



Timaru District Stormwater Strategy 2018-2048

An Integrated Approach to Urban Stormwater Management



Table of Contents

1. BACKGROUND AND CONTEXT	1
1.1. Purpose of the Strategy	1
1.2. Levels of Service	1
1.3. Land Use and Development.....	2
1.4. Takata Whenua.....	3
1.5. Stormwater Issues in the Timaru District.....	3
1.6. The Challenges – what can TDC do?	4
1.7. Scope of the Strategy.....	6
1.8. The Policy and Planning Framework.....	7
2. STORMWATER SERVICE AREAS	9
3. STORMWATER MANAGEMENT VISION AND GOALS	10
3.1. Vision	10
3.2. Goals.....	10
4. OBJECTIVES, DIRECTIVES AND METHODS.....	11
4.1. Planning and Regulation	11
4.2. Asset Management	12
4.3. Receiving Environment	13
4.4. Stakeholder Engagement and Education.....	14
5. MONITORING AND REVIEW.....	18
5.1. Monitoring	18
5.2. Review	18
APPENDIX 1: GLOSSARY	19
APPENDIX 2: STATUTORY UNDERPINNINGS OF THE STORMWATER STRATEGY.....	21

1. BACKGROUND AND CONTEXT

The management of stormwater is critical in the urban environment for the safety of the community and the protection of public and private property. If not effectively collected and drained, stormwater can become a significant hazard and can cause damage to structures and properties. However, the discharge of stormwater also has the potential to cause adverse effects on the environment and subsequently the well-being of communities. The natural attributes of rivers, lakes and other freshwater bodies can be degraded by excessive sediment and contaminant inputs or by the flow rates and volumes of stormwater discharges. Timaru District Council (TDC) has a responsibility to ensure that urban stormwater is managed in a manner that sustainably supports the environmental, social, cultural and economic well-being of the communities it serves.

Flooding, defined as a natural process which occurs when river or lake levels rise above the surrounding land, is considered a natural hazard and is not part of the issues addressed by TDC's stormwater management activity and this Strategy. In the Timaru District, the Regional Council is the primary agency responsible for flood protection and control.

1.1 Purpose of the Strategy

Stormwater management is a complex activity that involves the participation of a wide range of stakeholders including national and local government, private business sector, property owners and Takata Whenua.

In the Timaru District, TDC has the lead role in providing and managing urban stormwater services. The development of this stormwater strategy (the 'Strategy') aims to provide direction to TDC's decision-making on stormwater using an integrated management approach. The Strategy will establish:

- 1) TDC's stormwater management goals for the next 30 years and beyond;
and
- 2) What TDC will do to achieve those goals

1.2 Level of Service

At present, TDC provides stormwater services in the urban townships of Timaru, Temuka, Geraldine and Pleasant Point. The schemes range from piped to open channel systems and comprise TDC's primary stormwater networks. Stormwater is disposed to soakpits, surface water bodies (e.g. drains, rivers) or the ocean, depending on the scheme.

Rural stormwater is managed mainly through land drainage with minimal conveyances provided in Winchester, Cave and Pareora. Rural stormwater is not currently covered in this Strategy.

The current level of service that TDC has adopted is to provide a primary stormwater network to accommodate rain events up to a 1 in 5 year return period for urban residential areas, and a 1 in 10 year return period for industrial and commercial areas, without the inundation of habitable floor spaces. This level of service will result in stormwater ponding in

roads, parks and private properties for these rain events. The site specific rainfall investigations¹ have considered the increasing intensity of rain events in the District as predicted by climate change studies.

The design of upgrades and renewals of the primary stormwater network endeavors to provide a network with sufficient capacity to contain the stormwater up to the design rain events without overflows. However, the existing stormwater infrastructure is generally aged and the capacity of some parts of the network may not meet that design standard. TDC's approach is to upgrade pipe capacity at the time of renewal.

Secondary stormwater flow paths (or overland flow paths) provide escape routes for rainfall in excess of the capacity of the primary stormwater network.

1.3 Land Use and Development

Stormwater management is greatly influenced by land use and development.

Growth and land use changes result in an increase of stormwater flow rates and volumes through the creation of impervious areas (i.e. concrete and paved surfaces), an increase of the accumulation of contaminants and the degradation of secondary flow paths. During the 1970s and 80s, most open stormwater channels in the bottom of the stormwater catchment gullies were piped. This has meant land use in these areas has changed. Lifestyle shifts over time have also increased impervious areas significantly from when the pipes for the main stormwater drains were originally designed. Historically, stormwater networks were designed to collect stormwater and transport it as quickly as possible to discharge largely untreated to the receiving environment. This has resulted in legacy issues that now must be addressed. Also, building and fencing have contributed to impeding secondary stormwater flow paths which may result in localised flooding.

Although growth within the district is not projected to be at a high level, population and household number changes will still impact on stormwater services in the next 30 years. As more areas are built-up, or with increasing infill development, more impervious areas are created with increased levels of contaminants and there is further potential for the natural paths for stormwater flows and soakage to be occupied. This puts greater pressure on the existing capacity of stormwater networks which increases the infrastructure requirement to manage stormwater flows.

To address these issues, it is necessary to provide treatment for the removal of contaminants and the attenuation of stormwater flows to better match the natural pre-development flows. The use of low impact options, such as first flush retention dams, swales and rain gardens provide appropriate solutions, and these are being built into new residential zones.

The District Plan Review presents an opportunity for the community and stakeholders to influence policy and rules on how stormwater associated with land use and development is managed. Secondary flow paths are currently not clearly identified and protected.

