OurVision:

"Together we value, protect and restore the mauri/life-force of the waterways so that it enables mahinga kai, kī uta kī tai."

Temuka/ Te Umu Kaha

Stormwater Issues Summary October 2021

Timaru District Council (TDC) and Te Rūnanga o Arowhenua are making a plan to help manage stormwater discharges from the urban area of Temuka. This Stormwater Management Plan will help us better manage stormwater and protect our waterways. It will also help us meet the legal requirements for discharge of stormwater into the Taumatakahu Stream and Te Umu Kaha/Temuka River.

We have completed baseline studies and have identified key stormwater issues that will be addressed in the plan. This document summarizes the issues and provides additional context for what we've discovered with the current stormwater management system.

Stormwater Management in Temuka

TDC provides stormwater management for the urban areas of Temuka, approximately 412 ha including 2279 properties via a stormwater system of pipes and open channel network. The network is limited in some areas and the stormwater that travels through it is not treated before discharge to ground, Taumatakahu Stream and the Temuka River.

Stormwater System	Quantity
Stormwater Pipes	15436m
Swales and Open Channels	2423m
Sumps and Inlets	411
Soak Pits	31
Outfalls to waterways	28
Waterways	Ground, Taumatakahu Stream and Temuka River

Issues Summary

We have identified six key issues which are discussed in detail below:

1. **Flooding**
2. **Pollution**
3. **Reduced Aquatic Life**
4. **Maintenance**
5. **Increased Development**
6. **Climate Change**

Issue 1 - Flooding

Parts of the urban areas of Temuka suffer from nuisance flooding and ponding, particularly when it rains for an extended amount of time. This is due to limited drainage and blockage of natural flow paths.

Flooding is a natural phenomenon and typically occurs around waterway corridors, overland flow paths and in low lying areas. Our stormwater network is designed to a specific capacity or level of service, so that it can carry stormwater to the streams and the river. This helps reduce flood risks for houses, business and roads during relatively small rain events. This level of service may not prevent stormwater flooding from some large rain events. The stormwater ponding related issues we have identified in Temuka include:

1.1 The topography of Temuka being flat terrain, with some low lying areas and high groundwater. This presents issues for draining stormwater from the areas.

1.2 High groundwater levels in some parts of Temuka, where stormwater is discharged to ground via soak pits, further increases the water level and causes stormwater to pond until the groundwater level drops.

1.3 Limited and small pipe networks in some areas cause stormwater to flow overground when the pipe system is full or not available.

1.4 Blocked overland flow paths are causing stormwater ponding, as we have built in or obstructed places where stormwater would naturally flow. The loss of these natural flow paths mean stormwater moves into, and impacts more on the built environment. In these areas, stormwater can no longer flow along the natural path and will continue to build up and cause flooding or other damage.

Issue 2 – Pollution

Polluted stormwater is contributing to reduced water quality and diminished ecosystems in our local rivers, streams and other waterways – this impacts how the community and Te Rūnanga o Arowhenua interacts with these ecosystems.

Stormwater runoff picks up pollutants from hard surfaces such as roads, carparks, industrial yards and certain building materials. Polluted stormwater is discharged to the environment, putting strain on the health of our waterways. This affects what lives in them and how we interact with them. The stormwater pollution related issues we have identified in Temuka include:

2.1 Pollution in stormwater, and from other activities, can directly enter the Taumatakahu Stream and Temuka River via 37 untreated outfalls.

2.2 Poor quality of the Temuka River impacts on the relationship of Te Rūnanga o Arowhenua with the river and the Opihi Mātaitai Reserve, which are both mahinga kai/food gathering areas.

2.3 High nutrient concentrations (Nitrogen and Phosphorus) have been found in the stream and river. This is consistent with nutrients from upstream agricultural runoff and surrounding urban activities in the areas. Elevated nutrients can result in algae growth that can harm aquatic life.

2.4 High heavy metal concentrations (Zinc and Lead) have been found accumulating in the sediment in the lower Taumatakahu Stream and parts of the Temuka River. These can be attributed to vehicle movements and roofs/building materials.

2.5 High petroleum hydrocarbon Concentrations have found in the upper stretch of Taumatakahu Stream. This can be attributed to vehicles from the high use roads and carparks in the area.

2.6 High use roads (e.g. State Highway 1) and carparks without treatment of the stormwater runoff contributes to the pollution in the stormwater system and the waterways.

2.7 Industrial and commercial activities in Temuka present risks to the quality of stormwater and waterways. There are numerous commercial and industrial properties in the plan area, some of which have been identified as high risk due to the potential impacts of spills and discharge to the system.

