

Stormwater

Purpose

Stormwater drainage protects our communities, infrastructure and public places from flooding by discharging stormwater and collecting contaminants to minimise adverse effects from rain, runoff and high tides. Stormwater drainage on state highways is managed by NZ Transport Agency (NZTA).

Legislation associated with this service

- Local Government Act 2002;
- Resource Management Act 1991;
- Civil Defence and Emergency Management Act 2002;
- Land Drainage Act 1908;
- New Zealand Coastal Policy Statement;
- Regional Plan for Northland;
- Regional Water and Soil Plan for Northland;
- Regional Coastal Plan for Northland.

Risks and Issues

Risk Event	Description
Don't meet LoS expectations due to lack of funding	Inadequate level of funding may result in a failure to deliver the agreed Level(s) of Service and have potential adverse effects on the community, which may lead to environmental and public health damage, as well as significant legal and financial consequences.
Legislative non-compliance	Failure to comply with relevant legislative obligations / breach of legislation, caused by lack of awareness (changes in legislation not identified) lack of funding or lack of resources, resulting in unlawful action, environmental damage exposure to litigation risk, regulatory and/or government sanctions and reputational damage.
Failure to deliver on projects and programmes	Non-delivery on projects and/or programmes due to inadequate project or programme management, lack of resources / project planning or systems / ownership; change of leadership, cost escalation or unrealistic expectations, resulting in deferring of projects, possible community dissatisfaction, reduction in service levels and damage to Council's image and credibility.
Inadequate contract management (network maintenance and operations)	Inadequate contract management, caused by inadequate documentation / selection or availability of contractor / management of contractor, resulting in poor contractors' performance and outputs, interruption to services or reduction to service levels, health and environmental incidents, failure to meet legislative requirements, additional costs and reputational damage.
Inadequate asset management	Inadequate asset management, caused by lack of asset management knowledge, practice and training, lack of staff knowledge and training, lack of resources, inadequate communication of issues and strategic planning, resulting in reduction in service levels, failure to meet LTP commitments, inability to cater for growth, financial consequences and reputational damage.

From Infrastructure Risk Register

How we fund this Group

- General rates;
- Targeted rates;
- Development contributions;
- Financial contributions;
- Borrowing; and
- Asset sales.

What we do

We manage five community stormwater drainage schemes for Dargaville, Baylys, Te Kopuru, Kaiwaka and Mangawhai. The level of service for the schemes is only to protect habitable floors from flooding by removing and discharging stormwater. The system collects contaminants in a way that protects our environment and public health; and responds promptly and reasonably to threats of flooding on habitable floors. We maintain the performance of the stormwater drainage systems to the expectations of the community.

Stormwater drainage systems in Whakapirau, Glinks Gully, Kelly's Bay, Pahi, Tinopai, Paparoa, Maungaturoto and Matakoho are mostly incorporated into our roads network. There are several open drain systems that exist throughout the district.

Contribution to Community Outcomes

- Climate smart: Catchment plans and resource consents are managed to mitigate the effects of Climate change
- Vibrant communities: Stormwater is managed to support community and business activities
- Healthy environment: Investment into Infrastructure to minimize environmental effects and run off into our waterways

What we will deliver

Description	When
<ul style="list-style-type: none">• Hydrological models for stormwater networks in Mangawhai, Kaiwaka, Dargaville, Te Kopuru, Baylys, Maungaturoto and Paparoa where LoS or growth design questions need answering• Develop a standard for routine condition assessment of stopbank assets in the urban area and begin this assessment• Model infrastructure requirements in Dargaville for flood susceptible areas to allow LoS under increasing rain intensity and river levels• Create overland flow maps for the whole district. Required for reliable Stormwater Catchment Management Plans (CMP), land use planning and renewals strategy. Incorporate this into public maps system• Complete the new CMP for Dargaville and Mangawhai• Complete CCTV condition assessments in Kaiwaka, Maungaturoto, Paparoa, Te Kopuru and Baylys so asset conditions can be used in the renewal's strategy• Start restoration of Mangawhai stormwater ponds requiring upgrade to meet current standards	2021/2022
<ul style="list-style-type: none">• Complete the CMP for Kaiwaka, Maungaturoto, Paparoa, Te Kopuru and Baylys• Continue developing overland flow maps for the whole district. Required for reliable Stormwater Catchment Management Plans (CMP), land use planning and renewals strategy. Incorporate this into public maps system	2022/2023