¹ Timaru, Temuka and Geraldine Design Rainfalls (2015)

1.4 Takata Whenua

Ngāi Tahu places high value on local water resources, regarded as the source of all life and essential to the welfare of the people. The Timaru District is a significant area for the Takata Whenua. There are a number of prominent waterways that run through the District, including the Rangitata River and its tributaries to the north, and the Orari, Temuka, Opihi and Pareora Rivers to the south.

Development leads to the degradation of waterways and their inherent mauri. Te Rūnanga o Arowhenua have also raised specific concerns relating to water quality at Waitarakao (Washdyke) lagoon. Strengthening the relationships between Te Rūnanga o Arowhenua, the Timaru District Council and developers is fundamental to recognising and protecting iwi cultural values as the Strategy is implemented.

1.5 Stormwater Issues in the Timaru District

The broad issues below identify the overarching challenges TDC faces in terms of an integrated stormwater management in the District:

1.5.1 Planning and Regulation

- 1) National and regional standards are changing and need to be reflected in TDC's activity management practices.
- 2) The current regulatory framework does not provide sufficient mechanisms to address stormwater issues related to land use and development.
- 3) Land development and intensification have a significant impact on stormwater management.
- 4) Secondary flow paths are currently not identified, protected, or maintained.

1.5.2 Asset Management

- 1) Impact of climate change.
- 2) The capacity of the existing network may not meet the current (and future) level of service for providing protection to property
- 3) Renewal of aged assets is necessary
- 4) Many existing stormwater systems do not meet current treatment and attenuation standards.
- 5) Need to improve management of contamination of stormwater to minimise associated effects on receiving environments.
- 6) There is lack of specific information on stormwater characteristics (quantity and quality)
- 7) The affordability of improvements and the high cost of compliance.

1.5.3 Receiving Environment

- 1) Loss of aquatic habitat, pressure on invertebrate, fish and bird biodiversity from pollution, changing stormwater runoff patterns and excessive sediment inputs.
- 2) Degradation of cultural health of rivers and estuaries and their value for mahinga kai.

- 3) There is lack of specific information on the actual current receiving environment conditions.

1.5.4 Stakeholder Engagement and Education

- 1) There is limited community and stakeholder involvement.
- 2) Community and stakeholders lack understanding of the implications of stormwater discharges on the health of aquatic systems.

1.6 The Challenges – what can TDC do?

To address the issues, the following are the strategic considerations:

1.6.1 Improve stormwater quality

Poor stormwater quality affects the health of waterways, reduces their intrinsic value and limits the use of the resource. TDC must increase efforts to reduce the level of contamination in discharges of stormwater.

1.6.2 Plan for urban growth and intensification

With the population in the District expected to increase,² this growth will be accommodated by greenfield development and by urban intensification and renewal.

Intensification of existing urban areas through infill development must consider the impacts on stormwater and incorporate appropriate mitigation measures. The capacity of existing stormwater infrastructure may need to be upgraded depending on how areas are developed.

Housing density in greenfield developments will also increase impervious areas. Water Sensitive Urban Design or multi-value stormwater management (such as constructed wetlands which provide stormwater treatment, biodiversity and landscape values) can provide appropriate options, however these often require the use of land that might otherwise be used for other purposes. This can result in a perceived conflict between increasing housing density and use of stormwater management mechanisms that support a range of values.

Ongoing property renovation – such as additions and alterations, patios and paving, new driveway, etc. could also create demand for additional stormwater infrastructure capacity.

Secondary flow paths can be identified and protected by regulatory mechanisms.

² The District's population is projected to increase to 48,853 (+7.6%) by 2033, peaking in 2038 at 49,091, and declining slightly over the remaining period to 48,660 in 2063. This represents the medium growth scenario. The population is expected to increase to 48,293 (+6.4%) by 2028. (Source: TDC Long Term Plan 2015-2025). Timaru District population is 46,700 in 2016, based on Statistics NZ subnational population estimates.

The District's households are projected to grow to 21,105 in 2033 (+31.1%), peaking in 2043 at 21,451 households, and declining slightly to 21,355 by 2063. This represents the medium growth scenario. Households are expected to increase to 20,680 (+10.8%) by 2028. (Source: TDC Long Term Plan 2015-2025). Total residential properties in Timaru District are 20,738 as at October 2016, based on TDC rate database assessment count.

1.6.3 Upgrade and renew stormwater network infrastructure

Stormwater network renewals need to be designed to meet the required levels of service.

TDC's standards and practices must include for retrofitting stormwater management to meet treatment and attenuation requirements.

Stormwater run-off from roads is a major contributor to stormwater contamination. Street and road upgrades need to be planned and coordinated with the integration of stormwater treatment techniques to achieve effective and efficient outcomes.

1.6.4 Monitor stormwater and the receiving environments

Investigations are necessary to determine the actual levels of contaminants in the district's stormwater and the level of degradation of the receiving environments that are attributable to stormwater discharges.

1.6.5 Manage the impacts of climate change

It is likely more intense rain events will occur more frequently.

Particular attention must be paid to areas prone to flooding or nuisance ponding where existing infrastructure has insufficient capacity.

Stormwater management systems need to be resilient and adaptable to enable them to cope with this dynamic environment.

Stormwater overflows may have a consequential impact of increasing the risk of wastewater overflows, and inflow and infiltration into the sewer system must be managed.

1.6.6 Ensure economic sustainability

An increasing community expectation is for an improved service. However, TDC must balance these expectations with the ability of the community to pay and the need to plan effectively for the District's future needs.

1.6.7 Increase stakeholder understanding of and engagement in stormwater

A program of education for the public on stormwater responsibility is needed.

