## Long Term Plan 2021-31

## Activity Plan

# Stormwater Drainage

## Adopted 21 & 23 June 2021

Christchurch City Council

## Approvals

| Role | Position | Name | For Draft LTP | |
|---|---|---|---|---|
| | | | Signature | Date of sign-off |
| General Manager | GM City Services (acting) | Gallagher Carolyn | | 04/02/2021 |
| Activity Manager | Head of Three Waters & Waste | Helen Beaumont | | 02/02/2021 |
| Finance Business Partner | Finance Business Partner | Peter Langbein | | 15/02/2021 |

## Authors and Advisors to this Activity Plan

| Group | Business Unit | Position | Name |
|---|---|---|---|
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## Table of Contents

# 1. What does this activity deliver?

The stormwater network collects and conveys stormwater during rainfall events. This is designed to work with secondary flow paths which can include roads in larger storm events.
In delivering this service the Council aims to provide a balanced mix of:

- maintenance and renewals to preserve the levels of service;
- capital investment to respond to increasing demands for growth (both greenfield and infill); and
- managing stormwater discharge quality and quantity to improve health of water bodies to sustain ecological health and avoid any overwhelming of the stormwater network and the receiving environment.

The key physical assets used to deliver this activity are:

- The underground stormwater conveyance networks (including approximately 915km of pipes and 20,000 manholes/ sumps/inlets/outlets etc.)
- Open channels and overland flow path (including 2,429km of natural waterways such as rivers, streams and creeks, 110km of constructed drainage channels using various bank lining materials (timber, rock, concrete), in-channel structures, weirs and retaining walls etc.)
- Treatment devices that are not within the Flood Protection and Control Works activity (i.e. where there is no flood protection component such as silt traps, gross debris traps or proprietary treatments devices such as the cartridge filters) and flow level control devices.

Council uses a multi-value approach to Stormwater, where the drainage value of the network is considered alongside other values such as ecology, culture, recreation, heritage and landscape. Together these are known as the ‘six values’ that Council utilises in Stormwater drainage and waterway management.

Levels of Service provided by the Stormwater Drainage activity are:

- Council responds to flood events, faults and blockages promptly and effectively
- Stormwater network is managed to minimise risk of flooding, damage and disruption
- Council maintains waterway channels and margins to a high standard
- Council manages the stormwater network in a responsible and sustainable manner

This activity is intrinsically linked to and interdependent with the Flood Protection and Control Works activity.

# 2. Community Outcomes – why do we deliver this activity?

| | Community Outcome | Describe how the activity effects the Community Outcome |
|---|---|---|
| Primary Outcome 1 | Healthy water bodies | Appropriate stormwater management is a crucial part of keeping waterways healthy. Healthy waterways are an important part of a healthy environment. Without suitable investment in growth and renewal projects, land use intensification negatively impacts on the water quality and the ecological health of our natural waterways. For water quality in our waterways, wetlands and estuaries to improve over time good stormwater management such as timely renewals, appropriate maintenance regimes and public education on “where stormwater goes” is required by everyone in the community.<br><br>Based on the financially constrained funding model, Council will be just meeting its requirements for offsetting the effects on waterway degradation due to growth and the treatment of existing urban discharges within 2 priority catchments. Council will not be able to make any inroads into improving waterway health. |
| Primary Outcome 2 | Modern and robust city infrastructure and community facilities | A key objective of this activity is to limit the effects of flooding on homes and Council infrastructure and ensure lifeline routes are available during an emergency response.<br><br>Through careful planning, consultation and prudent financial investment, Council aspires to ensure Christchurch is well prepared for the impacts and consequences of natural hazards and can respond and recover quickly. This will include the goal that Council infrastructure is able to function following unexpected natural hazard events.<br><br>This will mean that the stormwater system will need to adapt as the climate changes, the sea rises and more frequent, more intense storms and rainfall affect the city. |
| Primary Outcome 3 | Safe and healthy communities | Around 30% of Christchurch residents live in areas at risk of flooding or coastal inundation. If this activity were not conducted then flooding could be expected to dramatically worsen across the city from ongoing wear and tear on existing networks, earthquake damage effects and climate change. Significant social harm and degradation could occur without flood protection and control works. There are thousands of homes and properties at risk of current and future flooding and coastal inundation across our low lying city. The ongoing health and wellbeing of our residents is supported by this activity. This activity is typically delivered concurrently with the Flood Protection and Control Works activity by using informed and proactive approaches to natural hazard risks. |
| Secondary Outcome 1 | Unique landscapes and indigenous biodiversity are valued and stewardship exercised | For an ecosystem to be healthy, there needs to be natural diversity in landscapes, waterways, flora and fauna species. Urbanisation and development has destroyed much of the natural landscape variability whether by heavily modifying and draining the swamps and estuarine areas, removal of native trees from the city areas or the Port Hills, and minimising the salt marsh areas. This combined with the pollution from urban run-off and industrial discharges into the rivers has drastically affected flora and fauna species.<br><br>To regain a connection with a healthy environment and public well-being, it is essential that Council recognises that there are many unique landscapes needing to be protected, maintain and extended along with its indigenous biodiversity. |

| | Community Outcome | Describe how the activity effects the Community Outcome |
|---|---|---|
| | | Greening of our infrastructure can bring ecosystems right to the residents of our city, making it a much more pleasant place to live. As communities see and enjoy living with the natural environment across their city, the unique landscapes and indigenous biodiversity will become truly valued. This community outcome cannot be met just by this activity, it will require a cross-activity relationship with the Parks, Transport, Strategy and the Biodiversity team.<br><br>As with the Healthy Waterbodies Community Outcome, the funding options being proposed will not provide for any serious inroads into meeting this community outcome within this LTP period. |

# 3. Strategic Priorities – how does this activity support progress on our priorities?

| Strategic Priorities | Activity Responses |
|---|---|
| Enabling active and connected communities to own their future | As a member of the Community Waterways Partnership Charter, Council work with other members to improve waterways, through delivery of education and awareness programmes to get the wider community working together to protect and improve waterways.<br><br>As one of the activities that Council is responsible for, consultation is undertaken at various levels (depending on the importance of the decision needed) for all of the strategic and financial directions in the stormwater activity. The community has the opportunity to submit on all critical decisions to ensure they have their say ensure they own their futures. Engaging with the community for joint activities such as planting days and community education is essential.<br><br>The more public willing to interact with the water ways running within their properties and communities, the more likely waterway encroachment trends will start to reverse, and habit protection and enhancement will become normal. |
| Meeting the challenge of climate change through every means available | This activity is critical to managing the effects of climate change for the district, which are projected to worsen over time. While the Land Drainage teams have appreciation for the effects of some aspects of climate change, additional work is required to better understand the changing risks and what that means to the asset base in the future.<br><br>Increased OPEX investment is required to gain a better understanding of risks and to better inform CAPEX decisions for the short, medium and long term. How the asset base itself will be affected by ground water elevation, sea level rise, sand accretion and changes to rainfall patterns, frequencies and intensities needs to be understood, as do the changing conditions the system will need to manage. Even if assets are perfectly maintained, LOS will be at risk in future due to insufficient capacity as a result of more intense rainfall, greater infiltration and decreasing hydraulic gradient across the city to the sea.<br>Designs to maximise the use of natural systems and minimise pumping are crucial, in order to carry out the activity with minimum emissions. The challenge is designing all facilities and assets to benefit the six-values approach for waterways while at the same time maximising their ability to minimise the extremes of climate change. |

| Strategic Priorities | Activity Responses |
|---|---|
| | Such understanding is essential in developing and implementing strategies which relate CAPEX investments in assets to the threats of climate change impacts such as the effects of rising sea level on coastal infrastructure. This will enable prudent levels of infrastructure investment in areas under threat, assist in adaptation planning and resilience building, and avoid wasted investment in assets which will become redundant through climate change effects well before the end of their economic life.<br><br>The use of low impact and sensitive urban designs used in Auckland and internationally should be further investigated to ensure we are moving forward as a modern city in a way that greatly benefits the wellbeing of city residents. Using green infrastructure also has the advantage of mitigating greenhouse gas emissions and enhancing biodiversity as well as managing flood risk.<br><br>For capital works, guidance on carbon costing is needed to inform cost-effective minimisation of embedded carbon in the council's assets. Considering the whole-of-life emissions of assets, and minimising embedded carbon at the construction stage, has the potential to significantly reduce the overall greenhouse gases attributable to council and will contribute towards meeting council and city emissions targets. |
| Ensuring a high quality drinking water supply that is safe and sustainable | By ensuring that all stormwater and flood protection infrastructure is maintained and operated to the correct standard and renewed at the optimum time, then the quantity of urban run-off contaminants entering the surface water system which may risk the quality of the drinking water supply in the shallow aquifers. Managing stormwater contributes to keeping wellheads and other water supply assets safe from flooding. |
| Accelerating the momentum the city needs | Councils Land Drainage Planning teams are working with appropriate Council Strategic documents (such as the Integrated Water Strategy and various Stormwater Management Plans) to ensure that stormwater pipe upgrades and the provision of treatment/storage facilities are planned and/or provided ahead of development to prevent any delays. Council plans for the required funding many years in advance to ensure the funding is available when it is required.<br><br>The proposed funding options will allow Council to meet the requirements of meeting development and growth unless there is any unforeseeable changes such as an increase in development costs, increased level of development etc. There will be limited opportunities to provide improvements to water body health or biodiversity. Climate change planning will progress for Coastal Hazard Adaptation, although the results of the project will not be realised in time to guide any works within the first 3 years of the LTP period. |
| Ensuring rates are affordable and sustainable | To meet the undertakings offered by Council to ensure that rates increases are minimised within the financially difficult times of the Covid-19 "fall-out", the funding available for the activity has been capped to meet this Strategic Priority. This results in a difficult balancing act to manage the needs of the community with the ongoing needs of the activity. To therefore meet this priority, there will be reductions to some Levels of Service and the creation of some longer term generational "debt" through delaying renewal works, flood mitigation projects and climate change mitigation/adaptation projects. There is a risk that that there will be an increase in OPEX expenditure to cover the shortfall in renewals funding i.e. the assets will need on-going repair rather than being replaced. |

# 4. Increasing Resilience

This Activity includes the provision, management and operation of the stormwater and waterways network. This encompasses the "health" of the network and the ability of the network to respond and recover from acute and chronic environmental events such as flood, earthquake, tsunami and climate change effects.