Description	When
<ul style="list-style-type: none"> Continue restoration of Mangawhai stormwater ponds requiring upgrade to meet current standards Continue collaborative monitoring projects with NRC Complete the condition assessment of the urban stopbanks Model infrastructure requirements in Mangawhai for flood susceptible areas to allow funding for LoS Complete CCTV condition assessments in Whakapirau, Tinopai, Pahi, (Glinks Gully, Kelly's Bay, Ruawai, Pouto and Matakohe as necessary) so asset conditions can be used in the renewal's strategy Finalise the Stormwater Bylaw and/or Policy 	
<ul style="list-style-type: none"> Continue restoration of Mangawhai stormwater ponds requiring upgrade to meet current standards Complete the CMP for all remaining areas with stormwater infrastructure, not limited to Whakapirau, Tinopai, Pahi, (Glinks Gully, Kellys Bay, Ruawai, Pouto and Matakohe as necessary). Continue developing overland flow maps for the whole district. Required for reliable Stormwater Catchment Management Plans (CMP), land use planning and renewals strategy. Incorporate this into public maps system Continue collaborative monitoring projects with NRC 	2023/2024
<ul style="list-style-type: none"> Complete restoration of Mangawhai SW ponds requiring upgrade to meet current standards Continue developing overland flow maps for the whole district. Required for reliable Stormwater Catchment Management Plans (CMP), land use planning and renewals strategy. Incorporate this into public maps system Rerun hydrological models for specific areas of the stormwater networks LoS or growth design questions need answering 	2024/2031

Performance Measures

What we measure	LTP Year 1 Target 2021/2022	LTP Year 2 Target 2022/2023	LTP Year 3 Target 2023/2024	LTP Years 4-10 Target 2024/2031
Network System adequacy For each flooding event, using a maximum of 1:50 year (Annual Event Probability 2%), the number of habitable floors affected. (Expressed per 1,000 properties connected to the district's stormwater system.)	≤10	≤10	≤10	≤10
Response time The median response time in an urgent flooding event (defined as an event is where a habitable floor is reasonably at risk of being affected P1), measured from the time that the Council (or subcontractor) receives notification to the time that service personnel reach the site.	≤2 hours for urgent events	≤2 hours for urgent events	≤2 hours for urgent events	≤2 hours for urgent events

What we measure	LTP Year 1 Target 2021/2022	LTP Year 2 Target 2022/2023	LTP Year 3 Target 2023/2024	LTP Years 4-10 Target 2024/2031
Customer satisfaction The number of CSR received regarding single network issues (however reasonably defined) per year/1,000 properties. This includes all CSR that relate to stormwater infrastructure whether directed to the contractor or individual Council staff member.	≤18	≤18	≤18	≤18
Discharge compliance Abatement notices, infringement notices, enforcement orders, convictions.	0	0	0	0
Positive Environmental Outcomes Water sensitive design, green infrastructure, low carbon design and construction, resilient network	As defined in the Stormwater CMP or Emissions Targets	As defined in the Stormwater CMP or Emissions Targets	As defined in the Stormwater CMP or Emissions Targets	As defined in the Stormwater CMP or Emissions Targets

Changes in Levels of Service

There will be no changes to the level of service - protect habitable floors only

Negative effects and issues

Identified significant negative effect/issue	Mitigation
Level of Service (LOS) versus Feasibility The construction and maintenance costs of infrastructure upgrades to meet level of service is beyond the means of the community to afford. Targeted rates for small communities do not enable good network management.	This will be managed through consultation with communities to determine the most practicable way forward, without negatively impacting on public health and the environment or creating risk to persons or property.
Contamination of Urban Watercourses Urban stormwater runoff has the potential to adversely impact the receiving environment stakeholders and users.	The engineering standard provides minimum standards for stormwater infrastructure. Updates will include best practice for Water Sensitive Design and treatment. Continue to improve understanding of coastal/estuarine outfalls and the effects on the environment and incorporate best practice into catchment management plans.
Contamination of Rural Watercourses Rural stormwater runoff is likely to have a different contaminant profile than that from the urban areas. Depending on land use rural runoff potentially has elevated levels of nitrogen and	The engineering standard provides general guidance for the management of rural stormwater runoff. The section primarily relates to quantity control of runoff, although there is a recommendation that appropriate water quality treatment options be considered in conjunction with attenuation. The Engineering Standards will be updated