A strong relationship between all stakeholders is needed.

1.7 Scope of the Strategy

The Strategy provides the overarching framework for stormwater management in the District. In particular the Strategy will focus on **urban stormwater**, where the risks of adverse environmental impacts from stormwater discharges are likely to be the most critical. This is also consistent with the Canterbury Land and Water Regional Plan's emphasis on mitigating urban stormwater contamination of receiving environments.

The Strategy will address four key areas aligned with the issues identified, namely:

1.7.1 Planning and Regulation

The Strategy will specifically address the need to provide, strengthen or update stormwater policies, rules and standards in the District Plan, standard specifications, code of practice for land development, and the stormwater bylaws.

1.7.2 Asset Management

The Strategy will focus on improvements in asset planning, development and maintenance to meet the requirements for attenuation and treatment, for the existing stormwater network to deliver the required level of service, and to increase existing stormwater network resilience.

1.7.3 Receiving Environment

The Strategy will enable a holistic approach to be developed in dealing with stormwater contamination and pollution and the control mechanisms so that discharge quantities and qualities are appropriate.

1.7.4 Stakeholder Engagement and Education

The Strategy will focus on increasing understanding and education of the community and stakeholders, along with enabling a broad participation in stormwater management.

1.8 The Policy and Planning Framework

TDC's planning and management of stormwater sits within a complex national and regional policy framework, set out in both statutory and non-statutory documents. TDC's responsibilities with regard to stormwater management are primarily described in the Local Government Act (LGA 2002) and the Resource Management Act (RMA 1991). Figure 1 shows the LGA and the RMA as the two central pieces of legislation governing stormwater management. Radiated from the central points are specific plans and policies that give effect to the legislation at the regional/local level.

The LGA mandates TDC to meet the current and future needs of communities for good-quality local infrastructure, including stormwater network services. It requires TDC to prepare a Long Term Plan (LTP) and an Infrastructure Strategy (IS) that embody what stormwater services will be provided and how stormwater assets will be managed. A Stormwater Activity Management Plan (AMP) provides among other details, specific operational information on levels of service, capital works, operating and maintenance costs. The IS and AMP are developed as part of the LTP process. The LGA also empowers TDC to make and enforce stormwater bylaws for the purpose of managing land drainage.

The RMA promotes the sustainable management of natural and physical resources. Sections 30 and 31 of the RMA establish the resource management functions of local authorities. To give effect to the RMA, various National Policy Statements (NPS) and National Environmental Standards (NES) have been issued. The NPS on Freshwater Management and the NES for Sources of Drinking Water are relevant to stormwater management. The control of water quality and quantity is largely a regional council (Environment Canterbury) function implemented through relevant stormwater provisions in the regional policy statements, and the objectives, policies and rules in various regional plans such as the Canterbury Land and Water Regional Plan, the Opihi River Regional Plan, and the Regional Coastal Environment Plan.

The RMA's provisions on control of the effects of land use activities, including stormwater management, is mainly a territorial authority function carried out through the District Plan (DP).

Within the context of this planning and policy structure, TDC's Stormwater Strategy shall be the overarching framework for stormwater management in the District that will inform the LTP and DP processes on major issues, provide direction for priority actions, and ensure compliance with the LGA and RMA. The feedback information flows between the Stormwater Strategy, the LTP and the DP shall ensure that the direction, provisions and implementation of these plans are mutually inclusive and consistent.