The Stormwater and Waterways renewal programme will be targeting assets in the poorest condition, both in the piped network and the lined waterway network addressing faults where the failure may result in private and public flooding damage, which includes the risk of sedimentation deposition damaging the receiving environments ecosystems. The renewal of infrastructure is attempted with an aim to remove pipework (day-lighting) and enhancement of lined waterways. This aims to restore the natural instream habitat, providing a more resilient asset with increased open margins for flood flow conveyance without overtopping which will be essential given the predictions of more intense rainfall patterns.

Through the completion and on-going improvement of catchment hydraulic models, more effective and targeted upgrades of predicted flooding areas as well as essential Stormwater Management Plans can be delivered at the best time to suit network performance, future growth and development, making the best use of Council funding. The proposed construction of a Water Quality model will provide the basis for targeted capital works for water quality outcomes (such as the proposed Addington Catchment Treatment Devices, and Waikākāriki - Horseshoe Lake Stormwater Treatment Facility) to ensure that Council meets the requirement of the Comprehensive Stormwater Network Discharge Consent and improved instream habitat.

The stormwater and waterway activity responds to natural hazard risks by

- Addressing impacts of climate change, sea level rise, other natural hazards in 30-Year Infrastructure Strategy and in various Stormwater Management Plans; and
- factoring resilience in capital projects and Stormwater and waterway renewals and replacement programmes that have to look well beyond the 30-Year Infrastructure time horizon

The following projects and programmes are examples of current projects with funding approved in the 2018 LTP where Council is building resilience into our assets.

***Upper Heathcote Stormwater Basins Project:***

| | |
|---|---|
| Project Description | As a result of changes caused by the earthquakes, flood risk has increased along the Ōpāwaho -Heathcote River. The Council has investigated the benefits of increasing floodwater storage in the upper Heathcote catchment. The team looked at whether this would help reduce flooding of homes along the Ōpāwaho - Heathcote River. Additional storage in these areas will primarily reduce flood risk in the upper and mid-Heathcote. Due to the tidal influence in the lower reaches other floodplain management options will still be required to reduce flood risk in the lower Ōpāwaho - Heathcote. |
| Scope and Expected Impact | Construction of four more large storage basins, which when working together will hold back water during flood events and release it after the storm has passed. These storage areas are Wigram East Retention Basin, Cashmere-Worsley Valley, a wetland facility at Curletts Road and further storage in Eastman Wetlands on Sparks Road.<br><br>Modelling results showed that additional storage areas in the upper catchment will reduce flood levels, reducing the number of floors levels at risk of above and below floor level flooding in both more frequent and more extreme events. |
| The Case for Change | The storage basins will reduce the impacts of flooding, allowing people to more easily live with the effects of flooding along the Heathcote River and improve community resilience. |
| The Resilience Dividend | This project reduces the risk of flooding along the Ōpāwaho - Heathcote River. As a result it increases the ability of Christchurch to be well prepared for natural hazards and can respond and recover quickly. |
| Further Opportunities | There is the opportunity to use this project to better inform Ōpāwaho -Heathcote River residents about the flood risk in their community and how to learn to live with flooding. |

These projects will position Christchurch to be better prepared for, and more resilient to, the disruptions identified in the Resilient Greater Christchurch Plan as most likely to impact community wellbeing.

# 5. Specify Levels of Service

| LOS number | C/M[1] | Performance Measures Levels of Service (LOS) | Historic Performance Trends | Benchmarks | Future Performance Targets | | | | Method of Measurement | Community Outcome |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Year 1 2021/22 | Year 2 2022/23 | Year 3 2023/24 | Year 10 2030/31 | | |
| Council responds to flood events, faults and blockages promptly and effectively | | | | | | | | | | |
| 14.0.1.1 | M | Council responds to flood events, faults and blockages promptly and effectively:<br>Percentage of emergency calls responded to within 2 hours (urban) or 6 hours (rural) | 2019/20: 98.1%<br>2018/19: 100%<br>2017/18: 100%<br>2016/17: 100%<br>2015/16: 100% | | ≥95% | ≥95% | ≥95% | ≥95% | Reported in monthly contract reports from the Contractor. | Safe & Healthy Communities |
| 14.0.1.3 | M | Council responds to flood events, faults and blockages promptly and effectively:<br>Percentage of routine calls responded to within 5 working days | 2019/20: 98.1%<br>2018/19: 97%<br>2017/18: 98.5%<br>2016/17: 99.3%<br>2015/16: 99% | | ≥95% | ≥95% | ≥95% | ≥95% | Reported in monthly contract reports from the Contractor. | Safe & Healthy Communities |
| 14.0.10 | C | Council responds to flood events, faults and blockages promptly and effectively:<br>Median response time to attend a flooding event, measured from the time that the territorial authority receives notification to the time that service personnel reach the site | 2019/20: 45<br>2018/19: 0<br>2017/18: 30<br>2016/17: 30<br>2015/16: >30 | | ≤60 mins urban<br><br>≤120 mins rural | ≤60 mins urban<br><br>≤120 mins rural | ≤60 mins urban<br><br>≤120 mins rural | ≤60 mins urban<br><br>≤120 mins rural | Reported in monthly contract reports from the Contractor.<br>Both targets must be met for the level of service to be met.<br>*Department of Internal Affairs, Stormwater non-financial performance measure number 3* | Safe & Healthy Communities |
| 14.0.11.3 | C | Stormwater network is managed to minimise risk of flooding, damage and disruption:<br>Number of complaints received by a territorial | 2019/20: 6.07<br>2018/19: 6.74<br>2017/18: 4.2 | | < 9 complaints per 1000 | < 9 complaints per 1000 | < 9 complaints per 1000 | < 8 complaints per 1000 | Number of requests for service received through the Hybris | Modern and robust city infrastructure and community |

[1] C/M – Community or Management level of service (LOS)
Community LOS - Previously known as LTP LOS. These are LOS that are community facing and will be published in our Statement of Service Provision.
Management LOS - Previously known as Non-LTP LOS. These are LOS that are measured in the organisation to ensure service delivery.

| LOS number | C/M[1] | Performance Measures Levels of Service (LOS) | Historic Performance Trends | Benchmarks | Future Performance Targets | | | | Method of Measurement | Community Outcome |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Year 1 2021/22 | Year 2 2022/23 | Year 3 2023/24 | Year 10 2030/31 | | |
| | | authority about the performance of its stormwater system<br>(Expressed per 1000 properties connected to the territorial authority's stormwater system) | 2016/17: 8.2<br>2015/16: 8.4 | | properties | properties | properties | properties | *Department of Internal Affairs, Stormwater non-financial performance measure number 4* | facilities |
| Council maintains waterway channels & margins to a high standard | | | | | | | | | | |
| 14.0.3 | C | Council manages the stormwater network in a responsible and sustainable manner:<br>Resident satisfaction with Council's management of the stormwater network | 2019/20: 42.7%<br>2018/19: 47%<br>2017/18: 35%<br>2016/17: 52%<br>2015/16: 50% | | ≥40% satisfaction | 40% | 39% | 35% | Resident satisfaction surveys | Sustainable use of resources and minimising waste |
| 14.0.6 | M | Council manages the stormwater network in a responsible and sustainable manner:<br>Percentage of all aquatic weed diverted from landfill (mechanical and hand harvested) | 2019/20: 100%<br>2018/19: 100%<br>2017/18: 100%<br>2016/17: 100%<br>2015/16: 100% | | ≥95% | ≥95% | ≥95% | ≥95% | Reported in monthly contract reports from the Contractor. | Sustainable use of resources and minimising waste |
| 14.0.4.1 | M | Council maintains waterway channels and margins to a high standard:<br>Minimum length of 500m of bank naturalised per year (based on a single side of the waterway) | 2019/20: 2,327<br>2018/19: 1,819 | | ≥95% | ≥95% | ≥95% | ≥95% | GIS and as-built data from CAPEX projects | Unique landscapes and indigenous biodiversity are valued and stewardship exercised |
| 14.0.14 | M | Council maintains waterway channels and margins to a high standard:<br>Ratio of the length of watercourse consented to be physically improved versus physically degraded in each year | New metric | | ≥3 | ≥3 | ≥3 | ≥3 | Ratio calculated as (kms improved ÷ kms degraded = 3 or more).<br>GIS and as-built data from CAPEX projects<br>Physically Improved – includes daylighting, naturalisation, artificial lining removal, riparian | Unique landscapes and indigenous biodiversity are valued and stewardship exercised |

| LOS number | C/M[1] | Performance Measures Levels of Service (LOS) | Historic Performance Trends | Benchmarks | Future Performance Targets | | | | Method of Measurement | Community Outcome |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Year 1 2021/22 | Year 2 2022/23 | Year 3 2023/24 | Year 10 2030/31 | | |
| | | | | | | | | | protection and enhancement)<br>Physically Degraded – includes piping, lining and other structures that contribute negatively to the environment<br>Excludes: water quality aspects of watercourse improvement and degradation such as contaminants and temperature change. | |
| Council manages the stormwater network in a responsible and sustainable manner. | | | | | | | | | | |
| 14.0.2.1 | C | Council manages the stormwater network in a responsible and sustainable manner:<br>Number of abatement notices regarding Council resource consents related to discharges from the stormwater networks per year | 2019/20: 0<br>2018/19: 0<br>2017/18: 0<br>2016/17: 0 | | 0 abatement notices | 0 abatement notices | 0 abatement notices | 0 abatement notices | Reported in resource consent compliance reports to ECan.<br><br>*Department of Internal Affairs, Stormwater non-financial performance measure number 2a* | Sustainable use of resources and minimising waste |
| 14.0.2.4 | C | Council manages the stormwater network in a responsible and sustainable manner:<br>Number of infringement notices regarding Council resource consents related to discharges from the stormwater networks per year | 2019/20: 0<br>2018/19: 0<br>2017/18: 0<br>2016/17: 0 | | 0 infringement notices | 0 infringement notices | 0 infringement notices | 0 infringement notices | Reported in resource consent compliance reports to ECan.<br><br>*Department of Internal Affairs, Stormwater non-financial performance measure number 2b* | Sustainable use of resources and minimising waste |

