



WASTEWATER MODELLING – INITIAL STAGES

MT WELCOME

TO	Pukerua Property Group LP	DATE	28 August 2026
PROJECT NAME	Mt Welcome	ENVELOPE REF	1753-02
ATTENTION	William Dorset	FROM	Kyle Dirse
EMAIL ADDRESS	william.dorset@classicdevelopments.co.nz		

1.0 INTRODUCTION

This memorandum updates the wastewater modelling and overflow assessment for the initial stages of the Mt Welcome development. It addresses Tiaki Wai's updated model and should be read alongside Envelope's Wastewater Modelling Report. Its purpose is to demonstrate that the initial stages can proceed while the long-term solution is confirmed through consent conditions using the final 2026 Porirua SPA ICM model.

The lodged design was initially assessed using the 2019 "Porirua WWTP" ICM model and subsequently updated using the 2023 "Porirua Simplified" ICM model. Since lodgement:

- Tiaki Wai has completed a draft network-wide performance assessment of the Porirua wastewater system (May 2026). This covers the network from Pukerua Bay to the wastewater treatment plant, including the network downstream of Envelope's previous model extent.
- On 19 August 2026, Tiaki Wai provided Envelope with an updated network model. The key improvement is the inclusion of the engineered overflow at Pump Station 13 (PS13) in Plimmerton, which receives wastewater from the Pukerua Bay catchment, including Mt Welcome. A fully calibrated model is expected in the coming months.

Envelope and Tiaki Wai discussed an interim assessment of the initial Mt Welcome stages discharging by gravity. The current modelling provides confidence that these stages can be serviced ahead of bulk network upgrades or on-site detention, subject to sufficient space being retained within the PS1 reserve lot. Final upgrade and storage requirements will be confirmed at detailed design through consent conditions using Tiaki Wai's final Porirua wastewater model when it has been completed.

2.0 INITIAL STAGE ASSESSMENT

The staging assessment uses two model cases:

- Base: the existing network with the 2016 population scenario.
- Adjusted CUR: the 2027 current scenario, comprising the existing network, committed and consented development, 220 Plimmerton Farms lots and an additional 200 Mt Welcome lots added for this assessment.

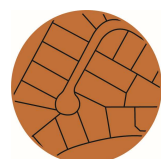
The SPA's longer-term 2036-2076 scenarios are not relied on for this staging assessment. These scenarios will be adopted once the network model is finalised.

3.0 DEVELOPMENT ASSUMPTIONS

The relevant greenfield development assumptions in SPA Appendix B, Table B-1 are:

- Mt Welcome is shown as nil lots until 2046, when 950 lots are included.
- Muri Road Stage 1 (83 lots) is included from 2036. Stage 2 is included from 2046 at 100 lots, increasing to 200 lots by 2056.
- Plimmerton Farms Stage 1 (220 lots) is included in the 2027 scenario.

The SPA therefore does not test Mt Welcome's initial stages within the current 2027 horizon. The adjusted CUR addresses that gap by adding the first 100 and 200 Mt Welcome lots.



4.0 PS13 AND DOWNSTREAM NETWORK

PS13 has an adopted capacity of 68 L/s, reduced from tested pump rates of 81-88 L/s. Its engineered overflow is now represented in the updated model.

Downstream of Envelope's model cut-off at Paremata Bridge, the SPA identifies existing network capacity and containment issues. These are wider network matters being progressed by Tiaki Wai through the Containment Standard Assessment and future modelling.

Envelope's assessment considers the network between the Mt Welcome discharge point and PS13. Assessment of downstream pump stations and their interaction across the wider network is the responsibility of Tiaki Wai as the network operator and is outside the scope of the Applicant's assessment.

5.0 MODEL PARAMETERS & LIMITATIONS

The SPA is a Revision 1 draft issued for client comment and has not been finalised. HAL notes that uncontrolled spill results are fictitious until confirmed against reported incidents. The SPA also assesses normal operating conditions only and does not include blockage or pump-failure scenarios.

The model parameters used for the initial staging capacity check are as follows:

Parameter	Adopted basis
Model	Simplified NGA model issued 19 August 2026, including the PS13 engineered overflow.
Design Storms	Climate-adjusted events from SPA Table 10-1: 6-month ARI (64.0 mm), 1-year ARI (93.4 mm) and 2-year ARI (122.5 mm).
Base Scenario	2016 Base scenario supplied with the model, including committed projects embedded in that scenario.
Adjusted Current Scenario (CUR)	2027 current scenario based on SPA Appendix B, Table B-1, with 200 Mt Welcome lots added. This case therefore includes 200 Mt Welcome lots and 220 Plimmerton Farms lots.
Mt Welcome discharge	Gravity discharge, with no PS1 detention.
Assessment extent	Network between the Mt Welcome discharge point and PS13. The network downstream of PS13 was not assessed in this staging check.
PS13 discharge	Limited to the adopted pump capacity of 68 L/s.

