and public assets.
Environmental Protection	Council enhances the quality of the receiving environment through the development of natural stream channels such as Borck Creek. Fish passage and aquatic life is considered when implementing capital projects and often improved.
Safety and Personal Security	Council maintains stormwater collection to minimise disruption to normal community activities and risk to life.

10.3 Resource Management

10.3.1 Resource Consents

The statutory framework defining what activities require resource consent is the Resource Management Act (RMA) 1991. The RMA is administered locally by Council, as a unitary authority, through the Tasman Resource Management Plan (TRMP). The following section discusses key consents that Council holds in order to undertake this activity.

Councils Engineering Services Department has over 200 consents to manage. Some consents require active management to ensure reporting and monitoring conditions are met allow the timely management for lodging new applications before existing consents expire. A register of all active consents including their conditions, compliance actions and expiry dates are managed in Bravegen.

10.3.1.1 Global Network Discharge Consent

Council needs to demonstrate compliance with the TRMP and, in particular, Part VI of that Plan: Discharges, Chapter 36. Council has a legal obligation to manage adverse effects from stormwater discharges from its network. The stormwater discharges from our networks currently do not comply with the permitted activity criteria of the TRMP and Council is therefore required to obtain consent. A regionwide discharge consent application will be lodged that covers all existing discharge points. The discharge consent will authorise discharges based on the outcomes that are anticipated through the stormwater management strategy and catchment management plans. Progressive improvement in stormwater quality from urban discharges is expected to be achieved by a works programme that is directed by the catchment management plan investigations. The development of catchment management plans for all Urban Drainage Areas will be required by conditions of consents. Proposed CMP Outcomes will be monitored through regular reviews of the CMPs and required efforts will be adjusted accordingly to ensure compliance with the global discharge consent.

10.3.1.2 Discharges and Diversions

Any new stormwater discharges or water diversions require resource consent, unless it is in rural or open space zones. Resource consent will be required for water diversions including bunds and the situations where natural streams have been piped as part of an urban reticulation system.

Subdivision developments may involve new stormwater discharges or extensions to the existing network of stormwater assets that require resource consent that Council will become responsible for when the new stormwater assets are transferred from the developer to Council.

10.3.1.3 Inlet and Outlet Structures

Structures on or extending onto or over river or stream beds, or on a shoreline, may require resource consent. Inlet structures are usually installed where natural streams flow into piped systems. The provisions of Part IV of the Tasman Resource Management Plan: Rivers and Lakes, determine what resource consents are required for structures in river and stream beds.

10.3.1.4 Detention Dams and Ponding Areas

Detention dams and ponding areas can be used to manage peak flood flows within specific stormwater catchments, especially where urban development increases the rate of run-off. Council now has responsibility for multiple detention dams and ponding areas within urban localities around the District. Structures used for the damming of water may require consent under the TRMP, the Building Act or both.

10.3.1.5 Channel Widening and Other Works in Waterways

Capital works to modify stream beds usually require resource consent. However, maintenance work is generally covered under the River Protection and Maintenance Works Resource Consent (under the jurisdiction of the Rivers activity).

10.3.2 Resource Consent Reporting and Monitoring

A detailed register of stormwater resource consents is held in Council's consents databases BraveGen and Active Manuals. Where permits for discharges, water takes or coastal activities, or consents for river beds are required, the RMA restricts those consents to a maximum term of 35 years only. Hence there needs to be an ongoing programme of "consent renewals" for those components of Council's stormwater activities, as well as a monitoring programme for compliance with the conditions of permitted activities or resource consents. Consent renewals have been programmed in the Capital programme. Use of Council's BraveGen and Water Outlook monitoring databases allows the accurate programming required by the consents including renewal prior to expiry.

Council has programmed the following consent renewals before they expire:

- Seaton Valley Drain Consent Renewal 2018/2019 – Expiry date 29 July 2019

- Richmond Detention Dam Consents Renewals 2030 to 2033 – Expiry date 31 May 2030 (Bill Wilkes, Washbourn, Lodestone and Eden)

10.3.2.1Auditing

Regular inspections of key sites are completed to ensure Council's maintenance contractor is operating in accordance with a number of key performance indicators aligned to any consent conditions or other legislative requirements. Inspections increase prior to significant rain events to ensure stormwater will not be obstructed.

10.3.2.2Environmental Reporting and Monitoring

In addition to audit assessments, any non-compliance incidents are recorded, notified to Council's Compliance Monitoring team and mitigation measures put in place to minimise any potential impacts.

10.3.2.3Council's Annual Report

The extent to which Council has been able to meet all of the conditions of each permit is reported in its Annual Report.

10.3.3 Property Designations

Designations are a way provided by the RMA of identifying and protecting land for future public works. Council has designated three areas in the Richmond urban area to ensure that improvements can be made to existing stormwater systems.

The following (Table 21) stormwater activity designations have a duration of 20 years (until 2029) for which to be 'given effect'. Once given effect, a designation remains valid for the life of the TRMP or until the requiring authority removes of alters the designation. Alterations to some designations (eg, boundaries) and outline plans for proposed work may be required from time to time. Designations do not negate the ongoing need for regional type resource consents (eg, watercourse and discharge) required for the designated site or purpose (refer to section 10.3.1 above).