| LOS number | C/M[1] | Performance Measures Levels of Service (LOS) | Historic Performance Trends | Benchmarks | Future Performance Targets | | | | Method of Measurement | Community Outcome |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Year 1 2021/22 | Year 2 2022/23 | Year 3 2023/24 | Year 10 2030/31 | | |
| 14.0.2.3 | C | Council manages the stormwater network in a responsible and sustainable manner:<br>Number of enforcement orders regarding Council resource consents related to discharges from the stormwater networks per year | 2019/20: 0<br>2018/19: 0<br>2017/18: 0<br>2016/17: 0 | | 0 enforcement orders | 0 enforcement orders | 0 enforcement orders | 0 enforcement orders | Reported in resource consent compliance reports to ECan.<br><br>*Department of Internal Affairs, Stormwater non-financial performance measure number 2c* | Sustainable use of resources and minimising waste |
| 14.0.2.2 | C | Council manages the stormwater network in a responsible and sustainable manner:<br>Number of successful prosecutions regarding Council resource consents related to discharges from the stormwater networks per year | 2019/20: 0<br>2018/19: 0<br>2017/18: 0<br>2016/17: 0 | | 0 successful prosecutions | 0 successful prosecutions | 0 successful prosecutions | 0 successful prosecutions | Reported in resource consent compliance reports to ECan.<br><br>*Department of Internal Affairs, Stormwater non-financial performance measure number 2d* | Sustainable use of resources and minimising waste |
| 14.0.15.2 | M | Stormwater Service potential - 10yr rolling historic ratio of renewals to depreciation:<br>The ratio of asset renewals to depreciation per year | New Metric<br>2018/19: 66% | IPWEA Asset management financial indicator : 100% | ≥47% | 85% | 91% | 80% | Historic 10yr average renewals expenditure / Historic 10yr average depreciation | Great place for people. Business and investment |
| 14.0.15.3 | M | Increase Land Drainage Asset Management Maturity towards agreed appropriate level (Advanced 89) | New Metric<br>2020: 77%<br>2018: 68%<br>2016: 60% | NZ Treasury Investor Confidence Rating (ICR) Asset Management Maturity Assessment (AMMA) Tool | ≥77% | 77% | 77% | 89% | Conduct assessment on alternate years.<br>Asset Management Maturity assessment (AMMA) to be conducted every two years by an external assessor until appropriate level of maturity target is achieved. | Sustainable use of resources and minimising waste |

| LOS number | C/M[1] | Performance Measures Levels of Service (LOS) | Historic Performance Trends | Benchmarks | Future Performance Targets | | | | Method of Measurement | Community Outcome |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Year 1 2021/22 | Year 2 2022/23 | Year 3 2023/24 | Year 10 2030/31 | | |
| Stormwater network is managed to minimise risk of flooding, damage and disruption | | | | | | | | | | |
| 14.0.11.2 | C | Stormwater network is managed to minimise risk of flooding, damage and disruption:<br>The number of flooding events that occur | 2018/19: 0<br>2019/20: 0<br>2017/18: 0<br>2016/17: 1<br>2015/16: 1 | | <2 flooding events | <2 flooding events | <2 flooding events | <2 flooding events | Site inspection reports.<br><br>Where a flood event is defined as "a result of the capacity of the stormwater network (either primary or secondary flow paths) being exceeded".<br><br>*DIA stormwater non-financial performance measure number 1a* | Modern and robust city infrastructure and community facilities |
| 14.0.11.1 | C | Stormwater network is managed to minimise risk of flooding, damage and disruption:<br>For each flooding event, the number of habitable floors affected. (Expressed per 1000 properties connected to the territorial authority's stormwater system.) | 2019/20: 0<br>2018/19: 0<br>2017/18: 8.6<br>2016/17: 0<br>2015/16: 0.66 | | <0.1 habitable floors per 1000 properties | <0.1 habitable floors per 1000 properties | <0.1 habitable floors per 1000 properties | <0.1 habitable floors per 1000 properties | Site inspection reports<br><br>*Department of Internal Affairs, Stormwater non-financial performance measure number 1b* | Modern and robust city infrastructure and community facilities |
| 14.0.11.4 | C | Percentage of total stormwater gravity network pipework length at condition grade 5 | Was a new item in 2018, no data has been collected. | Median Results from Water NZ National Performance Review =10.91% | ≤ 7% | ≤ 7% | ≤ 7% | ≤ 10% | Reported from Council Asset Management Systems.<br>Condition deterioration since inspection to be included when assigning a condition grade to a pipe. Lengths of pipe at condition 5 divided by total stormwater pipe length expressed as a percentage. | Modern and robust city infrastructure and facilities network |

| LOS number | C/M[1] | Performance Measures Levels of Service (LOS) | Historic Performance Trends | Benchmarks | Future Performance Targets | | | | Method of Measurement | Community Outcome |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Year 1 2021/22 | Year 2 2022/23 | Year 3 2023/24 | Year 10 2030/31 | | |
| 14.0.11.10 | M | Percentage of stormwater mains with high or very high consequences of failure inspected as scheduled in their lifespan | Changed Metric. | | ≥ 70% | ≥ 75% | ≥ 80% | ≥ 80% | Reported from Council Asset Management Systems.<br>Length of pipe inspected divided by total length of pipe.<br>Considering only pipes scheduled for inspection in the CCTV inspection programme. | Modern and robust city infrastructure and facilities network |
| 14.0.15.1 | M | Stormwater network is managed to minimise risk of flooding, damage and disruption:<br>Percentage of total Stormwater waterway linings at condition Grade 5. | No Metric | | ≤ 7% | ≤ 7% | ≤ 7% | ≤ 7% | Reported from Council asset management systems.<br>Condition deterioration since inspection to be included when assigning a condition grade to a lining. | Modern and robust city infrastructure and community facilities |

# 6. Does this Activity Plan need to change as a result of a Service Delivery Review (S17A)?

A Section 17A Service Delivery Review (S17A) is a legal requirement under the Local Government Act and determines whether the existing means for delivering a service remains the most efficient, effective and appropriate approach. The legislation requires that a S17A Service Delivery Review should periodically assess:

**"The cost-effectiveness of current arrangements for meeting the needs of communities within its district or region for good quality local infrastructure, local public services, and performance of regulatory functions".**

A review of stormwater activities was initiated in July 2109 for two key reasons:

- the expiry of the existing 3 waters maintenance contracts and a desire to go out to market for these services
- to enable Council to be prepared for the outcomes of the Department of Internal Affairs' 3 Waters review

The section 17A review was completed in June 2020 and presented to Council in August 2020. The review confirmed that there were underlying challenges with the status quo. Central Government's water reform programme gained significant momentum in mid-2020 and Council agreed to sign a non-binding Memorandum of Understanding with the Crown at the same extra ordinary Council meeting in August 2020 regarding water reform. Due to the increasing pace of water reform, the status quo was the recommended way forward for the section 17A review. The reform is going to lead to significant changes to 3-waters service delivery across the country and adding in further structural change during the reform process was not seen to add value to Christchurch.

The Government has announced a new national water regulator and is reviewing how to improve the supply arrangements of drinking water, wastewater and stormwater, including financing provisions and decision-making capability. Any changes implemented at a national level will have an impact on Council's service delivery.

Given the uncertainty in terms of the outcomes and timing water reform, it is difficult to predict the impacts on the stormwater supply activity service delivery structure. The Asset Management Plan is prepared on a "business as usual" assumption. Potential outcomes include:

- Regional or larger asset owning 2 waters entity

Regional, top of the South Island or full South Island entity that includes storm water and waterways

# 7. What levels of service changed from the LTP 2018-28 and why?

| LOS number | C/M | Performance Measures Levels of Service (LOS) | Historic Performance Trends | Benchmarks | Future Performance Targets | | | | Method of Measurement | Rationale for change | Options for consultation and engagement |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Year 1 2021/22 | Year 2 2022/23 | Year 3 2023/24 | Year 10 2030/31 | | | |
| Additions | | | | | | | | | | | |
| 14.0.11.10 | M | Percentage of stormwater mains with high or very high consequences of failure inspected as scheduled in their lifespan. | Changed Metric. Past performance not comparable to new measurement methodology. | None found. | Considering only pipes scheduled for inspection in the CCTV inspection programme: Length of pipe inspected divided by total length of pipe: .≥ 70% | ≥ 75% | ≥ 80% | ≥ 80% | Reported from Council Asset Management Systems. | This metric ensures that an appropriate amount of CCTV data is collected to inform renewals programmes to prevent uncontrolled failures or high operational and renewal costs. | Management Level of service - None required |
| 14.0.14 | M | Council maintains waterway channels & margins to a high standard | | | Ratio of the length of watercourse consented to be physically improved versus physically degraded in each year ( kms improved ÷ kms degraded = 3 or more) Physically Improved – includes daylighting, naturalisation, artificial lining removal, riparian protection and enhancement) Physically Degraded – includes piping, lining and other | ≥3 | ≥3 | ≥3 | GIS and as-built data from CAPEX projects | This provides an improved metric for habitat loss/gains due to piping of waterways. There are occasions where open water courses need to be piped e.g. health and safety, stagnant water pest and disease risks, access for maintenance etc. The removed level of service 14.0.4.2 meant that addressing the concerns list above would mean that LoS would not be met. | Management Level of service - None required |

