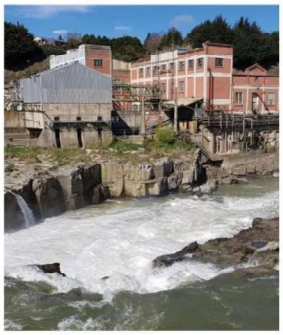
Appendix AI

Stormwater Monitoring Plan

DRAFT

ecoLogical Solutions
Environmental Consultants





May 2026

Wairākei South Stormwater Monitoring Plan

Submitted to:
Bell Road Limited Partnership

water fauna flora land

Quality Assurance

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1.0 Introduction

1.1 Description of the Site

The Wairakei South Development (the Site) is a proposed large-scale (approximately 350 hectares) mixed use development located at 339 Bell Road, Papamoa, Bay of Plenty. The Wairākei South Development proposal was referred as a Fast-track Approvals Act 2024 project and confirmed in December 2024.

The Site is currently in pasture and used for grazing. There are three watercourses in proximity of the Site, which are part of the Kaituna Drainage Scheme and have been either created or modified to prevent flooding of the lowland agricultural areas. The Kopuaroa Canal flows parallel to the Site's southern boundary before joining the Kaituna River approximately 600m upstream of the Tauranga Eastern Link, SH2. The Raparapahoe Canal runs parallel to, and lies approximately 600 m to the south of, the Kopuaroa Canal. Bell Road drain flows in an easterly direction and dissects the northern and south blocks of the Site and joins the Kaituna River on the eastern side of the Tauranga Eastern Link Road. The Bell Road drain will be diverted from its original location at the Site's western boundary to divert flow to the Kopuaroa Canal at the Site's southern boundary.

1.2 Proposed Stormwater Management

Stormwater treatment for the development has been designed in accordance with the Bay of Plenty Regional Council (BOPRC) Stormwater Management Guidelines (BOPRC 2012) and is detailed in the draft Stormwater Management Plan, or SMP (Maven, 2026). The primary treatment methods across the Site are wetland swales and wetlands, designed in line with the recommended approach and based on storage and residence time. Stormwater from the Site will discharge to Bell Road Drain from the northern treatment wetland and to Kopuaroa Canal from the southern treatment wetland (Figure 1)

1.3 Scope and Objectives

Ecological Solutions have been engaged by Bell Road Limited Partnership to prepare a Stormwater Monitoring Plan (SWMP). The purpose of the SWMP is to monitor stormwater quality and water quality in the receiving environment to evaluate the performance of the Site's stormwater management devices.