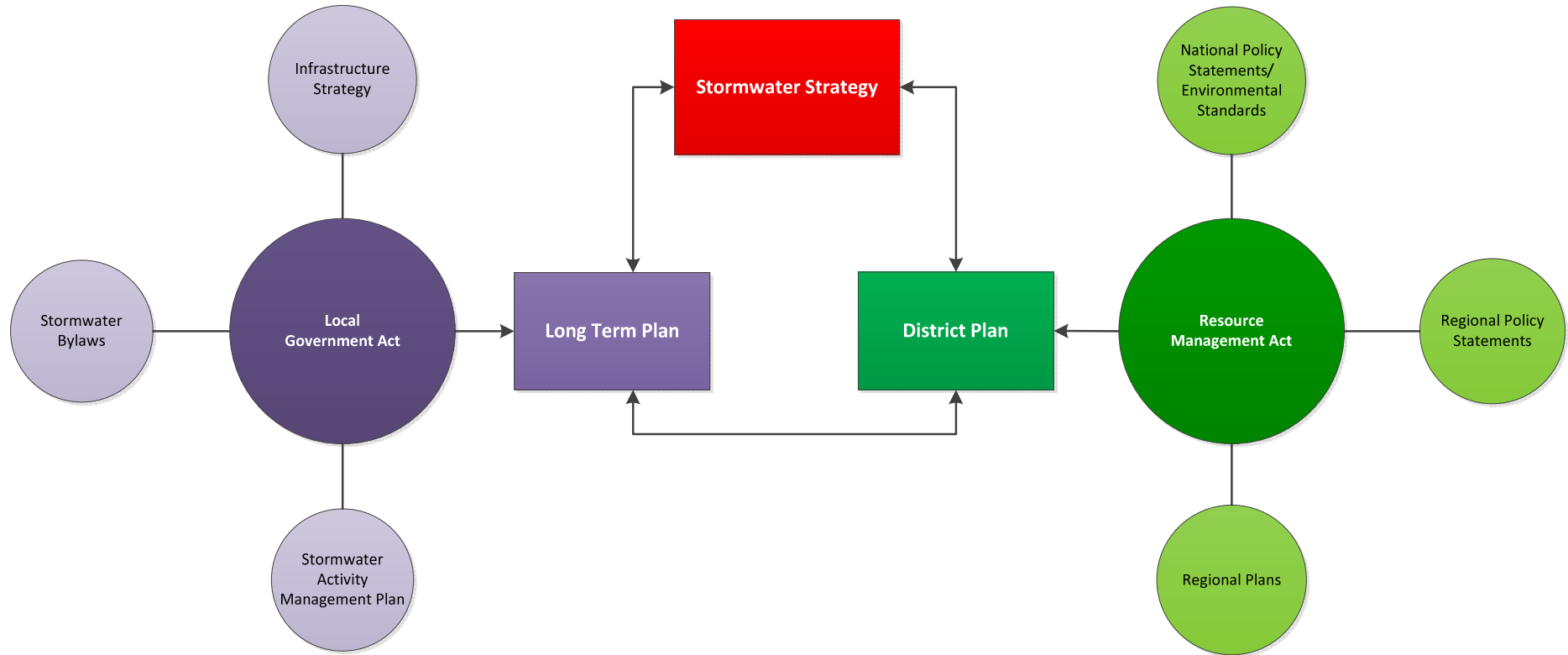


Figure 1. The Policy and Planning Framework

2. STORMWATER SERVICE AREAS

The Figure below shows the coverage of this Strategy. These are TDC's urban stormwater schemes servicing the townships of Timaru, Temuka, Geraldine and Pleasant Point.



Figure 2. Timaru District Urban Stormwater Schemes

3. STORMWATER MANAGEMENT VISION AND GOALS

3.1 Vision

The Stormwater Strategy is anchored on the vision for the district set out in the Timaru Long Term Plan. It envisions a community characterised by:

- ***Fantastic sustainable lifestyle***
- ***Thriving and innovative economy***
- ***Strong and enviable reputation and identity***
- ***Inspiring, people focused leadership***

Stormwater management will contribute to this vision through an integrated management of effective and efficient stormwater activities for economic vitality, desirable lifestyle, and ecological health.

3.2 Goals

The following goals of the Stormwater Strategy support the District's Vision and address the issues identified in Section 1.5.

3.2.1 Goal 1 - Planning and Regulation

Planning and regulatory framework supports and facilitates integrated stormwater management.

3.2.2 Goal 2 - Asset Management

Stormwater assets are managed effectively and efficiently using industry best practicable options to meet the adopted level of service of the primary network able to accommodate a 1 in 5 year rain event for residential areas and a 1 in 10 year rain event for commercial/industrial areas without inundation of habitable floor areas.

3.2.3 Goal 3 - Receiving Environment

The impact of the stormwater systems results in the quality and flow regime of receiving environments being maintained or enhanced.

3.2.4 Goal 4 - Stakeholder Engagement and Education

Broader community and stakeholder participation and understanding are established, and strong coordination and capability developed.

4. OBJECTIVES, DIRECTIVES AND METHODS

The *Objectives* are the detailed, measurable statement of the goals. *Directives* pertain to the required courses of action to achieve the objectives. *Methods* are the approaches to carry out this Strategy. A summary of these details is provided in Table 1 at the end of this section.

An Implementation Plan detailing projects and activities will be prepared as a companion document in accordance with this Strategy and regularly reviewed.

4.1 Planning and Regulation

4.1.1 Objectives

- 1) Enable the stormwater strategy through provision of appropriate policies and rules in the District Plan, Engineering Standards and Code of Practice, and Bylaws.
- 2) Minimise the adverse effects of stormwater on communities and freshwater systems
- 3) Provide the conceptual framework of stormwater infrastructure ahead of development

4.1.2 Directives

- 1) Implement the Stormwater Strategy through a comprehensive suite of statutory methods from the RMA and the LGA, and non-statutory methods.
- 2) Adopt sustainable stormwater management approaches³.
- 3) Ensure land development minimises the impact of stormwater.

4.1.3 Methods

- 1) Land use planning – this includes District Plan policies, objectives, methods and rules, zoning strategies, structure planning, subdivision controls, hazard (flood) avoidance, and specific development performance rules. Stormwater is a major factor that must be considered with urban growth decisions. The development of larger greenfield areas must undergo structure planning. Zoning provisions and subdivision controls must be reviewed. Pervious surfaces in developments and public spaces should be maximized. And, secondary flow paths should be identified and mapped, and provision made for their protection and maintenance.
- 2) Discharge controls – includes stormwater discharge approvals and consents, industrial stormwater pollution prevention measures, and pollution abatement and enforcement. Discharge rules set out clear expectations in terms of discharge qualities. An improved programme of pollution control, inspections and enforcement in relation to industrial sites is required. Regulatory changes to enable enforcement provisions, either through by-laws or resource consent requirements are likely.

³ Sustainable stormwater management approaches include Water Sensitive Urban Design (WSUD), Low Impact Urban Design and Development (LIUDD), multi-value stormwater management, etc.

- 3) Design controls – includes design guidelines, code of practice and standards for redevelopment and new developments, riparian protection/enhancement, and specific stormwater management techniques. These controls need to be adopted by TDC.
- 4) Enforcement – a robust administration and enforcement program with appropriate resourcing is required to mitigate the risk of breaches of stormwater rules and resource consents. The stormwater bylaws and resource consent conditions provide the framework for enforcement.

4.2 Asset Management

4.2.1 Objectives

- 1) Mitigate or eliminate the risk of inundation on public and private land through efficient and effective stormwater infrastructure services.
- 2) Progressively reduce existing adverse effects of stormwater discharges.
- 3) Ensure the long term sustainability of the infrastructure.
- 4) Increase resilience and maintain affordability of stormwater services.
- 5) Strengthen TDC's institutional capability in stormwater management.