2.8 Use of existing soak pits may, over time, release dissolved pollutants into the Taumatakahu Stream.

2.9 Stormwater discharges to ground (via soak pits) may result in pollutants (e.g., bacteria from dog/bird waste) traveling through the soil into groundwater bores and wells. There are more than 20 existing bores within 1,000 m of soak pits in the plan area that could be potentially impacted.

2.10 Sewage/wastewater can overflow into the stormwater system and the waterways in Temuka. This can happen during very heavy rainfall, particularly in low lying areas, when stormwater flooding enters the sewer system, causing it to overflow into the stormwater system and the waterways. This can also happen when the sewer system is blocked causing overflows.

OurVision:

"Together we value, protect and restore the mauri/life-force of the waterways so that it enables mahinga kai, kī uta kī tai."

Temuka/ Te Umu Kaha

Stormwater Issues Summary October 2021

Issue 3 – Reduced Aquatic life

Wildlife in the waterways is being reduced by both pollution and loss of natural habitat or shading - birds, fish, eels, plants and other native species are unable to thrive.

Our waterways have recreation and cultural significance and the protection and return to a healthy mauri / life-force is very important. A measure of the health of a waterway is the presence and variety of aquatic life like fish, plants and other native species, and the ability of these organisms to thrive and travel. The Taumatakahu Stream and Temuka River are important habitats for several native species, mahinga kai, cultural use and the transmission of matauranga Māori. They are also important features in the urban landscape and contribute to the general wellbeing of our community. The key stormwater issues related to aquatic life identified in Temuka include:

3.1 Low number and variety of aquatic life was measured in the stream and river.

3.2 Fine sediment has been observed smothering vegetation, insects and fish, which is likely from upstream agricultural practices and stream bank erosion.

3.3 Barriers to fish passage – including culverts – have been identified on Taumatakahu Stream. Seven of these are classified as 'Very High Risk' in-stream structures and may prevent fish migration. Four of these barriers are located only a short distance upstream from the confluence with the/ Temuka River.

Issue 4 – Maintenance

The limited maintenance of the stormwater system and waterways is impacting their function and our ability to enjoy the waterways.

Maintenance of the stormwater system ensures its proper functioning and reduces the impact of discharge into the waterways. Preventive maintenance will help reduce the need for expensive improvements to the stormwater system and will also ensure waterways are more accessible for our enjoyment. The key stormwater issues related to maintenance identified in Temuka include:

4.1 Operations and maintenance responsibilities of the stormwater system and waterways are spread amongst multiple organisations. This impacts the consistency and level of service provided.

4.2 Parts of the streams are on private property which affects the maintenance and use of the waterways.

4.3 Some maintenance of waterways that occurs generally falls under Environment Canterburys drainage bylaw, which focuses on maintaining conveyance/flood capacity. There is currently no mechanism to consider maintenance of waterways from a water quality or aquatic health perspective.

4.4 The stormwater network in Temuka is ageing and there is limited information on the condition of some of the stormwater infrastructure. This means that some parts of the network may be at the end of their service life and could be damaged or blocked.

Issue 5 – Development

Our communities will continue to grow and as development intensifies, stormwater will increase. This puts greater pressure on the existing stormwater system and our environment.

Stormwater is runoff from rainfall on hard surfaces, this increases in line with development. Previously as development occurred, stormwater system were designed to collect and transport runoff as quickly as possible to waterways, largely untreated. This approach has resulted in damage to the natural environment and limitations for the system to cope with increased development and the need to provide treatment before discharge into waterways. Growth and development in the town requires careful stormwater planning and management to ensure adequate level of service is provided. The key stormwater issues related to development identified in Temuka include:

5.1 Legacy issues due to the previous approach to development, where existing stormwater networks are no longer meeting the capacity and treatment level of service

5.2 Development will increase stormwater runoff and put greater pressure on the existing capacity of stormwater networks, making flooding and water quality issues worse if we don't change the way we develop.

Issue 6 - Climate Change

Our climate is changing, and more extreme weather will heighten existing issues with our stormwater system.

The magnitude of the effects of climate are uncertain due to the long-term nature of climate change. Predictions indicate an increase in rainfall intensity in the area, which will increase stormwater runoff. The key stormwater issues related to climate change identified in Temuka include:

6.1 It is likely that more intense rain events will occur more frequently, which will further increase flooding, pollution and damage to the natural environment.

6.2 The stormwater management system will need to be resilient and adaptable to cope with the impacts of climate change.