Table 21: Property Designations

ID	Location	Site Name/Function	Purpose of Designation
D247	Waimea Inlet to Main Road Hope and Hill Street St South, Richmond	Borck Creek and related drains (Eastern, Hills, Bateup, Whites, Reed/Andrews)	Stormwater management and associated recreation opportunities
D248	Richmond South	Bateup Drain detention ponds (2)	Stormwater detention
D249	Richmond West	Poutama Drain	Stormwater management

It is anticipated that Council will apply for additional designations in the future to address stormwater issues identified through the catchment management planning process.

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 Measures

The key risks relevant to the stormwater activity are summarised in Table 22.

Table 22: Key Risks

Risk Event	Mitigation Measures
Extreme weather events overloading network	Current • routine maintenance and pre-event checks and removal of blockages; Proposed • preparation of CMPs. • creation and protection of more secondary flow paths; • increased community education as to flow paths and how to minimise potential impact.
Catastrophic failure of a network structure	Current • routine maintenance and inspections are included in the network maintenance contract and asset management systems eg CCTV inspections; • Detailed inspections are completed for the entire bridge network every two years under the transportation AMP; • Reactive inspection preceding and following extreme weather events. Proposed • Additional key assets are brought under Council ownership or maintenance control if required.
Premature deterioration or obsolescence of an asset	Current • Maintenance performance measures included in the maintenance contract; • Routine inspections. Proposed • Improved asset data coupled with life prediction analysis to foresee issues.
Sub-optimal design and/or construction practices or materials	Current • Engineering Standards document and construction inspections; • Contract quality plans; • Professional services and construction contract specifications; • Third party reviews. Proposed • Ongoing staff training.
Ineffective stakeholder engagement e.g. iwi, Heritage New Zealand, community groups	Current • Council holds regular meetings with iwi; • Council's GIS software includes layers identifying cultural heritage sites and precincts. Council staff apply for Heritage New Zealand authority when these known sites are at risk of damage or destruction; • Project management processes and Council's consultation guidelines are followed.

Risk Event	Mitigation Measures
Failure to gain property access	Current • Stakeholder management; • Works entry agreements; • Use of Council's property team to undertake land purchase negotiations; • Public Works Act.
Obstructions of secondary flow paths	Current • Optimise design and capital and operating expenditure increase as a result of secondary flow path management through CMP programme. Proposed • Review with each AMP cycle • Educate public regarding residual risk.

11.2.1 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

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.

Table 23 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 23: 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. The Council is using the best information practically available from Business and Economic Research Limited (BERL) to reduce this risk.
Asset Data Knowledge	The Council has inspection and data collection regimes in place for assets. These regimes do not allow for entire network coverage at all times. The Council's aim is to strike the right balance between adequate knowledge and what is practical.	That the Council has adequate knowledge of the assets and their condition so that planned renewal works will allow the Council to meet the proposed levels of service.	There are several areas where the 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. The 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 the 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.: • 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. The 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 the Council's financing arrangements.

Type	Uncertainties	Assumption	Discussion
Project Funding	The 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.
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 the Council may not be able to afford the true cost of the project. The 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 the 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, the 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 the 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. The Council has not planned expenditure to specifically mitigate this risk.

Type	Uncertainties	Assumption	Discussion
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.

Table 24: Stormwater Specific Assumptions and Uncertainties

Type	Uncertainties	Assumption	Discussion
Network Capacity	Council uses stormwater modelling and other 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.
Stormwater Discharge Quality	The current documentation on discharge water quality and receiving environment water quality is limited. The quality required of stormwater discharges to at least maintain the existing conditions is therefore also unknown. Money has been allocated for stormwater treatment devices however, the quantity and spread of the programme will need to be assessed and prioritised as the CMPs are completed.	The budget allocation for water quality improvements is sufficient	Although monitoring data of urban runoff is not available, the potential for contaminant generation from urban catchments is well understood and based on a wide variety of scientific and monitoring studies that were done nationally and internationally. It's fair to assume that the contaminant generation from our urban catchments will be very similar to what is monitored elsewhere. Appropriate mitigation measures and treatment options are widely available, however retrofitting treatment devices may be challenging.

Type	Uncertainties	Assumption	Discussion
Future rainfall events	Significant future events may lead to increased community pressure for higher Levels Of Service or faster implementation of the works programmes	The impact of any further significant rainfall events and the resultant community expectations of higher levels of service will be minimal.	Council will communicate the anticipated response and prioritisation of flooding issues through catchment management plans, Long Term Plan and activity management plans.
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) that 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.	Council uses the latest climate predictions that have been prepared by NIWA for New Zealand and more specifically for the Tasman District. The anticipated effects from climate change in Tasman District include: • An increase in seasonal mean temperature and high temperature extremes • A significant 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 New stormwater infrastructure is designed based on a 2°C temperature increase with associated increases in rainfall intensity in accordance with NIWA HIRDS database.	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. 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. The expected impact of climate change effects on flooding will be further investigated with the help of flood modelling techniques. Due to the long-term nature of climate change predictions and different scenarios that are based on potential future CO2 emissions, the magnitude of the effects remain uncertain and variability in results should be considered.

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 stormwater 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 stormwater activity Council has determined that the appropriate level of practice is 'intermediate' with 'advanced level' of practice for demand forecasting, asset register data and asset condition

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 responsibility 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.