6.0 INITIAL STAGING RESULTS

Below are the peak flows and the accumulated volume at the PS13 spillway (engineered overflow) for each wet weather flow (WWF) design storm.

As noted above, the BASE scenario is from 2016, with the CUR scenario the 2027 scenario adjusted to include 100 and 200 lots from Mt Welcome.

Table 1. PS13 spillway – peak flow and accumulated volume (100 lots)

Design storm	Base peak (L/s)	Adjusted CUR peak (L/s)	Base volume (m³)	Adjusted CUR volume (m³)	Change in volume
6-month ARI	0.000	0.000	0.000	0.000	Nil
1-year ARI	0.000	0.000	0.000	0.000	Nil
2-year ARI	12.047	14.484	109.946	165.097	+58.15 m³ (+54%)



Table 2. PS13 spillway – peak flow and accumulated volume (200 lots)

Design storm	Base peak (L/s)	Adjusted CUR peak (L/s)	Base volume (m³)	Adjusted CUR volume (m³)	Change in volume
6-month ARI	0.000	0.000	0.000	0.000	Nil
1-year ARI	0.000	4.978	0.000	23.825	+23.825m³
2-year ARI	12.047	16.635	109.946	211.865	+101.9 m³ (+93%)

The results show:

- No spill occurs under the 6-month ARI containment-standard event for either 100 or 200 lots.
- Under the 1-year ARI event, no spill occurs for 100 lots, while 200 lots produce a 23.825 m³ spill.
- No new overflow locations occur between Mt Welcome and PS13.

7.0 CONCLUSION

The modelling supports gravity servicing of the first 200 Mt Welcome lots without PS1 detention. The initial staging scenario produces no spill in the 6-month containment-standard event and no material worsening of the existing PS13 engineered overflow in the larger design events.

Further model development and assessment of later development scenarios should be secured through consent conditions and progressed with Tiaki Wai as the NGA wastewater model is updated and calibrated. The parties have generally agreed that an engineering solution is available.