4.2.2 Directives

- 1) Maintain the existing stormwater infrastructure
- 2) Make improvements to the stormwater infrastructure
- 3) Renew and replace existing stormwater assets to incorporate improvements and to progressively meet current standards.
- 4) Co-ordinate the provision and maintenance of stormwater infrastructure with other TDC infrastructure (e.g., roads).
- 5) Require appropriate management of private stormwater devices.
- 6) Support continuing professional development of staff in relation to advances in industry practice.

4.2.3 Methods

- 1) Asset Maintenance - network capacity can be reduced through a lack of maintenance or deferred replacement. Preventive rather than reactive maintenance must be a priority so that levels of service are not compromised.
- 2) Manage capacity of the stormwater network – ensuring that the stormwater system has sufficient capacity for the primary network to accommodate a 1 in 5 year rain event for residential areas and a 1 in 10 year rain event for commercial/industrial areas without inundation of habitable floor areas. A comprehensive understanding of the District's stormwater network and capacity is required. Improvements could include pipe and drain upgrades, diversion of some catchments and utilization of retention areas, as confirmed through investigation and engineering modelling.

- 3) Treatment improvements - identify potential treatment improvements that are effective and efficient. This could include installation of proprietary treatment and low impact urban design devices. Retrofitting improvements to road drainage where there is demonstrable network benefit must be considered at the time of road renewal.
- 4) Provide stormwater network services as required in redevelopments and new developments – includes provision of stormwater services to appropriate standards for greenfield and brownfield development, including infill.
- 5) Ensure ongoing appropriate management of private stormwater devices - the owners of private stormwater devices that discharge to the public network need to demonstrate that the device is appropriately operated and maintained. Monitoring and enforcement needs to be strengthened.
- 6) Internal advocacy – implementation of the Strategy will require integrated decision making within TDC in relation to the processing of a range of land use, subdivision, building, services and other types of consents and approvals. These processes should be strengthened through closer coordination and liaison between officers and technical specialists.
- 7) Continuing professional development – participation in training courses, workshops and conferences keep staff up-to-date with the latest stormwater technology, different approaches to the management of discharges and monitoring methods. An educational resource needs to be made available.

4.3 Receiving Environment

4.3.1 Objectives

- 1) Stormwater discharges are not significantly detrimental and where possible complimentary to biodiversity and other instream values.
- 2) Meet appropriate standards for water quality, flow rate and volume.

4.3.2 Directives

- 1) Develop Stormwater Management Plans.
- 2) Obtain and comply with comprehensive stormwater discharge consents.
- 3) Reduce the amount of contaminants discharging to the receiving environment.
- 4) Promote removal of contaminants at source.
- 5) Require on-site management of stormwater where practicable.

4.3.3 Methods

- 1) Stormwater Management Plans – these are fundamental to the integrated management of stormwater, providing the necessary planning and

management mechanisms. SMP's also form the basis for the comprehensive stormwater discharge consents.

- 2) Source controls – this relates to control of stormwater contaminants at their origin. This could include the reduction in the production of contaminants through restrictions on building materials, such as uncoated zinc roofing, or measures to reduce runoff at source, and the contact between runoff and contaminants, reducing stormwater peak discharges, and, reducing inundation issues.
- 3) Treatment - stormwater treatment and control methods, or “structural methods” are the devices most commonly used for treatment of stormwater. The use of treatment methods may be targeted to specific problem sites. Planting of riparian margins is an example of treatment by filtration. Controlling flows from a detention system can reduce the magnitude and frequency of peak flows.
- 4) Monitoring – includes sampling and testing of stormwater flows and qualities to determine the actual levels of contaminants, and monitoring of the receiving environments in order to measure and assess the impacts of the stormwater discharges.

4.4 Stakeholder Engagement and Education

4.4.1 Objectives

- 1) The community are engaged when planning and designing stormwater management.
- 2) Te Runanga o Arowhenua are involved in stormwater management.
- 3) Increase awareness and understanding of stormwater management.

4.4.2 Directives

- 1) Undertake activities to raise public, industry and other stakeholder awareness and understanding of stormwater management issues.
- 2) Promote greater stakeholder participation in stormwater management.

4.4.3 Methods

- 1) Community education – education is a fundamental component of any strategy that aims to change people's behavior. Education is important for the public to understand their role and responsibility in managing stormwater systems. Education also develops resilience in the community to deal with storm events. An education programme needs to be developed and implemented, that is a complementary process incorporated with other stormwater management methods such as regulation and enforcement.
- 2) Takata Whenua – Consultation with local iwi is essential and seeks the sharing of information on takata whenua values and views to allow informed decision-making in respect to the management of stormwater. A

strong relationship with Te Runanga o Arowhenua which provides an increased capability between all parties is needed.

- 3) Stakeholder engagement – engaging with stakeholders across the District is required, especially industrial and commercial site owners who are identified as a higher risk group. This engagement must occur at a number of levels.