| LOS number | C/M | Performance Measures Levels of Service (LOS) | Historic Performance Trends | Benchmarks | Future Performance Targets | | | | Method of Measurement | Rationale for change | Options for consultation and engagement |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Year 1 2021/22 | Year 2 2022/23 | Year 3 2023/24 | Year 10 2030/31 | | | |
| | | | | | structures that contribute negatively to the environment Excludes: water quality aspects of watercourse improvement and degradation such as contaminants and temperature change.: ≥3 | | | | | | |
| 14.0.15.2 | M | Stormwater Service potential - 10yr rolling historic ratio of renewals to depreciation | New Metric 2018/19 : 66% | IPWEA Asset management financial indicator : 100% | The ratio of asset renewals to depreciation per year: ≥47% | 85% | 91% | 80% | Historic 10yr average renewals expenditure / Historic 10yr average depreciation | This ensures that suitable funding is provided to ensure that our assets are renewed at an acceptable rate that matches their level of being “used”. | Management Level of service - None required |
| 14.0.15.1 | M | Stormwater network is managed to minimise risk of flooding, damage and disruption | New Metric | | Percentage of total Stormwater waterway linings at condition Grade 5. Condition deterioration since inspection to be included when assigning a condition grade to a lining: ≤ 7% | ≤ 7% | ≤ 7% | ≤ 7% | Reported from Council Asset Management Systems. | This ensures that waterway lining renewals are suitably funded to an acceptable rate that matches their level of degradation. | Management Level of service - None required |

| LOS number | C/M | Performance Measures Levels of Service (LOS) | Historic Performance Trends | Benchmarks | Future Performance Targets | | | | Method of Measurement | Rationale for change | Options for consultation and engagement |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Year 1 2021/22 | Year 2 2022/23 | Year 3 2023/24 | Year 10 2030/31 | | | |
| 14.0.15.3 | M | Increase Land Drainage Asset Management Maturity towards agreed appropriate level (Advanced 89) | New Metric 2016 : 60 2018 : 68 | NZ Treasury Investor Confidence Rating (ICR) Asset Management Maturity Assessment (AMMA) Tool | Asset Management Maturity assessment (AMMA) to be conducted every two years by an external assessor until appropriate level of maturity target is achieved: ≥68 | 73 | 73 | 89 | Conduct assessment on alternate years | To ensure that asset management maturity improves to match the level required by Council. | Management Level of service - None required |
| Removed | | | | | | | | | | | |
| 14.0.1.4 | M | Council responds to flood events, faults and blockages promptly and effectively | 2017/18: 2016/17: 2015/16: | | Percentage of urgent calls responded to within 24 hours: ≥95% | | | | Reported in monthly contract reports from the Contractor. | This metric was removed due to repetition with other very similar items. | Management Level of service - None required |
| 14.0.1.2 | M | Council responds to flood events, faults and blockages promptly and effectively | 2017/18:100% 2016/17:100% 2015/16:100% | | Percentage of priority calls responded to within 3 working days (urban) or 5 working days (rural): ≥85% | | | | Reported in monthly contract reports from the Contractor. | This metric was removed due to repetition with other very similar items. | Management Level of service - None required |
| 14.0.4.2 | M | Council maintains waterway channels & margins to a high standard | | | No net loss of open waterway and riparian habitat (eg piping or encroachment in to setback): Pass | | | | GIS | This metric was removed as in some occasions open waterways need to be piped e.g. health and safety, stagnant water pest and disease risks, access for maintenance etc. | Management Level of service - None required |

| LOS number | C/M | Performance Measures Levels of Service (LOS) | Historic Performance Trends | Benchmarks | Future Performance Targets | | | | Method of Measurement | Rationale for change | Options for consultation and engagement |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Year 1 2021/22 | Year 2 2022/23 | Year 3 2023/24 | Year 10 2030/31 | | | |
| | | | | | | | | | | Therefore in the event that some open waterway was piped for valid reasons, this LoS would not be met. This LoS has been replaced with one that is better worded. | |

## Modified Level of Service

| | Description | Original | Modified | Rationale for Change | Options for consultation and engagement |
|---|---|---|---|---|---|
| 14.0.1.3 | Council responds to flood events, faults and blockages promptly and effectively | **Target:** Percentage of routine calls responded to within 5 working days (urban) or 10 working days (rural): ≥85% | 2021/22: The rural working day reference was removed as all rural and urban calls should be responded to within 5 working days.<br>2022/23: ≥95%<br>2023/24: ≥95%<br>2030/31: ≥95% | The rural working day reference was removed as all rural and urban calls should be responded to within 5 working days. | Management Level of service - None required |
| 14.0.11.3 | Stormwater network is managed to minimise risk of flooding, damage and disruption | **Target:**<br>**2021/22:** < 9 | 2021/22: < 9<br>2022/23: < 9<br>2023/24: < 9<br>2030/31: < 8 | The method of measurement has changed to refer to the targets as "requests for service" (RFS) rather than complaints and using the records from Councils RFS data system Hybris rather than call centre records. | None required, updated method of measurement |

| | Description | Original | Modified | Rationale for Change | Options for consultation and engagement |
|---|---|---|---|---|---|
| | | **Method of measurement:** Number of complaints received through the call centre<br><br>*Department of Internal Affairs, Stormwater non- financial performance measure number 4* | Number of requests for service received through the Hybris<br><br>Department of Internal Affairs, Stormwater non- financial performance measure number 4 | | |
| 14.0.3 | Council manages the stormwater network in a responsible and sustainable manner | **Target:**<br>2021/22: ≥40% | 2021/22: ≥40%<br>2022/23: ≥40%<br>2023/24: ≥39%<br>2030/31: ≥35% | The target values have been reduced based on the constrained level of funding proposed for infrastructure upgrades, renewals and improvements which will likely affect reported resident satisfaction levels as the asset base continues to deteriorate and flood mitigation isn't addressed. | None required |
| 14.0.4.1 | Council maintains waterway channels & margins to a high standard | **Target:**<br>2021/22: Total length of bank naturalised per year: 200m | 2021/22: Minimum length of bank naturalised per year (based on a single side of the waterway) : 500m<br>2022/23: ≥95%<br>2023/24: ≥95%<br>2030/31: ≥95% | Revised the word "Total" to "Minimum" to encourage the naturalisation of waterways to assist with achieving water quality outcomes and improved bio-diversity for healthy waterways. | Management Level of service - None required |
| | | **Method of measurement:**<br>GIS | GIS and as-built data from CAPEX projects | | Management Level of service - None required |

| | Description | Original | Modified | Rationale for Change | Options for consultation and engagement |
|---|---|---|---|---|---|
| 14.0.11.2 | Stormwater network is managed to minimise risk of flooding, damage and disruption | **Method of measurement:**<br>Site inspection reports<br>DIA stormwater non-financial performance measure number 1a | Site inspection reports<br><br>DIA stormwater non-financial performance measure number 1a<br><br>Where a flood event is defined as "a result of the capacity of the stormwater network (either primary or secondary flow paths) being exceeded". | Additional information added to inform the reader what the DIA's definition of a "flood event" is. | None required |
| 14.0.11.4 | Percentage of total stormwater gravity network pipework length at condition grade 5 | **Target wording:** Percentage of total stormwater gravity network pipework length at condition grade 5. Based on physical inspection or theoretical model : | Lengths of pipe at condition 5 divided by total wastewater pipe length expressed as a percentage. Condition deterioration since inspection to be included when assigning a condition grade to a pipe: ≤ 7% | Changes to the target wording to make it more applicable to the method that Council is using to define the renewals programme using the AAIF system. This moves away from solely using condition assessment for renewals, and considerers the consequences of failure.<br>Classification amended from M to C (Community) at the suggestion of Audit NZ, to align to the corresponding LOS in Wastewater. | None required |
| | | **Method of measurement:** Infonet | Reported from Council asset management systems. | | Management Level of service - None required |

# 8. How will the assets be managed to deliver the services?

Assets under this activity fall into 8 groups as follows (refer to table 7.1, page 81 of the Asset Management Plan (AMP);

1. Reticulation
2. Waterway lining
3. Open waterways
4. Open waterway structures
5. Hydrometrics
6. Pump stations
7. Flood protection structures
8. Treatment and storage facilities

The current 2020 Valuation found the total value (optimised replacement cost) of the assets covered by this AMP to be $2.12 Billion. Over 86% of this value is associated with the 935km of pipes and 28,000 nodes (inlets, outlets, manholes etc.) that make up the reticulation network.

As part of an increase in Asset Maturity required by Council, the renewal programming of assets also considers the importance of "Critical Assets". Critical assets are those whose failure would likely result in a significant disruption in service and financial, environment and/or social cost. Together with asset condition data (where derived by the limited CCTV data of pipes held, the more comprehensive but not current 2016 LDRP 98 Open Channels Condition Assessment for waterways or age data for pumping stations and facilities) helps prioritise renewals profiles for each asset class.

To plan for new assets for growth, upgrades for backlog due to historic land use changes or as identified by a risk assessment, the Planning department relies on strategy documents such as Te Wai Ora o Tane - Integrated Water Strategy document and Stormwater Management Plans and the accompanying Implementation Plans being developed. Projects to create new assets are prioritised according to the programmes delivering Area Plans, the Urban Development Strategy and the Land Use Recovery Programme. It is these plans, programmes and strategies which drive the development of the asset creation plan. For more detail see Section 7.3.1. – Asset Planning Strategies (page 84) of the AMP.

Asset planning must also address the significant issues for infrastructure as defined in the 30-year planning horizon embodied within the Infrastructure Strategy.

The other path that Council acquires assets is through the vesting of infrastructure provided as part of development. Capital works are carried out to adhere with Council's standard design, specification and construction documents. If the quality of construction is demonstrated through the provision of the required quality assurance records and compliance with Contract and/or Consent documents the hand over will be accepted. Once the asset has been accepted by Council, the asset information is captured within the asset management systems, and provision made for the appropriate operation and maintenance of the asset, according to the life-cycle plan for that asset.

Operation and maintenance costs associated with stormwater and waterway assets are considered to be associated with waterways, utilities or flood protection and are not further split between the asset groups listed above. There are three contracts for the maintenance and operation of the assets, with the main one being the "Land Drainage Maintenance Contract". The funding for the maintenance activities are a mixture of planned works and reactive works. This allows the greatest flexibility for the funding provided and a mixture of works that are required to meet levels of service for amenity and public satisfaction as well as fault resolution. There is more detail on the organisation of the Operations and Maintenance service provision in Section 7.5 Operations and Maintenance of the AMP.