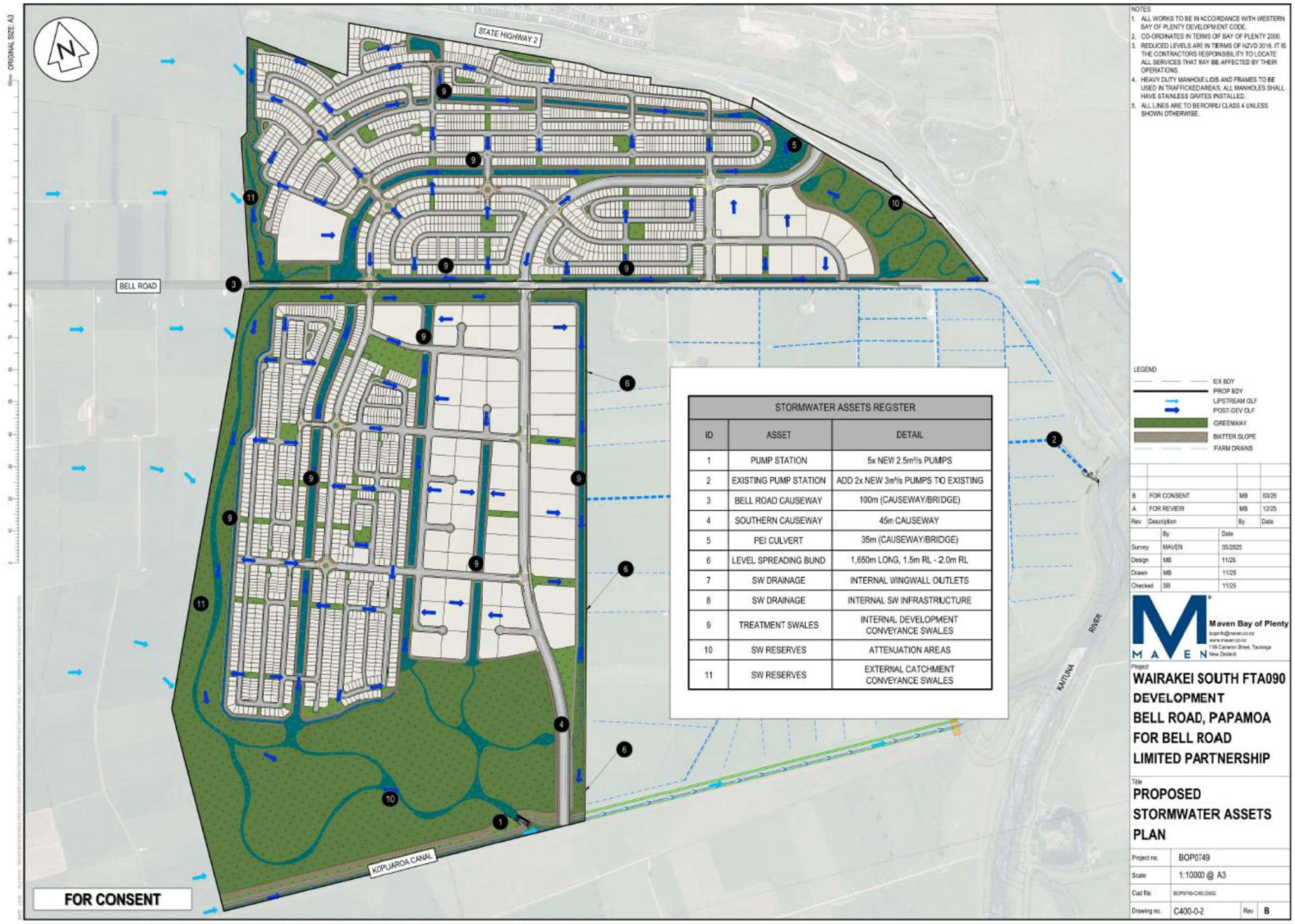

Figure 1: Stormwater treatment devices and discharge locations.

2.0 Monitoring

2.1 Sampling Sites

Water quality sampling will be carried out at the six stormwater discharge sites, and in the Bell Road Drain and Kopuaroa Canal at sites located upstream and downstream of the northern and southern discharges. Details of the sampling sites are presented in Table 1 and site locations are shown on Figure 2.

Table 1: Sampling site details.

Site code	Location	NZTM	
		Easting	Northing
SW-N1	Northern stormwater device	1894883	5818168
SW-N2	Northern stormwater device	1895055	5817861
SW-S1	Southern stormwater device	1892874	5817013
SW-S2	Southern stormwater device	1893266	5817055
SW-S3	Southern stormwater device	1893438	5817011
SW-S4	Southern stormwater device	1893781	5816873
B-US	Bell Road Drain - upstream	1895212	5817759
B-DS	Bell Road Drain - downstream	1895365	5817709
K-US	Kopuaroa Canal - upstream	1893355	5816466
K-DS	Kopuaroa Canal - downstream	1893679	5816451

Figure 2: Sampling locations.

2.2 Timing and Duration of Sampling

Water quality sampling will be undertaken annually during a 'storm event', that is, during rainfall events that are less than the five-year rainfall event and following at least three days of dry weather. The stormwater event definition is aligned with the Tauranga City Council Monitoring Plan (TCC 2012). Sampling will, where possible, be undertaken during the first flush of the storm (within one hour of the event).

Rainfall prior to sampling will be monitored at the F0490726 – Kaituna at Marshall Farm Monitoring Station reported on the BOPRC environmental data portal[1].

One round of baseline sampling will be carried out at the Bell Road Drain (B-US and B-DS) and Kopuaroa Canal (K-US and K-DS) sites prior to the completed construction of stormwater management devices.

Annual sampling will commence once the stormwater management devices are operating and discharging to the receiving environment. The northern wetland will be created first to facilitate the initial development stages and therefore sampling will commence at Sites SW-N1, SW-N2, B-US and B-DS. The remaining sites (SW-S1–SW-S4, K-US and K-DS) will be included once the southern wetland has been developed.

Stormwater monitoring will continue until the residential development is completed. Following this, if no water quality effects are detected, the monitoring programme will cease

2.3 Water Quality Sampling

2.3.1 Visual Assessment

A visual assessment from the bankside of the sites located on Bell Road Drain and Kopuaroa Canal (Sites B-US, B-DS, K-US, and K-DS) will be carried out to record any sign of conspicuous oil or grease films; scums or foams, floatable or suspended materials, water colour and odour using the 'Visual Assessment Form' provided in Appendix A. Photographic records will be made if any of the aforementioned are observed.

If the visual assessment shows evidence of any oil/grease films, floatable/suspended materials, unusual water colour or odour, the observer should extend the visual assessment up to 100 m downstream of the receiving environment sampling sites to determine whether the effect is localised or widespread.

