



Catchment Management Plan

Te Puna West and Minden

Western Bay of Plenty District Council (WBOPDC)

23 June 2025

→ **The Power of Commitment**

Project name		Stormwater Catchment Management Plan Update					
Document title		Catchment Management Plan Te Puna West and Minden					
Project number		12587854					
File name		12587854-Te Puna-West-Minden-Catchment-Management-Plan-REV-B.docx					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S0	A	Emily Diack Grace Tudreu	Justine Bennett	Approval on record	Bob Shaw	Approval on record	20/12/22
S3	B	Emily Diack Grace Tudreu	Justine Bennett	Approval on record	Bob Shaw	Approval on record	08/04/25
S4	1	Emily Diack Grace Tudreu Alice Hales	Justine Bennett		Bob Shaw		23/06/2025

GHD Limited [626860]

27 Napier Street, Freemans Bay
Auckland, 1011, New Zealand

T +64 9 370 8000 | **F** +64 9 370 8001 | **E** aklmail@ghd.com | **ghd.com**

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Executive Summary

This catchment management plan (CMP) has been developed in alignment with Western Bay of Plenty District Council's (WBOPDC) Comprehensive Stormwater Consent (CSC)(RM17-0121-AP) The CSC was issued in July 2020 and was issued for the Central Catchments. Te Puna West and Minden are small urban settlements located within the area known as Central Catchments.

The philosophy of the CMP encourages the maintenance, and where appropriate, improvement of the natural and physical resources in the catchment, through the continuous improvement of stormwater management. This CMP encourages improved stormwater management through the implementation of water sensitive design practices, to safely convey and treat stormwater, under an integrated management lens, and considers the health and wellbeing of the water bodies and freshwater ecosystems, the health needs of the community, and the ability to provide for social, economic and cultural wellbeing.

Currently this CMP does not address discharge of potentially contaminated stormwater from industrial and trade premises or stormwater discharges from future greenfield developments. The CMP focuses on driving integrated management through sustainable and resilient stormwater planning that considers potential climate change impacts.

The CSC covers the urban catchment area of Te Puna West and the Minden rural-residential catchment area. These areas exclude the wider Minden Lifestyle Zone, which expands over a significantly bigger footprint and nor does it consider the wider Te Puna catchment. It is acknowledged that given the exclusions this is not technically a fully integrated approach. However, this CMP aims to achieve an integrated outcome in those areas included, by considering the following, both now and in the future, when implementing water sensitive urban design and stormwater management principles and concepts:

- catchment land use(s),
- catchment activities,
- receiving environments, and
- climate conditions.

The stormwater catchment area of Te Puna West is approximately 21 hectares and the Minden stormwater catchment area covered by the CSC is approximately 87 hectares. Section 6 of the CMP indicates the location of Te Puna West and Minden stormwater network area, surrounding estuaries, and catchment boundaries. The characteristics of both small settlement catchments are also explained in detail in this section. Section 7 discusses the receiving environments of Te Puna West and Minden, and Section 8 details the public stormwater assets owned and serviced by the WBOPDC, including the condition of the stormwater assets and the maintenance requirements.

Using existing available information stormwater quantity and quality challenges within Te Puna West and Minden have been summarised, as detailed in Section 9, and outlined in the table below.

The Te Puna West catchment is almost completely developed, with the majority of its land used for residential housing. Significant future urban expansion or land development is not expected to occur in the catchment. The District Plan envisages potential future growth and development in the Minden catchment but not to a significant degree. Capital works, however, to upgrade stormwater infrastructure will continue for both catchments to achieve appropriate levels of service for residents. Stormwater discharges from existing and potential new developments are anticipated to result in potential impacts to the environment and socio-cultural values in the Te Puna West and Minden catchments. These potential impacts are summarised in the assessment of environmental effects (Section 10), and are considered to be relatively minor, to less than minor.