Table 1. Summary of Section 4

STRATEGY AREAS/GOALS (The Outcomes)	OBJECTIVES (What we aim for)	DIRECTIVES (What we need to do)	METHODS OF IMPLEMENTATION (How we will do it)
<p>Planning and Regulation</p> <p>Goal: Planning and regulatory framework supports and facilitates integrated stormwater management.</p>	<ol style="list-style-type: none"> 1) Enable the stormwater strategy through provision of appropriate policies and rules in the District Plan, Engineering Standards and Code of Practice, and Bylaws. 2) Minimise the adverse effects of stormwater on communities and freshwater systems 3) Provide the conceptual framework of stormwater infrastructure ahead of development 	<ol style="list-style-type: none"> 1) Implement the Stormwater Strategy through a comprehensive suite of statutory methods from the RMA and the LGA, and non-statutory methods. 2) Adopt sustainable stormwater management approaches. 3) Ensure land development minimises the impact of stormwater. 	<ol style="list-style-type: none"> 1) Land use planning 2) Discharge controls 3) Design controls 4) Enforcement
<p>Asset Management</p> <p>Goal: Stormwater assets are managed effectively and efficiently using industry best practicable options to meet the adopted level of service of the primary network able to accommodate a 1 in 5 year rain event for residential areas and a 1 in 10 year rain event for commercial/industrial areas without inundation of habitable floor areas.</p>	<ol style="list-style-type: none"> 1) Mitigate or eliminate the risk of inundation on public and private land through efficient and effective stormwater infrastructure services. 2) Progressively reduce existing adverse effects of stormwater discharges. 3) Ensure the long term sustainability of the infrastructure. 4) Increase resilience and maintain affordability of stormwater services. 5) Strengthen TDC's institutional capability in stormwater management. 	<ol style="list-style-type: none"> 1) Maintain the existing stormwater infrastructure 2) Make improvements to the stormwater infrastructure 3) Renew and replace existing stormwater assets to incorporate improvements and to progressively meet current standards. 4) Co-ordinate the provision and maintenance of stormwater infrastructure with other TDC infrastructure (e.g., roads). 5) Require appropriate management of private stormwater devices. 6) Support continuing professional development of staff in relation to advances in industry practice. 	<ol style="list-style-type: none"> 1) Asset maintenance 2) Manage capacity of stormwater network 3) Treatment improvements 4) Provide stormwater network services as required in redevelopments and new developments 5) Ensure ongoing appropriate management of private stormwater devices 6) Internal advocacy 7) Continuing professional development

Timaru District Stormwater Strategy 2018-2048

<p>Receiving Environment</p> <p>Goal: The impact of the stormwater systems results in the quality and flow regime of receiving environments being maintained or enhanced.</p>	<ol style="list-style-type: none"> 1) Stormwater discharges are not significantly detrimental and where possible complimentary to biodiversity and other instream values. 2) Meet appropriate standards for water quality, flow rate and volume. 	<ol style="list-style-type: none"> 1) Develop Stormwater Management Plans. 2) Obtain and comply with comprehensive stormwater discharge consents. 3) Reduce the amount of contaminants discharging to the receiving environment. 4) Promote removal of contaminants at source. 5) Require on-site management of stormwater where practicable. 	<ol style="list-style-type: none"> 1) Stormwater Management Plans 2) Source controls 3) Treatment 4) Monitoring
<p>Stakeholder Engagement and Education</p> <p>Goal: Broader community and stakeholder participation and understanding are established, and strong coordination and capability developed.</p>	<ol style="list-style-type: none"> 1) The community are engaged when planning and designing stormwater management. 2) Te Runanga o Arowhenua, are involved in stormwater management. 3) Increase awareness and understanding of stormwater management 	<ol style="list-style-type: none"> 1) Undertake activities to raise public, industry and other stakeholder awareness and understanding of stormwater management issues. 2) Promote greater stakeholder participation in stormwater management. 	<ol style="list-style-type: none"> 1) Community education 2) Takata Whenua 3) Stakeholder engagement

5. MONITORING AND REVIEW

5.1 Monitoring

The effectiveness of the Stormwater Strategy will be monitored at the following levels:

- 1) Monitoring of discharge performance against standards in the comprehensive stormwater discharge resource consents
- 2) Site specific monitoring at identified high risk sites
- 3) Investigative monitoring to identify sources of contaminants or effectiveness of management measures. This will be done through specific studies.
- 4) Reporting on the status of projects and activities in the Strategy's Implementation Plan
- 5) Reporting on key performance indicators on stormwater services in TDC's Annual Report
- 6) Results of the two-yearly Community Survey which assesses various aspects of community engagement and satisfaction with TDC services including stormwater

5.2 Review

The Strategy is intended to be a living document that can be adjusted with new information. The Implementation Plan shall be reviewed annually, including a summary of what has been progressed the previous year, and an assessment of whether changes to current methods are needed.

The whole Strategy should be reviewed on a six-yearly basis prior to the updating of the Long Term Plan. The full review will include analysis of monitoring trends and discussion of what has been achieved.

APPENDIX 1: GLOSSARY

Integrated Management Approach - is directing the individual components of stormwater management and stakeholder group actions into a cohesive whole so that goals are effectively met with the best use of resources.

Level of Service - the current level of service is the provision of a primary stormwater network to accommodate rain events up to a 1 in 5 year return period for urban residential areas, and a 1 in 10 year return period for industrial and commercial areas, without the inundation of habitable floor spaces.

Point Source - means any single identifiable point of discharge which may contain contaminants, such as a pipe or outfall.

Primary Stormwater Network - refers to TDC's piped and channeled stormwater reticulation network designed for a 1 in 5 year return rainfall event in residential zones, and a 1 in 10 year return rainfall event in commercial and industrial zones.

Secondary Stormwater Flow Paths - refers to the overland flow paths for stormwater flows in excess of the capacity of the primary stormwater network, generally designed for a 1 in 50 year return rainfall event.