As discussed in Section 12 of this Activity Plan, there are a number of high level management risks to the business as well as more detail and specific risks related to the activity in Section 5.3.2 - Activity Specific Risks (page 54 of the AMP). In brief, some of the specific risks include: a historic underspend in renewals of infrastructure (including CCTV inspections) which could result in a major failure resulting in expensive replacement works, breach of consent conditions and reputation damage; insufficient CAPEX provision for better network understanding through model construction, insufficient OPEX funding for maintenance leading to deferrals, greater network degradation and higher capital replacement costs. The issues with insufficient funding for better understanding of the effects of climate change on the infrastructure, the ability to meet mandated carbon neutrality goals committed to by Council and the need for guidance from Council are also covered in the Risk Tables in this document and the AMP.

The funding cap will mean that some projects are delayed to beyond either the 3 year or the 10 year funding period or individual programme/project budgets have been reduced. There will be a resulting loss in ability to renew our asset base to match the rate in which we are “using it”, or provide an improvement above the current level of asset base i.e. we will not make any major inroads towards improving water course health or starting either investigative or physical works to prepare for climate change e.g. commencing hillside stabilisation (where practicable) to minimise sedimentation in our waterways due to erosion resulting from higher intensity rain events. We will be providing all works needed to meet growth in the city, as well as to meet the conditions of the Comprehensive Stormwater Network Discharge Consent.

Please note that at the time of writing, the Draft Infrastructure Strategy (IS) had not been completed to allow discussion on how the IS may affect the activity or the ability to deliver the service. It is anticipated that the main issues related to the activity will need to be updated to reflect the funding constraints that were bought in after the Draft IS was prepared.

# 9. What financial resources are needed?

| Stormwater Drainage<br>000's | Annual Plan 2020/21 | LTP 2021/22 | LTP 2022/23 | LTP 2023/24 | LTP 2024/25 | LTP 2025/26 | LTP 2026/27 | LTP 2027/28 | LTP 2028/29 | LTP 2029/30 | LTP 2030/31 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Activity Costs before Overheads by Service* | | | | | | | | | | | |
| Stormwater Drainage | 14,609 | 12,729 | 13,112 | 13,583 | 14,035 | 14,546 | 15,090 | 15,648 | 16,253 | 16,892 | 17,550 |
| | 14,609 | 12,729 | 13,112 | 13,583 | 14,035 | 14,546 | 15,090 | 15,648 | 16,253 | 16,892 | 17,550 |
| *Activity Costs by Cost type* | | | | | | | | | | | |
| Direct Operating Costs | 269 | 258 | 264 | 270 | 278 | 285 | 293 | 301 | 310 | 319 | 329 |
| Direct Maintenance Costs | 10,536 | 7,853 | 8,164 | 8,507 | 8,865 | 9,246 | 9,644 | 10,067 | 10,528 | 11,012 | 11,518 |
| Staff and Contract Personnel Costs | 3,804 | 4,619 | 4,684 | 4,805 | 4,893 | 5,016 | 5,153 | 5,280 | 5,415 | 5,560 | 5,703 |
| Other Activity Costs | - | - | - | - | - | - | - | - | - | - | - |
| | 14,609 | 12,729 | 13,112 | 13,583 | 14,035 | 14,546 | 15,090 | 15,648 | 16,253 | 16,892 | 17,550 |
| **Activity Costs before Overheads** | **14,609** | **12,729** | **13,112** | **13,583** | **14,035** | **14,546** | **15,090** | **15,648** | **16,253** | **16,892** | **17,550** |
| Overheads, Indirect and Other Costs | 6,560 | 6,822 | 7,220 | 7,478 | 7,647 | 7,980 | 8,080 | 8,336 | 8,693 | 8,815 | 9,079 |
| Depreciation | 20,036 | 22,082 | 22,947 | 23,663 | 24,540 | 25,435 | 26,728 | 28,085 | 29,537 | 31,028 | 32,594 |
| Debt Servicing and Interest | 1,752 | 1,825 | 2,028 | 2,251 | 2,674 | 3,057 | 3,665 | 4,092 | 4,505 | 4,726 | 4,996 |
| **Total Activity Cost** | **42,957** | **43,458** | **45,307** | **46,975** | **48,895** | **51,018** | **53,564** | **56,162** | **58,988** | **61,461** | **64,219** |
| **Funded By:** | | | | | | | | | | | |
| Fees and Charges | 17 | 15 | 15 | 16 | 16 | 16 | 17 | 17 | 18 | 18 | 19 |
| Grants and Subsidies | - | - | - | - | - | - | - | - | - | - | - |
| Cost Recoveries | - | 100 | 204 | 209 | 213 | 219 | 224 | 229 | 236 | 242 | 248 |
| Other Revenues | - | - | - | - | - | - | - | - | - | - | - |
| **Total Operational Revenue** | **17** | **115** | **220** | **224** | **230** | **235** | **241** | **247** | **253** | **260** | **267** |
| **Net Cost of Service** | **42,941** | **43,343** | **45,087** | **46,751** | **48,666** | **50,783** | **53,323** | **55,915** | **58,735** | **61,201** | **63,952** |
| **Funding Percentages:** | | | | | | | | | | | |
| Rates | 100.0% | 99.7% | 99.5% | 99.5% | 99.5% | 99.5% | 99.6% | 99.6% | 99.6% | 99.6% | 99.6% |
| Fees and Charges | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Grants and Subsidies | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Cost Recoveries | 0.0% | 0.2% | 0.5% | 0.4% | 0.4% | 0.4% | 0.4% | 0.4% | 0.4% | 0.4% | 0.4% |
| **Capital Expenditure** | | | | | | | | | | | |
| Replace Existing Assets | 10,260 | 12,319 | 14,788 | 18,319 | 22,548 | 24,332 | 23,267 | 26,584 | 25,785 | 25,252 | 25,933 |
| Improve the Level of Service | 10,806 | 6,830 | 6,590 | 8,256 | 7,020 | 2,763 | 3,387 | 3,224 | 4,523 | 4,654 | 5,473 |
| Meet Additional Demand | 796 | 1,823 | 2,125 | 643 | 47 | 46 | 58 | 61 | 56 | 55 | 55 |
| **Total Activity Capital** | **21,861** | **20,972** | **23,504** | **27,218** | **29,615** | **27,141** | **26,712** | **29,870** | **30,365** | **29,962** | **31,461** |

## Funding Consideration

Local Government Act 2002 Section 101 Funding Consideration. The following tables are based on the financials from the previous page.

## Funding Policy

### *Funding Principles*

| User-Pays | Exacerbator-Pays | Inter-Generational Equity | Separate Funding? |
|---|---|---|---|
| **Low** | **Low** | **Low** | **High** |

The table above shows how Council has considered funding in relation to the Activity, using a simple high / medium / low scale:

- User-pays – the degree to which the Activity can be attributed to individuals or identifiable groups rather than the community as a whole;
- Exacerbator-pays – the degree to which the Activity is required as a result of the action (or inaction) of individuals or identifiable groups;
- Inter-generational equity – the degree to which benefits can be attributed to future periods; and
- Separate funding – the degree to which the costs and benefits justify separate funding for the Activity.

Where an Activity is paid for through a number of funding mechanisms, Council's practice is to meet its operating costs in the first instance from fees & charges and grants & subsidies (subject to the considerations outlined above). If the Activity requires further operational funding, this remainder is funded through rates.

This capital programme will be funded in accordance with the following principles:

| **Investment type** | **Initial funding** | **Serviced and/or repaid by:** |
|---|---|---|
| • Renewal / replacement | • Rates and debt | • Rates |
| • Service Improvement and other assets | • Debt | • Rates |
| • Growth | • Debt and Development Contributions | • Rates and Development Contributions |

***Operating Cost Funding Policy***

This table below shows Council's broad funding target for the Activity (i.e. how much is paid for by individuals / groups, and how much by the community as a whole), and the associated funding mechanism used (i.e. general rates, targeted rates, user charges, etc.). As the precise balance between individual / group and community funding may vary in practice (particularly for volumetric fees and charges), the funding target for each of the below tables is expressed in broad terms rather than specific percentages:

- Low = this source provides 0%-25% of the funding for this Activity;
- Medium = this source provides 25%-75% of the funding for this Activity; and
- High = this source provides 75%-100% of the funding for this Activity.

| **Funding Target** | | **Funding mechanism** | |
|---|---|---|---|
| Individual / Group | Community | Individual / Group | Community |
| **Low** | **High** | | **Targeted Rate on whole District (High)** |

***Capital Cost Funding Policy for this Activity***

| Rates | Borrowing | DC s | Grants and Other |
|---|---|---|---|
| **Medium** | **Medium** | **-** | **-** |

Please refer to Section 9 of the Asset Management Plan (AMP- pages 141-151) for a comprehensive breakdown and commentary on the CAPEX and OPEX expenditure applied for by the business as the Recommended Option, the funding cap for the 3 Waters and Waste Unit funding option, the funding approved through the LTP process and the financial projections and trends. Please note that due to the intrinsic link between the Stormwater Drainage and the Flood Protection & Control Works Activities, it is impracticable to separate the costs between them. Therefore, the financial figures below represent the funding for the whole Land Drainage activity not just the Stormwater Drainage portion. Several key figures are included below.

The charts below illustrate the planned spending over the next ten years, by spend type and by activity based on the funding provided (the Land Drainage portion allocated of the funding cap for 3 Waters and Waste). The graph on the left indicates the division of CAPEX expenditure which shows that the main portion of the funding that has been allocated to ensuring that Council meets the Comprehensive Stormwater Network Discharge Consent conditions and funding obligations for growth and development. Renewal works are still being underfunded due to the budget constraints and lower level of asset management maturity to better assess when assets require replacement. Flood Mitigation works – as indicated under "Total EQ Recovery" – is greatly reduced in this LTP following the completion of many of the LDRP/EQ Recovery projects and several years of relatively low rainfall. As in past LTP budgets, improvement works (e.g. waterway enhancement) remains a low funding priority given the competing needs for funding in the other areas of the Activity.