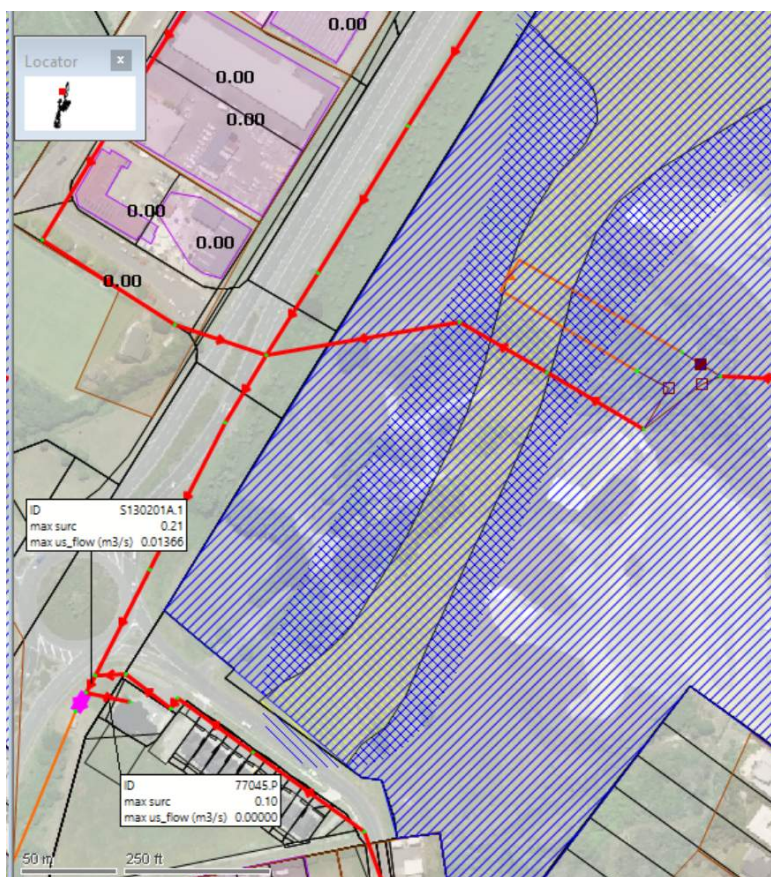
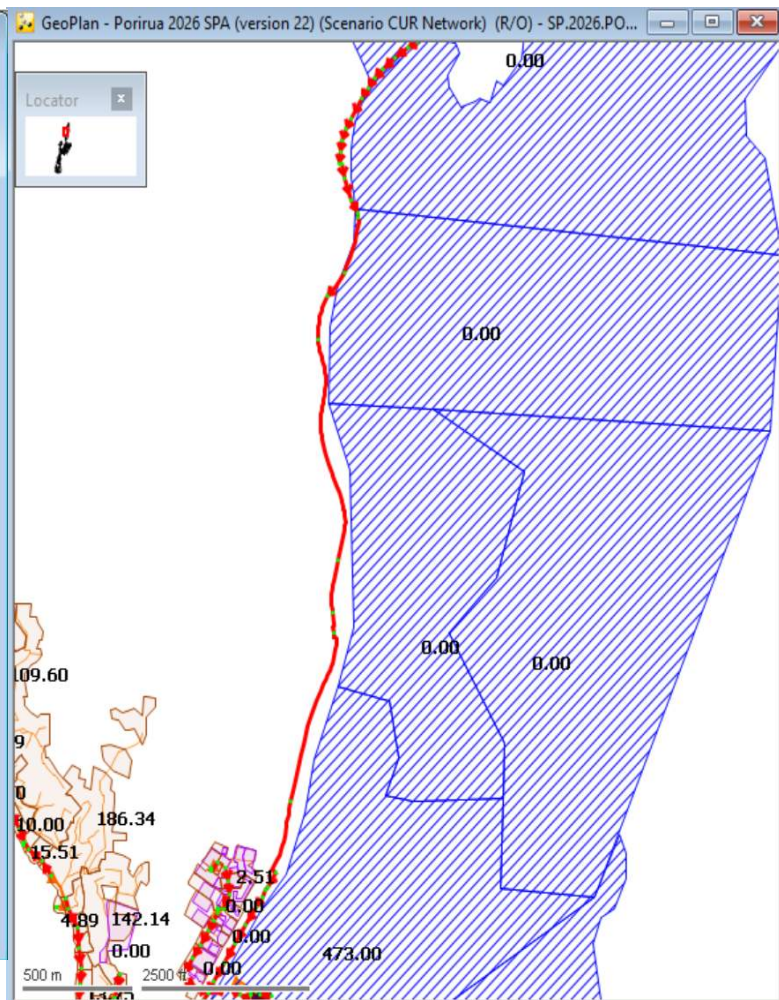
Before development proceeds beyond 200 Mt Welcome lots, the then-current NGA model should be re-run. If that assessment identifies a material worsening of overflow performance at PS13 or elsewhere in the assessed network, the necessary bulk network upgrades and/or an on-site detention solution should be implemented before further stages proceed.

The model results are provided in **Appendix A**.