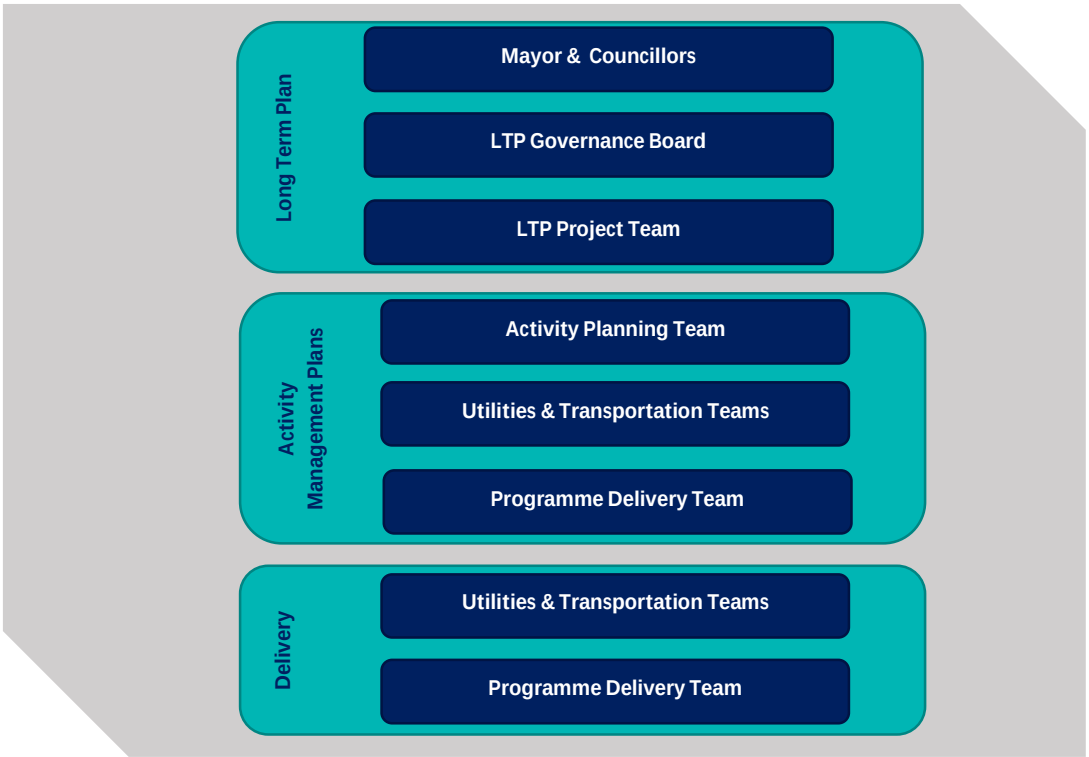


Figure 21: Teams Involved in Activity and Asset Management

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.

Table 25 summarises the reviews that have been completed to date and when the next review is required for this activity.

Table 25: Summary of Reviews

Scope of Review	Summary of Review	Review Date	Next Review
Three Waters Operations & Maintenance Contract	An initial review found that current operations & maintenance contract arrangements were appropriate and that the new contract would be procured on a similar basis. A full review is to be conducted in collaboration with Nelson City Council at a later date.	2017	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 and operational 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 panel 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 22 below. 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.