Identified stormwater quantity issues

Constraint or issue	Catchment area	Effect on stormwater management
Te Puna West Catchment		
Limitations in future expansion in the catchment according to the District Plan	Whole of catchment	Lack of reticulation to service urban areas can result in flow not being effectively collected and conveyed away to a discharge point, exacerbating localised flooding issues particularly during 1% AEP flows.
Location of secondary flow paths are not well understood	Whole of catchment	Without a model to determine the location and capacity of overland flow paths, the understanding of flood risk is incomplete. Lack of adequate secondary flow paths may lead to property damage since these flows are not contained.
Specific areas in the catchment are exposed to significant flood risks (0.1 to 3m) from uncaptured surface runoff and coastal inundation, increasing property vulnerability	– Mataiwi Rd/Waitui Reserve – Snodgrass Rd/Te Kopa O Te Hotu – Wallace Rd – Fairlie Grove	Increased safety risk to community and property. Increased risk of property damage, especially in areas with potential overland flowpaths (e.g., Fairlie Grove and Wallace Rd).
Potential for wastewater overflows from the wastewater reticulation network during heavy rains or if there are damages to the infrastructure caused by natural hazards such as tidal inundation or blockage	Whole of catchment	Wastewater overflows can contaminate the foreshore in Te Puna West, degrading overall water quality
Flat topography and low elevation	Whole of catchment	Flat topography and low elevation increase the risk of stormwater assets and infrastructure facing damage from sea level rise and coastal storms. Infrastructure may not be designed to handle additional flows from inundation. There is also a risk of infiltration of saline waters into stormwater pipes. Flat topography also increases the chances of water ponding/localised flooding during rainfall events.
Minden Catchment		
Low to moderate risk of slip and erosion throughout the catchment due to steep topography.	Whole of catchment	Moderate slip and erosion risks can undermine the stability of stormwater infrastructure, leading to increased maintenance costs and potential failures.
Minden is classed as a Lifestyle Zone in the District Plan. There are plans to develop around 1,730 ha of land across Minden over the next 40 years.	Nominated catchment areas	More development leads to increased imperviousness, resulting in increased surface runoff. Since the CSC does not apply to new greenfield development, careful consideration of third-party development consents and stormwater management designs will be required to ensure that cumulative effects across the catchment or downstream of development are not increased due to future greenfield development.
Location of secondary flow paths are not well understood.	Whole of catchment	Without a model to determine the location and capacity of overland flow paths, the understanding of flood risk is incomplete. Lack of adequate secondary flow paths may lead to property damage since these flows are not contained.
Localised flooding in areas with existing streams such as Perkins Drive and Maruia Place, affecting properties in these areas.	Low depression points, gullies and ridges	Localised flooding can lead to a higher volume of stormwater runoff, overwhelming existing drainage systems and causing overflow. An overwhelmed system can lead to high discharge flow into receiving streams, which can erode streambanks, leading to sedimentation and destabilisation of the stream channel.

To mitigate, reduce, minimise and avoid the potential effects identified, the CMP includes a Mitigation Plan (Section 12). The Mitigation Plan describes the best practice for stormwater management by providing a 'toolbox' of measures and identifies areas of the catchment that require mitigation from the effect of urban stormwater runoff and discharges.

The Mitigation Plan is based on the concept of water-sensitive urban design and practices from good practice guidelines in other jurisdictions. Concepts that should be considered when prioritising potential stormwater management options for the Te Puna West and Minden catchments. The 'toolbox' of stormwater management options suitable for the Te Puna West and Minden catchments are categorised into water quality and water quantity controls. Though some approaches can deliver aspects of both. Additionally, strategic approaches (non-structural approaches) are included.

Water quality options include source controls and treatment measures. Source controls include stormwater runoff controls (such as suitable roof materials, well-managed maintenance plans, and planting vegetation) and wastewater seepage (such as regular maintenance of septic systems, ensuring appropriate design of wastewater systems, and regular monitoring and maintenance of wastewater systems). Treatment measures on the other hand include things such as biofiltration devices, integrating wetlands, targeted use of catchpit filters and implementing practices such as silt fences, vegetation cover and measures to prevent soil erosion reducing sediment in stormwater. Water quantity control options include source controls and quantity management. Quantity source controls include:

- Reducing runoff by capturing at the source.
- In areas where the stormwater runoff exceeds the capacity of catchpits, provide an efficient high-flow channel system, reducing overland flow caused by blocked or poorly spaced catchpits.
- The use of vegetated swale channels, rain gardens and infiltration trenches.
- Designating low-lying areas within the catchment for things such as detention basins.
- Water re-use, i.e., rainwater tanks.
- Separation of roof drainage from direct connection to the streets (i.e., to the kerb) in urban and reticulated areas.
- Permeable paving. This can also be paired with below ground storage in situations with a connection to the piped network.
- Maintaining or increasing pervious area by increasing the overall green spaces and natural areas (pocket parks, gardens, tree pits).

Quantity Management Controls include the implementation of water sensitive design measure. These includes measures such as (but not limited to):

- Managing existing overland flow paths through appropriately sized vegetated swales which encourage infiltration where ground conditions permit.
- Use of detention devices such as dry detention basins and ponds, particularly in low-lying areas within parks, to moderate peak flows.
- Water re-use on site to reduce the volumes of water discharged off-site.
- For smaller events, initial discharge of stormwater through bioretention systems.

Strategic approaches aim to influence people's behaviour rather than relying solely on large infrastructure assets. These tools act as preventive measures, addressing issues before runoff occurs. Strategic approaches that can be considered for both catchments include:

- Encouraging community participation in stormwater management projects, such as tree planting, rain garden installations, and clean-up events.
- Offering incentives for developers and property owners to implement stormwater management practices.
- Establishing programmes to monitor stormwater quality and quantity and evaluating the effectiveness of implemented strategies.
- Incorporating stormwater management into broader community planning efforts, such as land use planning, transportation planning, and climate resilience strategies.