Identified significant negative effect/issue	Mitigation
phosphates than urban stormwater, due to fertiliser usage and animal husbandry.	to reflect best practice in Water Sensitive Design and treatment.
Climate Change Increasingly climate change effects, particularly increased intensity of rainfall events and sea level rise will challenge the resilience and capacity of the network.	Investigation of potential negative effects and solutions that relate to the District. Increased focus on Water Sensitive Design and green infrastructure will play a big part in these solutions. Focus on flood protection devices in low-lying areas of Dargaville and Mangawhai is critical.
Flooding Direct Impact Urban catchments create a greater amount of impervious coverage (such as roads, roofs and paved areas) than would be seen in the natural environment. Runoff is generated quicker from paved areas and can result in overland flow paths and localised flooding, which can damage property and increase the risk to life.	The Engineering Standards allow for protection of the receiving environment from potential erosion and flooding. The attenuation of runoff allows for flooding to be controlled locally, within the specific device. Online tools are being developed to enable better planning around problem areas such as overland flow paths.
Network Resilience and Capacity not supported by a holistic design Historical focus on grey infrastructure has not gained the district the potential advantages of water sensitive design	In the long term, continuing this philosophy will negatively impact on the capacity for aquifers to recharge and the catchments to be resilient under increasing hydrologically challenging times. There is now a focus on green infrastructure and water sensitive design.
Stormwater Infiltration Studies of the stormwater network in Dargaville and Mangawhai have found stormwater leaking into the wastewater system	Aging infrastructure, particularly in Dargaville, is due to long term under investment. Continue with renewal plans and condition investigations.
Infrastructure not maintained to the correct standard Base infrastructure maintenance and renewals has been under resources leaving capacity and resilience issues. Green infrastructure devices have been poorly catalogued and maintained.	A robust maintenance schedule is being developed with the maintenance contractor and asset management improvements are set to allow clarity on ownership and responsibility of core assets and green infrastructure assets.
Future growth The spatial plans have identified the likely growth areas in Kaipara. Fast growth without good infrastructure planning has in some cases such as Mangawhai left deficit in funding and LoS provision.	Formal, reticulated stormwater systems and funding will be required in the future for small townships so LoS can be maintained with growth. Because five schemes have targeted stormwater rates, funding for works beyond these schemes is currently very small and an overall funding model should be agreed on to engage community growth.
Public safety Public safety is at the forefront of network operations some assets however have an inherent risk	All risks to the public are elevated with urgency to the maintenance contractor and continual improvement is applied to the built environment.

Identified significant negative effect/issue	Mitigation
	Generally Council policy is to not pipe open drains (and not allow private piping of open drains) unless there a strong evidence to for a positive safety gain.
Asset data Many aspects of the asset management system still require improvement.	Asset data management is a process of continual improvement and there are multiple improvement projects underway and planned. There are still many roading assets not represented in the Waters database though, and some assets have incorrect ownership tags. These will require asset cleansing surveys.

How are we considering Climate change?

In planning these activities, Council has considered climate change projections for sea level rise, increased flooding and coastal inundation and erosion, and increased severity of storms and intensity of rainfall events including increased intensity in short-duration rainfall events. We understand that Kaipara's changing climate poses a variety of risks to Council's stormwater activities. We understand that a lot of our stormwater assets are exposed and at risk. We also anticipate that discharge allowances will decrease, impacting levels of service and increasing cost to provide expected services.

Stormwater assets play a vital role in enabling the built environment. We will continue to improve our understanding of risk by analysing regional hydrodynamic modelling and expanding our flow modelling and analysis where possible.

As we gather more information on climate-related risks, we will begin to explore possible adaptation responses. Where feasible, we will incorporate adaptation decisions into new projects and pursue sustainable, emissions-efficient designs and project management process.