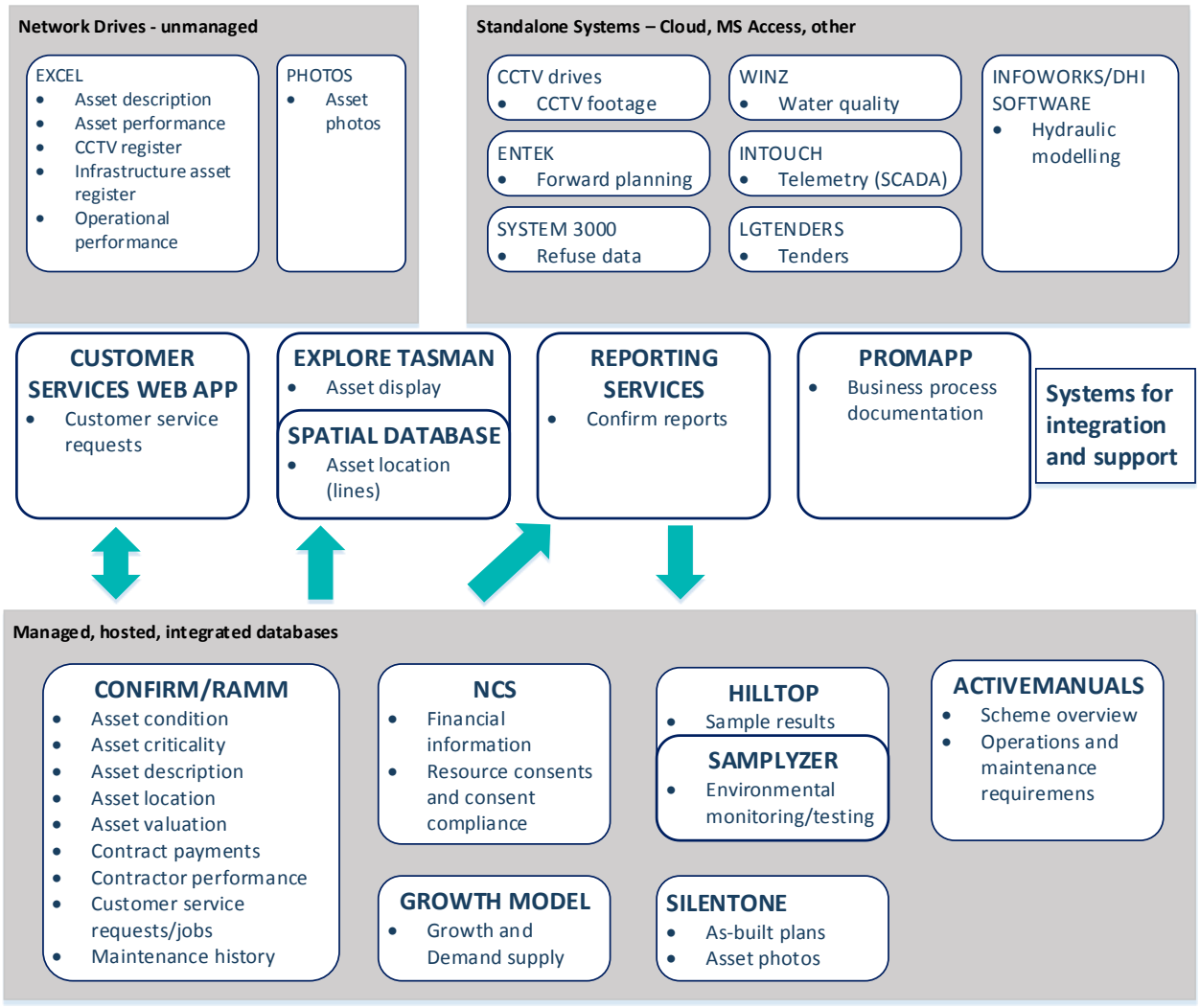


Figure 22: Council's Information Systems and Tools

12.3.2 Asset Data

Table 26 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. Council is considering a staged alignment to the NZ Asset Metadata Standards.

Table 26: 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.	4	3
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
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

Data Type	Information System	Management strategy	Data Accuracy	Data Completeness
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
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

Data Type	Information System	Management strategy	Data Accuracy	Data Completeness
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 27: 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 28 outlines the quality management approaches that support Council's asset management processes and systems.

Table 28: 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.
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. Assessment of our Activity Management Practices

13.1 Assessment of our Activity Management Practices

In late 2016/early 2017, Council undertook an assessment of its current asset management practices for the transportation activity. This was a self-assessment, but the targets where developed in consultation with Waugh Infrastructure Management Ltd to ensure there 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 descriptions to maturity.

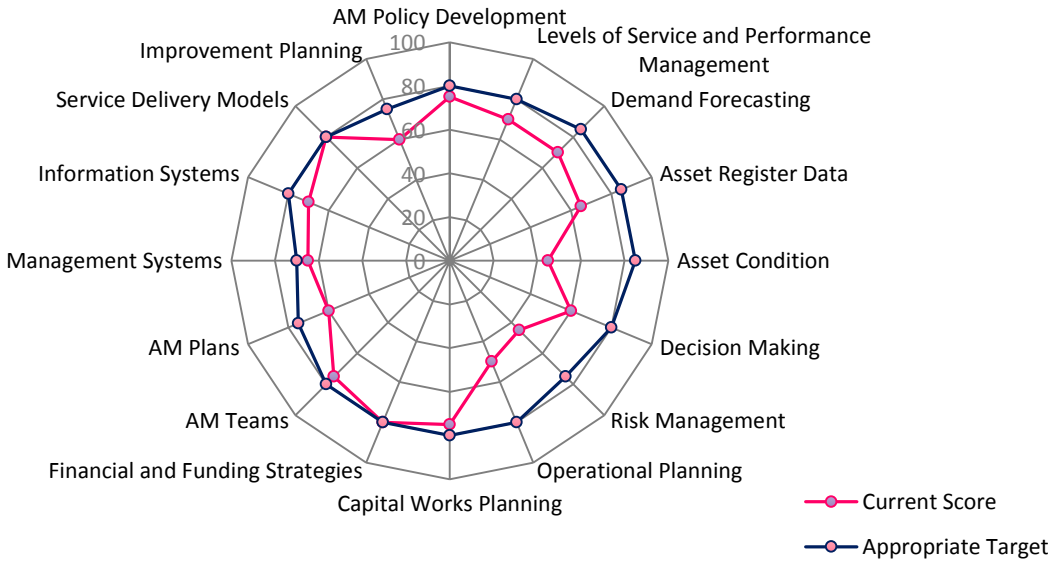


Figure 23: Stormwater Maturity Levels

Figure 23 shows that there are some gaps between where Council's current practice is and where it is desired to be. Focus areas for improvements are Asset Register Data, Asset Condition, Decision Making, Risk Management, and Operational Planning. The actions required to close these gaps have been included in the Improvement Plan.

13.2 Peer Reviews

13.2.1 Waugh Review

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 24.