2.3.2 Sample Collection and Analysis

A manual grab sample will be collected from each site labelled with site name, date and time, and chilled on ice before transport to a laboratory (accredited by International Accreditation NZ) for analysis. Samples must be delivered to a laboratory within 24 hours. Samples should be analysed by a laboratory for the parameters presented in Table 2 and Table 3.

Samples at the receiving environment sites (Sites B-US, B-DS, K-US and K-DS) should be collected in the centre of the channel within a run or riffle section, rather than a pool (McCarthy & Hamel 2014, NEMS 2019).

[1] https://envdata.boprc.govt.nz/Data/Map/Parameter/Precip%20Total/Interval/Latest

Table 2: Stormwater wetland sites - water quality sampling parameters and consent trigger values.

Parameter	Unit	Consent Trigger Values
pH	pH units	≤6 and ≥9
Total Suspended Solids (TSS)	g/m^3	150 (for <10% AEP events)
Hardness[1]	g/m^3 as $CaCO_3$	-
Dissolved Organic Carbon (DOC)[1]	g/m^3	-
Chemical Oxygen Demand (COD)	g/m^3	250
Copper (dissolved)	µg/L	2.5
Zinc (dissolved)	µg/L	31
Total Petroleum Hydrocarbons (TPH)	g/m^3	15

Note: [1]Required to interpret copper and zinc results.

Table 3: Receiving environment sites - water quality sampling parameters.

Parameter	Unit
pH	pH units
Temperature	ºC
Dissolved oxygen	g/m^3
Electrical Conductivity	µS/cm
Total Suspended Solids	g/m^3
Turbidity	NTU
Hardness	g/m^3 as $CaCO_3$
Dissolved Organic Carbon	g/m^3
Total Biological Oxygen Demand	g/m^3
Total Oxidised Nitrogen	g/m^3
Ammoniacal nitrogen	g/m^3
Total Nitrogen (TN)	g/m^3
Dissolved Reactive Phosphorus	g/m^3
Total Phosphorus	g/m^3
Copper – total and dissolved	g/m^3
Iron - total and dissolved	g/m^3
Lead - total and dissolved	g/m^3
Zinc - total and dissolved	g/m^3
Total Petroleum Hydrocarbons	g/m^3
Enterococci	CFU/100ml
Escherichia coli	CFU/100ml

3.0 Reporting

An annual report will be prepared and submitted to BOPRC within three months of the last annual sampling date. The report will include:

- A description of the sites and study methods.
- Analysis of the water quality results.
- Interpretation of results including comparison with past surveys and relevant consent trigger limits and receiving environment guideline values and targets.
- Recommendations for changes, if any are identified, to the monitoring programme.

Upon completion and submission of each annual report a suitably qualified and experienced professional will determine whether additional monitoring is required.

4.0 References

BOPRC 2012. Stormwater Management Guidelines for the Bay of Plenty region. Guideline 2012/01. April 2012 (updated as at December 2015).

Maven 2026. Bell Road Limited Partnership Wairakei South Bell Road Pāpāmoa. Stormwater Management Plan.

McCarthy D.T. and Hamel D. 2014. Quality assurance/quality control in stormwater sampling. In: Quality Assurance & Quality Control of Environmental Field Sampling, pp 98-127.

NEMS 2019. Water Quality Part 2 of 4: Sampling, Measuring, Processing and Archiving of Discrete River Water Quality Data. National Environmental Standards. 85p.

Tauranga City 2012. Monitoring Plan for Tauranga City Council Comprehensive Stormwater Consents.

APPENDIX A

Visual Assessment Form

Visual Assessment Form

CLIENT/REF:		SITE CODE:
Date:	Time:	Observer:
Rainfall duration/intensity:	☐ None ☐ Light	☐ Moderate ☐ Heavy
Time since rain:	☐ Within 1 hr ☐ Within 2 hrs	☐ Other:
VISUAL ASSESSMENT		
Water appearance	☐ Clear ☐ Murky ☐ Cloudy ☐ Unusual colour ☐ Other (describe):	
Odour	☐ None ☐ Sewage ☐ Sulphur ☐ Chlorine/chemical ☐ Petroleum/solvent ☐ Organic (including dead things) ☐ Other (describe):	
Water surface	☐ Oily film/sheen/globs ☐ Slime/algal bloom ☐ Scum/foam/froth ☐ Other (describe):	
Stream bed	☐ Sediment covering ☐ Slime and/or scum ☐ Other (describe):	
Other Obvious Indicators of Stormwater Pollution	☐ No ☐ Yes (describe):	
NOTES		