Stormwater - means runoff that has been channeled, diverted, intensified or accelerated by human modification of the land surface or runoff from the external surface of any structure as a result of precipitation and includes entrained contaminants and sediment including that generated during construction or earthworks. (*Source: Canterbury Land and Water Regional Plan*)

Stormwater Management - refers to managing the quantity and quality of stormwater. Stormwater management covers both technical and institutional aspects of the stormwater activity, including:

- control of surface inundation within defined levels of service
- planning and construction of stormwater systems to minimise the adverse effects of stormwater on the receiving environment;
- control of hazardous materials to prevent release of pollutants into the environment;
- protection or rehabilitation of natural waterways;
- building "soft" structures such as ponds, swales, wetlands or green infrastructure solutions to work with existing or "hard" drainage structures, such as pipes and concrete channels;
- long-term asset management programs to repair and replace aging infrastructure;

Timaru District Stormwater Strategy 2018-2048

- stormwater plans, policies, strategies and standards to address comprehensive stormwater needs;
- consideration of the effects of stormwater associated with the development of land;
- development of funding approaches for stormwater programs; and
- education of the community on the implications and responsibilities of stormwater discharges and what improvements can be made.

Urban Stormwater - in the context of this strategy refers to stormwater discharged from urban areas of the Timaru District serviced by a primary stormwater network.

Water Sensitive Urban Design (WSUD) - is a land use planning and engineering design approach to urban development which integrates the water cycle into urban design, using design features such as raingardens, swales and wetlands to minimise environmental degradation and improve aesthetic and recreational appeal.

APPENDIX 2: STATUTORY UNDERPINNINGS OF THE STORMWATER STRATEGY

(A) Local Government Act 2002

Section 10 Purpose of local government

- (1) The purpose of local government is—
 - (a) to enable democratic local decision-making and action by, and on behalf of, communities; and
 - (b) to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.
- (2) In this Act, good-quality, in relation to local infrastructure, local public services, and performance of regulatory functions, means infrastructure, services, and performance that are—
 - (a) efficient; and
 - (b) effective; and
 - (c) appropriate to present and anticipated future circumstances.

(B) Resource Management Act 1991

(B1) Canterbury Land and Water Regional Plan

Activity and Resource Policies

Stormwater and community wastewater systems

- Policy 4.15 In urban areas, the adverse effects on water quality, aquatic ecosystems, existing uses and values of water and public health from the cumulative effects of sewage, wastewater, industrial or trade waste or stormwater discharges are avoided by:
- (a) all sewage, industrial or trade waste being discharged into a reticulated system, where available;
 - (b) all stormwater being discharged to land or into reticulated system, where a reticulated system is available;
 - (c) all stormwater being discharged in accordance with a stormwater management plan, where one has been consented;
 - (d) the implementation of contingency measures to minimise the risk of a discharge from a wastewater reticulation system to surface water in the event of a system failure or overloading of the system beyond its design capacity; and
 - (e) any reticulated stormwater or wastewater system installed after 11 August 2012 is designed and managed to avoid sewage discharge into surface water.

- Policy 4.16 Any reticulated stormwater system for any urban area is managed in accordance with a stormwater management plan that addresses the following matters:
- (a) the management of all discharges of stormwater into the stormwater system; and
 - (b) for any reticulated stormwater system established after 11 August 2012, including any extension to any existing reticulated stormwater system, the discharge of stormwater being subject to a land-based or designed treatment system, or wetland treatment prior to any discharge to a lake or river; and
 - (c) how any discharge of stormwater, treated or untreated, into water or onto land where it may enter water meets or will meet, the water quality outcomes and standards and limits for that waterbody set out in Table 1, Schedules 5 and 8 and Sections 6 to 15,(whichever applies); and
 - (d) The management of the discharge of stormwater from sites involving the use, storage or disposal of hazardous substances, and
 - (e) Where the discharge is from an existing local authority network, demonstration of a commitment to progressively improve the quality of the discharge to meet condition (c) as soon as practicable but no later than 2025.
- Policy 4.16A Operators of reticulated stormwater systems implement methods to manage the quantity and quality of all stormwater directed to and conveyed by the reticulated stormwater system, and from 1 January 2025 network operators account for and are responsible for the quality and quantity of all stormwater discharged from that reticulated stormwater system.
- Policy 4.17 Stormwater run-off volumes and peak flows are managed so that they do not cause or exacerbate the risk of inundation, erosion or damage to property or infrastructure downstream or risks to human safety.

Region-wide Rules

Reticulated Stormwater Systems

- Rule 5.93A The discharge of stormwater or construction-phase stormwater into a reticulated stormwater system is a permitted activity, provided the following condition is met:
1. Written permission has been obtained from the owner of the reticulated stormwater system that allows entry of the stormwater into the reticulated stormwater system.
- Rule 5.93 The discharge of stormwater or construction-phase stormwater from a reticulated stormwater system onto or into land or into or onto land in circumstances where a contaminant may enter water, or into groundwater or a surface waterbody is a restricted discretionary activity, provided the following conditions are met:
1. For a discharge that existed at 11 August 2012, an application for a discharge permit is lodged prior to 30 June 2018, or at a later date as agreed between the reticulated stormwater system operator and the CRC; and

2. A stormwater management plan has been prepared to address the management of stormwater in the catchment and is lodged with the application; and
3. The discharge will not cause a limit in Schedule 8 to be exceeded.