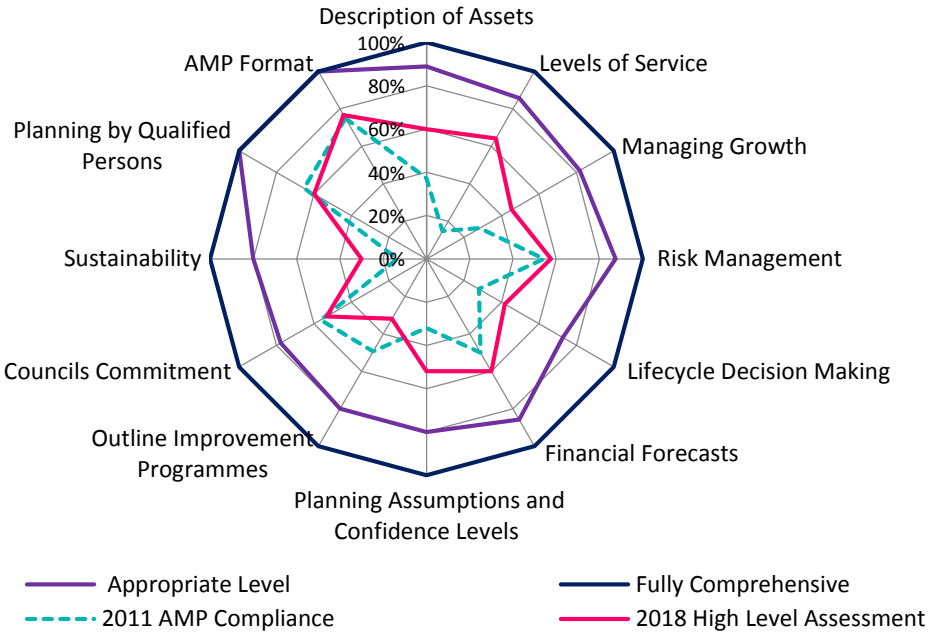


Figure 24: 2018 Peer Review Compliance Status Summary

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 minor 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.

13.2.2 Water New Zealand's National Performance Review

Council voluntarily participate in Water New Zealand's National Performance Review (NPR). It is an annual benchmarking exercise of the Three Waters (water supply, wastewater and stormwater) service delivery. NPR benchmarks are used to identify potential opportunities to improve service delivery and compare specific performance results against other District, City Council and Council-Controlled Organizations. The report provides decision makers and the public with a transparent picture of Council's performance within the sector.

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:

- Secondary flowpath mapping and regulation through integration in the resource management plan through plan changes such as Richmond Intensive Development Area (RIDA).
- Council is committed to catchment management planning and established a Catchment Management Framework which includes a stormwater strategy and discharge consent component. Stormwater modelling and flood mapping as well as the development of CMP Richmond and Motueka is progressing well.
- The Nelson Tasman Land Development Manual is being developed and includes provisions for environmental improvements.
- The renewed Operation & Maintenance contract results in better and more efficient asset management as well improved data collection.

13.3.2 Summary of Planned Improvements

A list of the planned activity specific improvement items is in Table 29.

Table 29: Stormwater Specific Improvement Items

Improvement Item	Further Information	Need for Improvement	Priority	Status	Expected Completion Date	Team Responsible	Cost/Resource Type
Reporting and analysis of rainfall events in relation to their AEP	Rain gauges	Improved understanding of extreme rainfall occurrences across the district is required	Medium	Ongoing	Ongoing	Hydrology & Engineering	Staff time
Promoting and providing technical support for water sensitive design measures	In relation with LDM, practice notes and external design guidelines	Improve successful implementation of water sensitive design	High	Ongoing	Ongoing	Engineering, Parks and Reserves	Staff time
Addressing stormwater issues close to the source	Planning	Improving water quality	High	Ongoing	Ongoing	Engineering	Staff time
Investigate and manage effects of forestry harvesting	Modelling	Improved understanding of water quality and quantity effects of plantation forestry in relation to urban stormwater runoff is required	Medium	Not started	TBC	Engineering	Staff time
Implement integrated structure planning	Planning	Improve integrated and holistic design approaches at catchment wide scale	High	Not started	2019/2020	Engineering and Environmental Planning	Staff time
Develop stormwater modelling standards	Modelling	Improve consistency and confidence in stormwater modelling results	High	Not started	2018	Engineering	Consultants and staff time
Stormwater quantity and quality monitoring for model calibration and consent monitoring	Modelling	Improve reliability of stormwater modelling results and monitor effectiveness of stormwater improvements	Medium	Not started	TBC	Engineering and Hydrology	Consultants and staff time

Improvement Item	Further Information	Need for Improvement	Priority	Status	Expected Completion Date	Team Responsible	Cost/Resource Type
Stormwater system capacity mapping	Modelling	Improve understanding of piped network capacity	High	Not started	2018/2019	Engineering	Consultants and staff time
Summarise Council and private ownership responsibilities of stormwater assets	Transportation (road drains) and river activities	Improve public understanding of stormwater maintenance responsibilities	High	Not started	2018	Engineering	Staff time

A list of general across activity improvement items is given in Table 30.

Table 30: General Activity Management Improvement Items

Improvement Item	Further Information	Need for Improvement	Priority	Status	Expected Completion Date	Team Responsible	Cost/Resource Type
Create Critical Asset Framework		Only the initial assessment has been undertaken, the framework was never re-tested.	High	In Progress	Jun-20	Activity Planning	Staff Time
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	Jun-20	Data Analyst – Utilities	Consultants and staff time Budget $33,500 in 2019/20