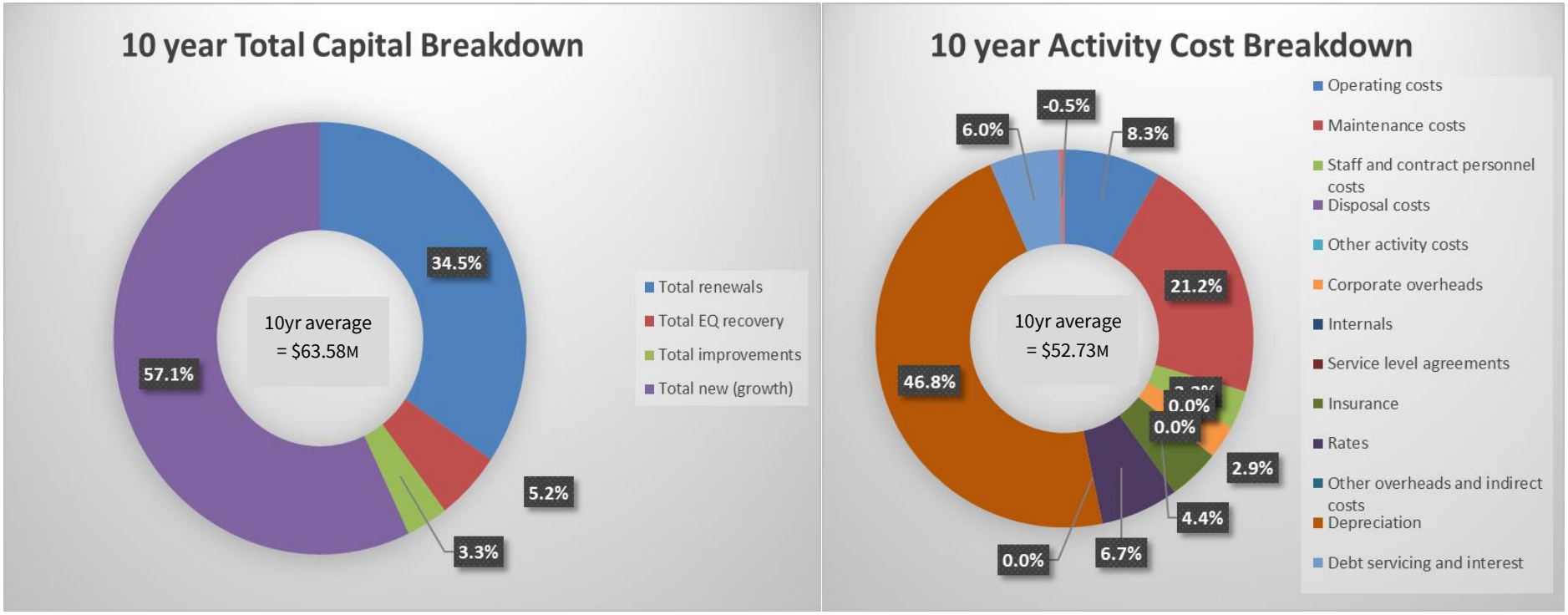


**Figure 9.1: Forecast Land Drainage Activity Breakdown**

The projected total cost of providing the necessary core services covered by this activity, including operations, maintenance, renewal, upgrade, improvement and earthquake recovery over the 10 years of the Long Term Plan (LTP) from Financial Year 21/22 to Financial Year 2031/32 (FY22 – FY32) is **$2,073 million**. The historic expenditure for the 10 year period FY2011 to FY2020 was **$609 million**.

The significant projected increase is primarily due addressing specialist projects such as the Otakaro Avon River Corridor works, backlog upgrades to address predicted flooding areas and programmes of work to start adaptation to climate change and environmental improvement/restoration works.

The actual funding allocated to providing the necessary core services covered by this Activity plan over the 10 years of the LTP is **$1,163million**. This is **56%** of the cost (as outlined above) to provide optimised asset management at the lowest lifecycle cost.

The allocated funding leaves an annual average shortfall of **$910 million** over the 10 years of the LTP (all values exclude inflation).

A snapshot of key financial indicators is shown below, including the historic ten year average and how this compares with the next LTP period.

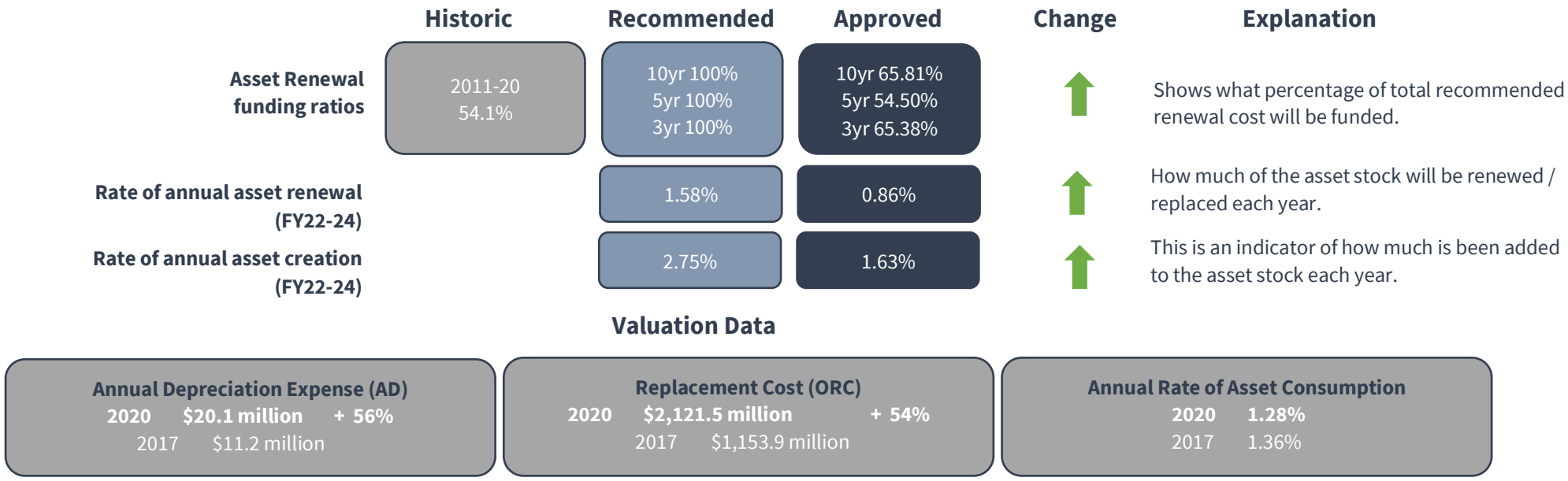


**Figure 9.2: Financial Indicators**

# 10. How much capital expenditure will be spent, on what category of asset, and what are the key capital projects for this activity?

| Activity | Driver | ID | Project Name | 2021/22 | 2022/23 | 2023/24 | 2024/25 | 2025/26 | 2026/27 | 2027/28 | 2028/29 | 2029/30 | 2030/31 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Stormwater Drainage** | | | **($000)** | | | | | | | | | | | |
| | **Asset Renewal** | | | | | | | | | | | | | |
| | | 324 | Programme - SW Reticulation Renewals | | 1,074 | 3,143 | 5,906 | 8,805 | 10,163 | 12,177 | 12,518 | 12,881 | 13,228 | 79,895 |
| | | 327 | SW Technical Equipment Renewal | 60 | 61 | 61 | 47 | 46 | 53 | 56 | 56 | 55 | 55 | 550 |
| | | 388 | Programme - SW Open Waterway Renewals | | | 114 | 498 | 690 | 708 | 1,635 | 894 | 920 | 945 | 6,404 |
| | | 481 | Programme - SW Waterway Structure Renewals | | | | 280 | 287 | 295 | 303 | 298 | 307 | 315 | 2,085 |
| | | 984 | Programme - SW Waterway Lining Renewals | | | 811 | 4,592 | 9,480 | 9,948 | 10,495 | 10,789 | 9,875 | 10,142 | 66,132 |
| | | 33828 | SW Timber Lining Renewal - Marshland Road Canal Reserve Drain (Stage 1) | 10 | 2,121 | 1,765 | 2,541 | | | | | | | 6,437 |
| | | 34025 | SW Cressy Terrace Pump Station Reticulation Renewal (PS601) | 11 | | | | | | | | | | 11 |
| | | 37305 | SW Lyttelton Reticulation Renewals (Brick Barrel) | 1,500 | 1,545 | 1,091 | | | | | | | | 4,136 |
| | | 37306 | SW Jacksons Creek Reticulation Renewal (Brick Barrel) (Near Selwyn St - Brougham St Intersection) | 1,550 | 36 | | | | | | | | | 1,586 |
| | | 41866 | Programme - SW Stormwater Drainage Reactive Renewals | | | | 550 | 563 | 578 | 594 | 584 | 601 | 617 | 4,087 |
| | | 48551 | SW Manchester Street Drain Reticulation Renewal (Brick Barrels) (Purchas Street to Bealey Ave) | | | | 515 | 981 | | | | | | 1,496 |
| | | 49028 | SW Little River Reticulation Renewals | 695 | | | | | | | | | | 695 |
| | | 49030 | SW Jacksons Creek Upper Reticulation Renewal (Brick Barrel) (Ward Street) | 50 | | | | | | | | | | 50 |
| | | 49031 | SW Roche Avenue Pipe Renewal (95m SwPipe-26936) | 100 | | | | | | | | | | 100 |
| | | 49093 | SW Corsair Bay Pipeline Renewal (From Park Terrace Inlet to Coastal Outfall) | | 1,763 | | | | | | | | | 1,763 |
| | | 49716 | SW Mairehau Drain Timber Lining Renewal (Westminister to Crosby) | 2,737 | 300 | | | | | | | | | 3,037 |
| | | 49778 | Delivery Package - SW Waterway Structures Renewal | 391 | 267 | 274 | | | | | | | | 932 |
| | | 49868 | SW Okeover Stream Grill Renewal (Newbridge Place) | 60 | | | | | | | | | | 60 |
| | | 49964 | SW Sissons Drain Timber Lining Renewal (Hoani Street to Langdons Road) (105m) | 85 | | | | | | | | | | 85 |
| | | 50348 | Delivery Package - SW Reactive Drainage Asset Renewals | 512 | 524 | 536 | | | | | | | | 1,572 |
| | | 50366 | SW Mains Renewals Affiliated With Roading Works | 250 | 767 | 524 | 537 | 550 | 565 | 580 | 596 | 613 | 630 | 5,612 |
| | | 55065 | SW Jacksons Creek Reticulation Renewal (Brick Barrel) (Brougham to Barrie) (SWPipe ID 17624) | 230 | 1,139 | | | | | | | | | 1,369 |
| | | 55073 | SW Tennyson Street Reticulation Renewal (Brick Barrel) | 443 | | | | | | | | | | 443 |
| | | 55103 | SW Dudley Creek Waterway Lining Renewal (Scotston Avenue) | 730 | | | | | | | | | | 730 |
| | | 55105 | SW Papanui Creek Waterway Lining Renewal (Paparoa Street) | 624 | | | | | | | | | | 624 |