The exercise of discretion is restricted to the following matters:

1. The quality of, compliance with and monitoring of the stormwater management plan prepared to address the management of stormwater in the catchment and matters set out in guidance documents prepared by the CRC; and
2. The rate and volume of discharge and the changes to the flow regime of a river or artificial watercourse, flood frequency, including flooding of land or dwellings, erosion of river bank and channels; and
3. The concentration of contaminants and resulting actual and potential adverse environmental effects, including cumulative effects on the receiving water quality of surface and groundwater, aquatic ecosystems, Ngāi Tahu cultural values and other existing uses and users of the water, including takes and discharges; and
4. Measures to:
 - (a) reduce the volume and concentration of contaminants in the discharge; and
 - (b) ensure the volume and rate of discharge do not exceed:
 - (i) the capability of the soil and subsoil layers at the site to reduce contaminant concentrations in the discharge; and
 - (ii) the infiltration capacity of the soil and subsoil layers at the site; and
 - (c) avoid the accumulation of toxic or persistent contaminants in the soil or subsoil layers; and
 - (d) minimise suspended sediment in stormwater from activities involving earthworks; and
5. The potential benefits of the activity to the applicant, the community and the environment; and
6. The need for measures to protect any human or animal drinking-water sources.

Rule 5.94 The discharge of stormwater or construction-phase stormwater from a reticulated stormwater system onto or into land or into or onto land in circumstances where a contaminant may enter water, or into groundwater or a surface waterbody that does not meet the conditions of Rule 5.93 is a non complying activity.

(B2) Canterbury Regional Coastal Environment Plan

Resource Overview

Section 3.10 Timaru

Issues - Water quality is also affected by urban runoff

Policy 7.2 Establish water quality classes, set water quality standards and control the discharge of contaminants and water within the parts of the Coastal Marine Area defined in Schedule 5 that contain areas of degraded water quality or which need classifications to reflect existing or potential uses of the areas:

(a) The water quality in the following areas will be classified as water managed for the maintenance of aquatic ecosystems, and the water quality maintained and where necessary improved for this purpose :

(v) The Operational Area of the Port of Timaru

(b) The water quality in the following areas will be classified as water managed for contact recreation and for the maintenance of aquatic ecosystems, and the water quality maintained and where necessary improved for these purposes:

(ix) The Coastal Marine Area off Washdyke and Caroline Bay;

(d) Once the degraded water quality in an area has been improved to consistently meet the standards set in the relevant water quality class, Environment Canterbury will review the classifications and where appropriate prepare changes to this plan that will aim at achieving higher levels of water quality for that area. In preparing any such changes to this Plan, Environment Canterbury will ensure any proposed higher standards are reasonable and achievable within a specified timeframe and take into account the existing uses of the areas.

Rule 7.1 Permitted Activities

(b) Except as provided for by paragraph (e), the discharge of stormwater into water, or onto or into land in the Coastal Marine Area is a Permitted Activity, provided that the discharge, disregarding the effect of any natural perturbations that may affect the receiving water:

(i) shall not result in any scouring or erosion of the foreshore or seabed that is not erased by wind, tidal or wave action within 24 hours; and

(ii) shall not give rise to any of the following effects in the Coastal Marine Area, in any direction from the point of the discharge, and further than the greater of 100 metres, or 100 times the average internal diameter of the outfall pipe being used, or 100 times the average width of the open culvert or drain being used:

1. the production of suspended materials; or

2. (a) within areas classified as Coastal AE water or Coastal CR water: a change in the colour of the receiving water by greater than ten points, as measured using the Munsell Scale, or a reduction in the visual clarity of the receiving water by greater than 50%;

3. (b) within any other area: a change in the colour of the receiving water by greater than five points, as measured using the Munsell Scale, or a reduction in the visual clarity of the receiving water by greater than 20%;
and
- (iii) shall not give rise to any of the following effects in the Coastal Marine Area, in any direction from the point of the discharge, and further than the greater of 20 metres, or 20 times the average internal diameter of the outfall pipe being used, or 20 times the average width of the open culvert or drain being used:
 1. the production of conspicuous oil or grease films, scums or foams, or floatable materials; or
 2. any emission of objectionable odour; or
 3. any reduction in the concentration of dissolved oxygen in the receiving water to less than 80% of saturation; or
 4. any change by more than 3o Celsius in the natural temperature of the receiving water or any change that causes it to exceed 25o Celsius; or
 5. other than in the Operational Area of a Port, any increases in the concentrations of the dissolved fractions of the following metals in the receiving water, measured after filtering a sample through an acid-washed 0.45 micron filter, to more than the following concentrations:
 - Arsenic 50 mg per cubic metre
 - Cadmium 2 mg per cubic metre
 - Chromium 50 mg per cubic metre
 - Copper 5 mg per cubic metre
 - Lead 5 mg per cubic metre
 - Nickel 15 mg per cubic metre
 - Zinc 50 mg per cubic metre; or
 6. other than in the Operational Area of a Port, any increase in the BOD5 of the receiving water measured after filtration through a GF/C filter, to more than 2 g per cubic metre.
 7. in the Operational Area of a Port, the capability of causing significant adverse effects on aquatic life or the capability of causing a significant loss of indigenous biological diversity.
- (f) The discharge of stormwater into water or onto or into land in the Coastal Marine Area as runoff through a pipe, channel, drain, culvert or other collection system from a road where the road, its batters or retaining walls abut the Coastal Marine Area, is a Permitted Activity, provided that the discharge shall not result in:
 - (i) any scouring or erosion of the foreshore or seabed that is not erased by wind, tidal or wave action within 24 hours; or
 - (ii) any deposition of sediment or other suspended material on the foreshore or seabed that is not erased by wind, tidal or wave action within 24 hours.

(B3) Opihi River Regional Plan

Relationship with the Regional Policy Statement and Regional Plans

The rules in this Plan operate at the same time as those in the Natural Resource Regional Plan:

Relevant Permitted Activity Rules in the Natural Resource Regional Plan

WQL6 Discharge of stormwater onto or into land where it may enter groundwater

WQL7 Discharge of stormwater into a river, lake or artificial watercourse