Improvement Item	Further Information	Need for Improvement	Priority	Status	Expected Completion Date	Team Responsible	Cost/Resource Type
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).	Engagement is required to determine an appropriate level of service	Medium	Not started	2021	Activity Planning	Staff time
Capture and track maintenance data	Historical costs should be analysed to calculate forward budgets	Improve the consistency and confidence when planning operations and maintenance budgets	Medium	Not started	Ongoing	Activity Planning and Utilities Data Analyst	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
62001	Stormwater Modelling	Modelling to determine effects of development to stormwater networks.	530,000	80,000	80,000	80,000	30,000	10,000	10,000	10,000	10,000	10,000	10,000	100,000	100,000
62002	Structure Planning and Designation	Long term infrastructure planning for new growth areas	220,000	20,000	20,000	0	20,000	0	0	20,000	0	0	20,000	60,000	60,000
62003	Legal Fees		300,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	100,000	100,000
62004	Consultants	Professional Services	1,986,000	66,200	66,200	66,200	66,200	66,200	66,200	66,200	66,200	66,200	66,200	662,000	662,000
62005	Overland Flowpath Monitoring		1,500,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000	500,000
62006	Operation and Maintenance Contract Tender	Retender allowance	300,000	0	0	0	0	0	0	0	50,000	50,000	0	100,000	100,000
62007	Land Acquisitions/Easements		300,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	100,000	100,000
62008	Motueka West Discharge Feasibility Study	Undertake study of options to discharge stormwater from Motueka West and determine feasible solution	100,000	100,000	0	0	0	0	0	0	0	0	0	0	0
62009	Catchment Management Plans	Development of catchment management plans	1,050,000	100,000	100,000	100,000	100,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000	250,000
62010	Activity Management Plans Reviews and Updates	Undertake reviews and updates of activity management plan	340,000	2,000	26,500	5,500	2,000	26,500	5,500	2,000	26,500	5,500	2,000	128,500	107,500
62012	Risk, Resilience and Recovery Planning	Undertake risk, resilience and recovery planning	130,000	20,000	20,000	0	0	10,000	0	0	10,000	0	0	40,000	30,000
62013	Valuations	Valuations 3-yearly reviews	25,000	0	2,500	0	0	2,500	0	0	2,500	0	0	10,000	7,500
62015	Reticulation Operation and Maintenance		75,000	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	25,000	25,000
62016	Drains and Creeks Operation and Maintenance		195,000	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	65,000	65,000
62017	Detention Dams Operation and Maintenance		75,000	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	25,000	25,000
62018	Other Operation and Maintenance		75,000	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	25,000	25,000
62021	Reticulation Contract Routine		4,997,850	166,595	166,595	166,595	166,595	166,595	166,595	166,595	166,595	166,595	166,595	1,665,950	1,665,950
62022	Drains and Creeks Contract Routine		2,511,870	83,729	83,729	83,729	83,729	83,729	83,729	83,729	83,729	83,729	83,729	837,290	837,290
62029	Reticulation Contract Reactive		2,051,550	68,385	68,385	68,385	68,385	68,385	68,385	68,385	68,385	68,385	68,385	683,850	683,850
62030	Drains and Creeks Contract Reactive		559,530	18,651	18,651	18,651	18,651	18,651	18,651	18,651	18,651	18,651	18,651	186,510	186,510
62032	Other Contract Reactive		559,530	18,651	18,651	18,651	18,651	18,651	18,651	18,651	18,651	18,651	18,651	186,510	186,510
62033	Electricity		72,000	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	24,000	24,000
62034	Insurance	Annual Allowance	2,618,760	87,292	87,292	87,292	87,292	87,292	87,292	87,292	87,292	87,292	87,292	872,920	872,920
62035	Rates and Water	Rates - District Wide	6,960,000	232,000	232,000	232,000	232,000	232,000	232,000	232,000	232,000	232,000	232,000	2,320,000	2,320,000
62036	General Operations		600,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000	200,000
62037	SCADA/ Telemetry		60,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	20,000	20,000
62039	Consent Monitoring	Consent Monitoring	2,105,000	30,000	35,000	45,000	55,000	65,000	75,000	75,000	75,000	75,000	75,000	750,000	750,000
	Feasibility Studies	Feasibility Studies	127,580	15,400	0	0	0	0	0	30,660	28,120	0	0	53,400	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
66003	Gibbs Road Stormwater Diversion	Stormwater intercepting pipe and sumps to prevent flooding of buildings at the town centre.	0	100	0	563,000	563,000	0	0	0	0	0	0	0	0	0	0	0
66007	Motueka West Discharge System	Growth areas north of King Edward Street and to the east of SH60 require a stormwater system in place to convey stormwater from the development area across High Street, into the existing drain and beyond.	89	11	0	6,050,000	0	0	0	42,000	48,000	2,700,000	3,260,000	0	0	0	0	0
66008	Motueka - Tidal Gate Renewal	Renewal of gates, hydraulics, control cabinets and telemetry at Woodlands Drain and Wharf Road	0	0	100	400,000	0	0	0	0	0	0	0	0	0	0	200,000	200,000
66009	Eastern Hills Drain Upgrade	Eastern Hills Drain needs to be realigned through Mytton property following it's disconnecting from Bateup Drain. Approx 60 m will need to be financed by Council while the next section up to the connection with Borck's Creek will be done by the developer.	29	71	0	114,000	0	0	0	30,000	84,000	0	0	0	0	0	0	0
66013	Bateup Drain Upgrade Stage 1	Widening of the existing drain and construction of environmental strip along Bateup Drain from Cardiff to Paton Rise development.	65	35	0	128,000	0	0	128,000	0	0	0	0	0	0	0	0	0
66015	Gladstone Road - Poutama Drain Stormwater Link	Construction of Washbourn Pressure Pipe will cut off parts of Gladstone Rd/ Waverley St catchment and connections to existing 1200 mm pipes along Gladstone Rd needs to be provided	0	100	0	1,064,000	0	0	0	54,000	252,500	757,500	0	0	0	0	0	0
66016	Reed / Andrews Drain Upgrade	Increase capacity of Reed/Andrews drain to cater for increased flows in Bateup Drain.	65	35	0	411,000	0	0	0	0	0	20,500	390,500	0	0	0	0	0
66017	Pipe and Manhole Renewals	District wide budget for renewal of pipes and manholes in poor condition	0	0	100	1,780,000	0	0	0	0	0	0	0	0	0	0	705,000	1,075,000
66018	Bateup Drain Upgrade Stage 3	Widening of the existing drain and construction of environmental strip along Bateup Drain from Arizona Development to Hill Street	100	0	0	402,000	0	0	0	0	0	0	0	0	0	0	0	402,000
66019	Takaka Stormwater Improvements	Lake Killarney protection	0	100	0	1,022,000	0	0	0	0	0	0	0	11,000	21,000	28,000	962,000	0
66022	Secondary Flowpath Improvements	District wide improvements as derived from the CMPs	0	100	0	3,200,000	0	0	0	0	250,000	250,000	250,000	250,000	100,000	100,000	1,000,000	1,000,000
66023	Stormwater Outlets, Inlets and Valves Renewals	District wide budget to replace outlets, inlets and valves that are in poor condition	0	0	100	1,100,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	260,000	580,000
66028	Stafford Drive Stormwater Pipe Extension	The localised flooding issues at 72 to 84 Stafford Drive are to be addressed by a stormwater system that collects the runoff in road sumps and discharges into an existing open channel	0	100	0	138,000	138,000	0	0	0	0	0	0	0	0	0	0	0
66031	Stormwater Quality Improvements	Implementation of measures to improve the quality of stormwater runoff at strategic locations	0	100	0	1,350,000	0	0	0	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000	500,000
66032	Seaton Valley Stream Upgrade - Stage 2	Continuation of the upstream section of the stream widening to achieve additional capacity required to serve the new developments.	34	66	0	403,000	0	0	0	65,000	17,000	321,000	0	0	0	0	0	0
66034	Lower Queen Street Bridge Capacity Upgrade - Stage 2	Doubling the span of the bridge to allow for enlarged profile of Borck Creek.	34	66	0	680,000	0	0	0	0	0	0	0	40,000	640,000	0	0	0
66036	Washbourn Drive Stormwater Culvert Upgrade	Stormwater from Bill Wilkes Reserve needs to be diverted to Washbourn Garden pond	0	100	0	709,000	0	0	0	0	0	22,000	27,000	660,000	0	0	0	0