| Activity | Driver | ID | Project Name | 2021/22 | 2022/23 | 2023/24 | 2024/25 | 2025/26 | 2026/27 | 2027/28 | 2028/29 | 2029/30 | 2030/31 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 55112 | SW Dudley Creek Waterway lining Renewal (Paparoa Street to PS219) | 391 | 1,099 | 1,099 | | | | | | | | 2,589 |
| | | 56034 | SW Spencerville Road Pipeline Realignment & General Repairs | | 75 | 425 | | | | | | | | 500 |
| | | 60215 | SW Jacksons Creek Lower Water Course Renewals | | 128 | 978 | 1,002 | 1,027 | 113 | | | | | 3,248 |
| | | 60217 | SW Dudley Creek Timber Lining Renewals (Ranger Street) | | 500 | 500 | 130 | | | | | | | 1,130 |
| | | 60218 | SW Dudley Creek Timber Lining Renewals (Harris Crescent, Papanui) | | 180 | 10 | | | | | | | | 190 |
| | | 60231 | SW No 2 Drain Rural Renewal | | 830 | 743 | 743 | 743 | 744 | 745 | 50 | | | 4,598 |
| | | 60289 | SW St Albans Creek Timber Lining Renewals (Innes Road) | | 150 | 25 | | | | | | | | 175 |
| | | 60290 | SW - St Albans Creek Timber Lining Renewals (Knowles to Innes) | 455 | 98 | | | | | | | | | 553 |
| | | 60291 | Delivery Package - SW Waimairi & Fendalton Stream Lining & Enhancement | 489 | 293 | 15 | | | | | | | | 797 |
| | | 60292 | SW Harbour Road Drain Over Pūharakekenui - Styx River (Brooklands) | | 120 | 20 | | | | | | | | 140 |
| | | 60335 | SW Waimari Stream (Straven to Rochdale) | | 100 | 245 | 20 | | | | | | | 365 |
| | | 60336 | SW Goodmans Drain Timber Lining Renewal (Prestons to Marshland Road) | | 70 | 721 | 20 | | | | | | | 811 |
| | | 60337 | SW Jardines Drain from Nuttall Drive to Ōpāwaho - Heathcote River Drain Renewal | | 200 | 1,501 | 501 | 50 | | | | | | 2,252 |
| | | 60338 | SW Faulls Drain Lining Renewal (Hills to Walters, Marshland) | | 150 | 2,683 | 50 | | | | | | | 2,883 |
| | | 60339 | SW Addington Brook to Hagley Park South Timber Lining Renewal | | 78 | 500 | 4,509 | 1,109 | 100 | | | | | 6,296 |
| | | 60340 | SW Arran Drain Realignment (Ferry Road, Linwood) | 360 | | | | | | | | | | 360 |
| | | 60342 | SW Dry Stream - Victory Branch Drain Lining Renewal (St Martins) | 587 | 371 | | | | | | | | | 958 |
| | | 61929 | SW - Hays Bay Drain No 2 Renewal, Black Rock | | 10 | | | | | | | | | 10 |
| | | 61942 | SW Treleavens Drain Timber Lining Renewal (Lower Styx Road) | | 400 | 30 | | | | | | | | 430 |
| | | 62242 | SW - Opara Stream Naturalisation Renewal Works, Okains Bay | | 102 | | | | | | | | | 102 |
| | | 62243 | SW - Steamwharf Stream, Palinurus to Dyers Bank Renewal Works | | 102 | 52 | | | | | | | | 154 |
| | | 62244 | SW - Avon River , 85 Avonhead Road Bank Renewal Works | | 51 | 147 | 54 | | | | | | | 252 |
| | | 62245 | SW - Smacks Creek, 30R Wilkinsons Road Renewal Works | | 51 | 195 | 54 | | | | | | | 300 |
| | | 62246 | SW - Kaputone Creek, 26 Springwater Avenue Bank Renewal Works | | 32 | 110 | | | | | | | | 142 |
| | | 65142 | SW Papanui Creek at Tulloch Place Invert Renewal | | 200 | 150 | | | | | | | | 350 |
| | | 65143 | SW Riccarton Main Drain Timber Renewals (Riccarton To Wharenui Road) | | 200 | 589 | 50 | | | | | | | 839 |

| Activity | Driver | ID | Project Name | 2021/22 | 2022/23 | 2023/24 | 2024/25 | 2025/26 | 2026/27 | 2027/28 | 2028/29 | 2029/30 | 2030/31 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 65144 | SW Popes Drain Lining Renewal (Centaurus Road) | | 75 | 201 | 20 | | | | | | | 296 |
| | | 65145 | SW Jacksons Creek (Upper) Lining Renewals | | 250 | 500 | 1,500 | 50 | | | | | | 2,300 |
| | | 65146 | SW St Albans Creek (St Albans School) Lining Renewal | | 150 | 210 | 20 | | | | | | | 380 |
| | | 65147 | SW McSaveneys Road Drain Timber Lining Renewal | | 119 | 500 | 2,131 | 50 | | | | | | 2,800 |
| | | 65148 | SW Kā Pūtahi (Kaputone) Creek Bank Renewal (Englefield Reserve) | | 45 | 150 | 75 | | | | | | | 270 |
| | | 65149 | SW Waimairi Stream Bank Renewal (Fendalton Park) | | 45 | 135 | 40 | | | | | | | 220 |
| | | 65150 | SW Wairarapa Stream Bank Renewal (Wairarapa Terrace) | | 45 | 95 | 40 | | | | | | | 180 |
| | | 65151 | SW Cross Stream Bank Renewal (Elwood Park) | | 36 | 65 | 20 | | | | | | | 121 |
| | | 65152 | SW Feltham Basin Renewal (Akaroa) | | 50 | 125 | | | | | | | | 175 |
| | | 65153 | SW Charlesworth Pond Renewal (Ferrymead) | | 107 | 68 | | | | | | | | 175 |
| | | 65154 | SW Lighthouse Lane Sand Filter Conversion (Governers Bay) | | 150 | | | | | | | | | 150 |
| | **Growth** | | | | | | | | | | | | | |
| | | 329 | SW New Technical Equipment | 60 | 62 | 61 | 47 | 46 | 58 | 61 | 56 | 55 | 55 | 561 |
| | | 56115 | SW Sutherlands Road Waterway Enhancements Infrastructure Provision Agreement (IPA) | 230 | 10 | | | | | | | | | 240 |
| | | 56318 | SW Cashmere Stream Enhancement (Cashmere Road) | 445 | 755 | 350 | | | | | | | | 1,550 |
| | | 56343 | SW Quarry Road Drain Conveyance Improvements & Sutherlands Road Culverts | 1,088 | 1,298 | 233 | | | | | | | | 2,619 |
| | **Level of Service Improvement** | | | | | | | | | | | | | |
| | | 60458 | SW WE Brittans Drain Naturalisation | | | | | | | | 60 | 61 | 378 | 499 |
| | | 65807 | Ilam Stream Improvements | 150 | | | | | | | | | | 150 |
| | **Meeting Current Levels of Service** | | | | | | | | | | | | | |
| | | 26599 | SW Cashmere Worsleys Flood Storage (LDRP 500) | 2,549 | 1,362 | 1,015 | 537 | | | | | | | 5,463 |
| | | 26891 | SW Estuary Drain (LDRP 515) | 469 | | | | | | | | | | 469 |
| | | 28742 | SW Temporary Stop Bank Management (LDRP 507) | 190 | | | | | | | | | | 190 |
| | | 29076 | SW Charlesworth Drain (LDRP 531) | 188 | 728 | 1,379 | | | | | | | | 2,295 |
| | | 35900 | SW Pump Station Earthquake Repairs (LDRP 513) (PS205) | 1,875 | 1,623 | | | | | | | | | 3,498 |
| | | 44457 | Programme - SW Open Water Systems Utility Drain Improvements | | | | 561 | 1,437 | 1,474 | 1,260 | 2,146 | 2,208 | 2,268 | 11,354 |
| | | 50664 | Delivery Package - SW Natural Waterways | 447 | 418 | 407 | | | | | | | | 1,272 |
| | | 55592 | SW Halswell Modelling (LDRP 533) | 727 | 40 | | | | | | | | | 767 |
| | | 57329 | SW St Albans Creek (Slater to Hills) (LDRP 534) | 127 | 3 | | | | | | | | | 130 |
| | | 60183 | SW Hempleman Drive Asset Improvements (Akaroa) | | | 1,006 | 107 | | | | | | | 1,113 |

| Activity | Driver | ID | Project Name | 2021/22 | 2022/23 | 2023/24 | 2024/25 | 2025/26 | 2026/27 | 2027/28 | 2028/29 | 2029/30 | 2030/31 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 60209 | SW Stevensons Steep Network Renewals (Lyttelton ) | | | 726 | 744 | 55 | | | | | | 1,525 |
| | | 60356 | Programme - SW Port Hills and Lyttelton Harbour Erosion & Sediment | | 205 | 314 | 429 | 440 | 452 | 464 | 477 | 491 | 504 | 3,776 |
| | | 60378 | Programme - SW Stormwater Modelling (Quality & Treatment) | 107 | 75 | 99 | 101 | 104 | 106 | 109 | 112 | 116 | 119 | 1,048 |
| | | 60436 | Programme - SW Fish Passage Barrier Remediation | | 665 | 524 | 537 | 275 | 282 | 290 | 298 | 307 | 315 | 3,493 |
| | | 60455 | SW WE St Albans Creek Naturalisation | | | | 54 | 165 | 339 | 348 | 358 | 368 | 378 | 2,010 |
| | | 60456 | SW WE Upper Dudley Creek Naturalisation | | | | | 55 | 339 | 348 | 358 | 368 | 756 | 2,224 |
| | | 60457 | SW WE Jacksons Creek Naturalisation | | | | | | 56 | 58 | 358 | 368 | 378 | 1,218 |
| | | 60460 | SW WE Styx River Tributaries Naturalisation | | | | 54 | 132 | 339 | 348 | 358 | 368 | 378 | 1,977 |
| **Stormwater Drainage Total** | | | | **20,972** | **23,503** | **27,220** | **29,616** | **27,140** | **26,712** | **29,871** | **30,366** | **29,962** | **31,461** | **276,823** |