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
66037	Seaton Valley Stormwater Detention Dam Construction	Stormwater detention dam to serve growth in north-western Mapua.	36	64	0	419,000	0	0	0	0	0	0	0	0	0	0	419,000	0
66039	Reactive Stormwater Improvements	District wide minor stormwater improvements for isolated level of service improvements	0	100	0	3,000,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000	1,000,000
66044	SH6 Richmond Deviation Stormwater Improvements	Properties along State Highway 6 including the school experience occasional flooding. Stormwater needs to be efficiently conveyed under the state highway to the opposite side to prevent flooding. Upgrade the existing and construct a new culvert under SH 6 Richmond Deviation.	10	90	0	308,000	308,000	0	0	0	0	0	0	0	0	0	0	0
66045	Washbourn Stormwater By-pass Pipeline	Construction of pressurised pipe from Washbourn Gardens to Poutama Drain to protect Richmond town centre from flooding.	0	100	0	6,400,000	325,000	0	0	3,075,000	3,000,000	0	0	0	0	0	0	0
66046	Lower Queen Street Bridge Capacity Upgrade - Stage 1	The span of the existing bridge over Borck Creek at Lower Queen Street needs to be lengthen to match the new width of the creek bed. Additionally, the bridge needs to be widened to fit the increased traffic level due to growth.	34	66	0	859,000	0	0	0	0	59,000	800,000	0	0	0	0	0	0
66047	Borck Creek SH60 Culvert Upgrade	The existing culvert needs to be replaced with a new one of 21.0 m total width to suit Q100=60 m3/s capacity.	61	39	0	1,311,000	0	0	0	0	9,000	46,500	1,255,500	0	0	0	0	0
66048	Reed/Andrews Drain SH6 Culvert Upgrade	Replace the existing culvert under SH6 with new box culvert to match the increased flow capacity of Reed/Andrews drain.	61	39	0	469,000	0	0	0	0	29,000	440,000	0	0	0	0	0	0
66049	Bateup Drain Paton Road Culvert Upgrade	The capacity of the existing concrete culvert where Paton Rd crosses over Bateup Drain needs to be increased to match the increased design flow along the drain driven by growth.	52	48	0	242,000	0	0	0	0	0	0	0	0	0	3,000	239,000	0
66050	Middlebank Drive Pipe Upgrade	Upgrade piped stormwater system from the Olympus Drive to Gladstone Road. The new 1050 mm dia pipe will be constructed to by-pass the Cemetery Detention Dam and the stormwater system from Wensley Rd (1050 mm dia pipe) needs to be connected to the new system on Cautley Street.	0	100	0	3,509,000	0	0	0	0	0	0	0	0	0	0	3,509,000	0
66051	Borck Creek Widening - Headingly Lane to Estuary	Channel widening within designation to 65m to enable growth.	35	65	0	1,406,000	0	0	0	0	0	0	0	0	20,000	35,000	1,351,000	0
66052	Borck Creek Widening - Poutama to SH 60	Insufficient channel capacity to allow expected growth. 10m widening, interim widening to allow short-term growth. Will be widened to 70m eventually. This option allows for developers to excavate fill and Council to construct a 10m wide environmental channel.	33	67	0	1,192,000	0	0	0	0	500,000	662,000	10,000	10,000	10,000	0	0	0

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
66054	Network Tasman Channel Upgrade	Reed/Andrews Drain needs to be widened for the increased flow due to growth. Council currently owns 10m wide corridor behind Network Tasman's building.	65	35	0	778,000	0	0	0	40,000	58,000	680,000	0	0	0	0	0	0
66055	Richmond South Stormwater Treatment	Stormwater treatment wetland to treat run-off from the upper catchment.	71	29	0	700,000	0	0	0	0	0	0	0	0	15,000	45,000	640,000	0
66057	Borck Creek Widening - SH60 to SH6 Permanent	Capacity of Borck Creek between SH6 and SH60 needs to be upgraded for the future growth.	61	39	0	3,142,000	0	0	0	0	0	0	0	0	0	0	3,142,000	0
66058	Whites Drain Upgrade	Widening of the existing drain and construction of environmental strip from the connection with Reed/Andrews Drain and Paton Rd.	0	100	0	290,000	0	0	0	0	0	0	0	0	0	0	290,000	0
66059	Richmond Stormwater Land Purchase	Land purchase to enable construction of new stormwater assets	27	73	0	9,776,370	944,120	1,845,000	1,425,000	262,500	50,000	800,000	0	0	0	4,299,750	150,000	0
66060	Blair Terrace Stormwater Pipeline	New 900mm stormwater pipe connecting to the Washbourn Bypass Pipeline would alleviate overland flow issues that affect Oxford St, Queen St and Beach Road.	0	100	0	3,070,000	0	0	0	0	0	0	0	0	50,000	1,200,000	1,820,000	0
66061	Hunt Street Stormwater Extension	Collecting flow from the general Hunt Street area and diverting it to Gladstone - Poutama Link.	0	100	0	800,000	0	0	0	0	0	0	0	0	0	0	800,000	0
66062	Poutama Drain Widening Stage 2	Poutama Drain is designated as a stormwater reserve and Greenway. Some widening took place in 2015-16 but the change to having the Washbourn Stormwater Diversion discharge into Poutama Drain means more capacity is required in the drain. Widening is also required to provide capacity for the Middlebank Drive catchment and Gladstone Road diversions.	35	65	0	1,486,000	0	0	0	0	1,309,000	147,000	10,000	10,000	10,000	0	0	0
66063	Lower Queen Street Bridge Capacity Upgrade - Stage 3	Increasing the span of the bridge by 50% to allow for enlarged profile of Borck Creek.	34	66	0	760,000	0	0	0	0	0	0	0	0	0	0	0	760,000
66065	Bird Lane New Stormwater Pipe	The area will be rezoned from rural to residential and the stormwater pipe will service the development and alleviate some current flooding issues.	67	33	0	822,000	0	0	0	0	9,500	16,500	25,000	771,000	0	0	0	0
66066	Upper Queen St Stormwater Diversion	Stormwater diversion from Queen St, along Washbourn Dr and into Washbourn Gardens.	0	100	0	503,000	0	0	0	0	26,000	20,000	457,000	0	0	0	0	0
66067	Ned's Creek Flood Prevention Works Stage 1	Construction of bund along Ned's Creek northern bank to prevent flooding	0	100	0	610,000	232,000	378,000	0	0	0	0	0	0	0	0	0	0
66068	Lower Queen Street Wetland	Construct centralised stormwater treatment	44	56	0	420,000	0	0	0	0	0	0	0	0	0	0	420,000	0
66069	Growth Allowance for Stormwater Infrastructure	Allowance to increase pipelines reactively due to growth	100	0	0	425,000	25,000	25,000	25,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	0	0
66071	Richmond - Detention Dam Consent Renewals	Consents expire 31 May 2030 (Bill Wilkes, Washbourn, Lodestone, Eden)	0	0	100	87,000	0	0	0	0	0	0	0	0	0	0	87,000	0
66072	Seaton Valley Resource Consent Renewal	Seaton Valley Drain consents expire 29 July 2019 (RM080112, RM08013, RM0800260, RM080261, RM080262, RM080113)	0	0	100	11,000	11,000	0	0	0	0	0	0	0	0	0	0	0
66073	Bateup Drain Upgrade Stage 2	Increase capacity of Bateup Drain to suit growth from Paton Rise Development to Paton Rd	69	31	0	127,000	0	0	0	0	0	11,000	116,000	0	0	0	0	0

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
66074	Growth Allowance for Stormwater Infrastructure - 11 to 20 yr	Allowance to increase pipelines reactively due to growth	100	0	0	500,000	0	0	0	0	0	0	0	0	0	0	500,000	0
66075	Growth Allowance for Stormwater Infrastructure - 21 to 30 yr	Allowance to increase pipelines reactively due to growth	100	0	0	500,000	0	0	0	0	0	0	0	0	0	0	0	500,000