# 11. Does this activity have any significant negative effects on social, economic, environmental or cultural wellbeing, now or in the future?

| Negative Effect | Mitigation |
|---|---|
| Social<br>Social, cultural and environmental effects of construction works | Management of construction activities to minimise risk of non-compliance with relevant consent conditions. |
| Social, cultural and environmental effects of stormwater discharges into waterways | Ongoing education and works programme to reduce encroachment and degradation of waterways through development, flooding issues due to development within secondary flow paths and increasing contaminant loadings and quantities of run-off.<br>Develop and deliver stormwater management plans that consider all six values and set appropriate, measurable performance targets.<br>Monitor stormwater discharges and instigate appropriate remedial actions as may be necessary to address potential non-compliances. |
| Future risk to levels of service as climate change and sea level rise strain the effectiveness of stormwater system (projected increased stormwater volumes in more frequent, more extreme events and decreasing hydraulic gradient). | Investigations to better understand how climate change will affect demand and capacity in order to maximise effectiveness of future investment and adaptation. Engage community in cost vs level of service provision discussion. Work with town planners and those engaged in community consultation on dynamic adaptive planning to ensure a holistic approach is taken. |
| Social and economic effects of flooding caused by declining stormwater conveyance and flood storage capacity due to urban infill | Appropriate provisions in the District Plan and the Stormwater Bylaw and increased provision of Council resources for community education, monitoring and enforcement |
| Economic | |

| Negative Effect | Mitigation |
|---|---|
| Cost to Council / ratepayers of operating stormwater drainage network | Follow documented procedures and industry best practice for cost minimisation.<br>Follow technological developments and implement cost saving initiatives on a continuous improvement basis.<br>Focus process of defining key performance indicators on cost efficiency.<br>Ensure staff are kept updated with technological and operational best practice through attendance at conferences and participation in specialist industry working groups. |
| Cost to Council/ratepayers of future work needed to upgrade system in order to appropriately manage projected increased volumes of stormwater in more frequent, more extreme events and decreasing hydraulic gradient resulting from climate change and sea level rise. | Investigations to better understand how climate change will affect demand and capacity in order to maximise effectiveness of future investment and adaptation. Work with town planners and those engaged in community consultation on dynamic adaptive planning to ensure a holistic approach is taken. |
| Meeting increasing community and regulatory requirements for improved stormwater quality requires ongoing CAPEX and OPEX commitment by Council | Ongoing education and works programme to reduce creation of stormwater contamination at source and reduce contaminant load, necessary to reduce the reliance on infrastructure for contaminant removal through provision of stormwater treatment facilities and devices.<br>Provision of adequate CAPEX and OPEX to meet the regulatory requirements and community levels of service |
| Meeting community and regulatory requirements for management of stormwater quantity, including flooding and the effects on it from climate change, requires ongoing CAPEX and OPEX commitment by Council | Appropriate provisions in the District Plan and the Stormwater Bylaw and increased provision of Council resources for community education, monitoring and enforcement<br>Timely development and implementation of an effective Council Climate Change Adaptation Plan<br>Provision of adequate CAPEX and OPEX to meet the regulatory requirements and community levels of service |
| Environmental<br>Embedded carbon in capital works contribute to council & district greenhouse gas footprint. | Take a whole-of life approach to greenhouse gases. Seek guidance on carbon pricing in order to affordably minimise embedded carbon in capital works. Train staff as necessary. |
| Urban development increases the contaminant load in stormwater discharges | Retrofit treatment of existing urban areas |
| Cultural<br>Without suitable consideration for cultural values with how we renew, plan for, construct and operate our networks, Council will not meet central government legislation requirements. | By conserving and improving our landscapes and biodiversity which are taonga, mahinga kai will be enhanced through our activities. This can be achieved over time by ensuring that good stormwater management practice is carried out by Council in its planned works and maintenance activities, and by the community in general.<br><br>Also by protecting our heritage items such as the Lyttelton Brick Barrel piped network, we are preserving our heritage for future generations. |

# 12. What risks are identified and what controls and mitigations are planned?

Council's Risk Policy and assessment framework outlines its approach to managing risk. The framework provides a way to consistently identify, record and assess risks, and prioritise those that need to be mitigated.

Risk management is inherent in all of Council's Land Drainage activity processes. Significant risk management strategies for this activity include:

- **Management escalation and review:** The Land Drainage Operation and Maintenance team holds a weekly management meeting to review progress on operational activities.
- **Asset design:** For Council delivered projects, all elements are designed and delivered in accordance with Council's Infrastructure Design Standards and Construction Standard Specification. These two documents set in place the expectations of fit-for-purpose design and construction practises.
- **Delivery:** During construction, quality assurance processes are in place to confirm that the works are undertaken in accordance with expectations and guidelines.

A detailed overview of Council's approach to managing the Land Drainage risks is outlined in the Chapter 5 of the Land Drainage Asset Management Plan.

| Risk Title<br>There is a risk that/of: | Caused By: | Resulting In: | Controls and Mitigations |
|---|---|---|---|
| Potential non-compliance with the consent conditions of the Comprehensive Stormwater Network Discharge Consent, which Council has committed to delivering under its obligations as a territorial authority. | • The current funding level is constrained, with very limited flexibility for dealing with any changes to the consent listed 10 year projects<br>• Cost over-runs or unknown site conditions may lead to non-conformance<br>• Lack of technical resource time and personnel required to deliver timescales and documented evidence requirements | • Unable to deliver on water quality and quantity outcomes<br>• Breach of consent conditions with ECAN leading to enforcement and prosecution of Council<br>• Major reputational damage with ECan, Ngai Tahu/Iwi and the public. | • Provision of escalation structures in the event of any issues which may lead to non-compliance dealt with in accordance with the "Joint Christchurch City Council & Canterbury Regional Council Stormwater Management Protocol, Report U10/12 (the Protocol)" document.<br>• Prioritise funding to meet consent obligations<br>• Ongoing engagement with the Regulator (ECan) and stakeholder groups concerning compliance issues<br>Obtain appropriate expert advice (including legal regarding RMA) |
| Slow progress and development of a 21st century garden city, failure to make coordinated progress of Otakaro Avon River Corridor (OARC), which is part of the city's regeneration plan and commitment to the community. | • The majority of the funding for the Otakaro Avon River Corridor work development has been deferred by 10 or more years to meet the funding envelope. Only funding for 2 projects and concept design work has been provided<br>• Only works that are required to meet statutory obligations and a limited level of network renewals remain in the initial 10 year financial envelope of the LTP, | • This may lead to out of sequence works between various council activities (i.e. Parks and Transport) and reputational issues with council not delivering these works and undermining the garden city image<br>• Compromised development of a 21st century garden city<br>• Reduced expenditure will see contractors/consultants downscale or move to other cities/towns for work. This may lead to increasing unit | • Implementation of the Councils Climate Change Strategy and the integration with the required works within the Avon river corridor<br>• Review funding for OARC projects and concept design work, to assess future funding/resource requirement<br>• Defined OARC end-date and related timeline, and project schedules to be development |

| Risk Title<br>There is a risk that/of: | Caused By: | Resulting In: | Controls and Mitigations |
|---|---|---|---|
| | only the initial stages of the OARC are included in this<br>• There is no ability for securing works to provide any infrastructure enhancements or surety around infrastructure being in place to support stormwater projects that address flood mitigation, water quality treatment, residential and commercial development<br>• There is no clear end-date or timeline in place for development of the OARC | rates for infrastructure works and decreased external development in Christchurch<br>• Creating intergenerational debt through insufficient investment to resolve the current backlog of renewals or meeting current renewal rates which will merge into a predicted larger bow-wave of renewals in FY's 36-41<br>• Reduced support for new residential and commercial development as a result of capacity constraints<br>• Reputational damage if Christchurch is perceived to be behind the times with investment in delivering green infrastructure. | |
| Loss of unique landscapes and indigenous biodiversity, and deterioration of water body health, through Council failing to deliver:<br>1) waterway enhancements<br>2) treatment of water from:<br>• brownfield/existing development – both commercial and council-owned<br>• roading and transport projects | • The existing work programme for Waterway Ecology and Water Quality Improvement has had all funding deferred for 10 years<br>• Specific (small) projects created for dealing with some known areas requiring improvement have been deferred for 3 years<br>• Lack of financial provision for purchase of lands for long term ecological/environmental improvements by Council | • Inability to improve waterway health through investment in enhancement and biodiversity<br>• Continued trends of loss of habitat in the city's waterways impacting indigenous invertebrates, aquatic and avian species<br>• Failure in meeting obligations for protecting Maori values for freshwater including mahinga kai<br>• Failure to meet council set community outcomes for Healthy Waterbodies | • Review waterway setback requirements in the District Plan to prevent encroachment and provide more space for enhancement.<br>• Legislate changes to council requirements to require source control on industrial, commercial and residential properties<br>• Creation of a planning document outlining a prioritisation of the waterways to focus on and the funding envelope which may be required for e.g. land purchase etc. |

As discussed above, there are a number of activity specific risks that were identified as part a robust risk identification process during the AMP writing process, initially to identify the activity specific related from the ProMapp risk register, and then expand on this with the risks and challenges that face the business. All of these risks are contained in Section 5.3.2 - Activity Specific Risks and relate to risks such as:

- major infrastructure failure;
- outdated or inadequate flood models;
- failures of stormwater facilities due to criticality, performance and underfunding;
- climate change effects on infrastructure;
- residential development and encroachment;
- insufficient investment of CAPEX and OPEX; and
- inability to meet Councils Carbon Neutrality goals.

It is recommended that the risk tables in Section 5 of the AMP are viewed in conjunction with this Activity Management Plan to understand the challenges that face the activity, the mitigation measures, and the residual risk levels.