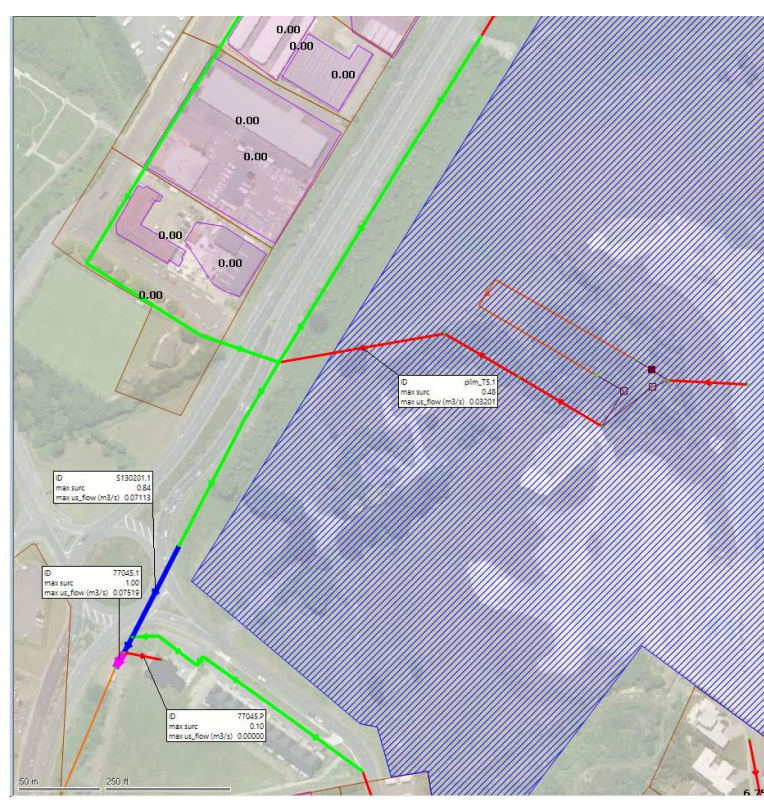
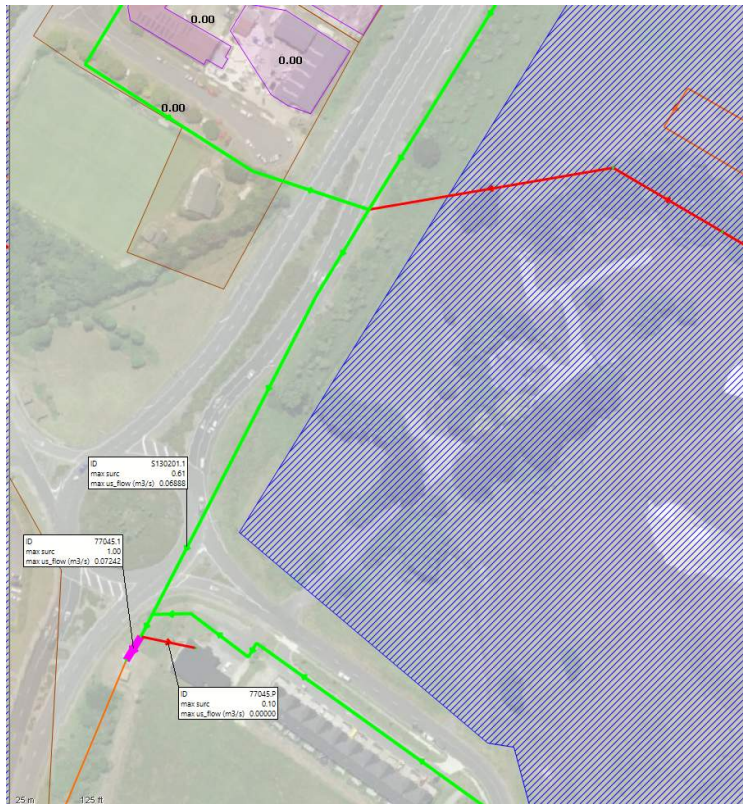
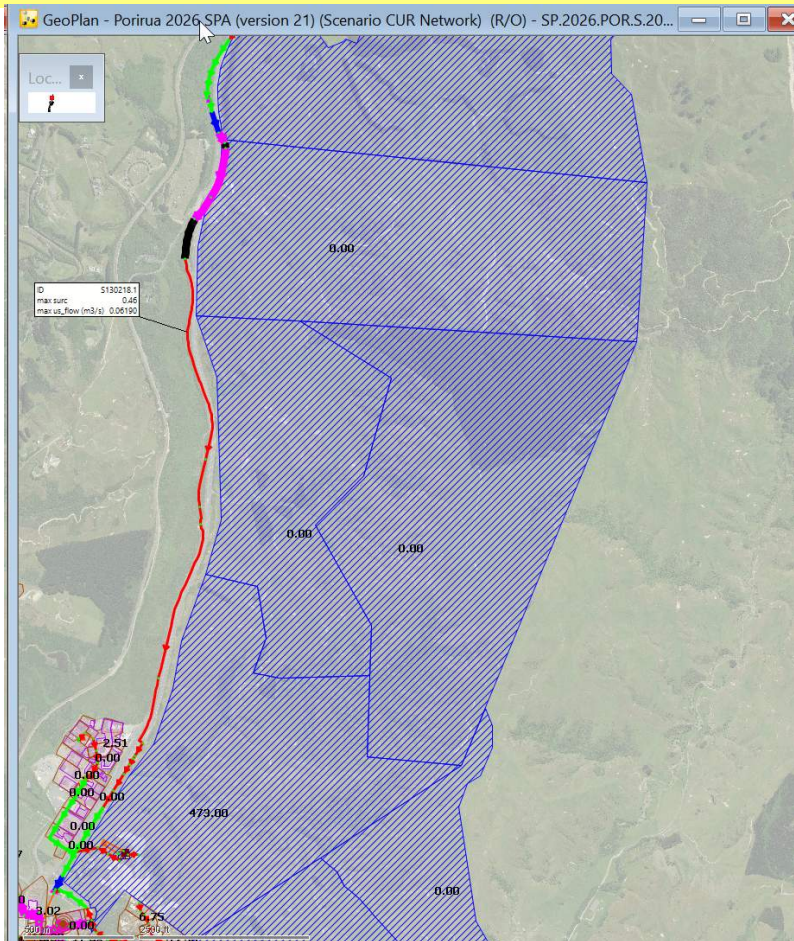
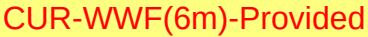
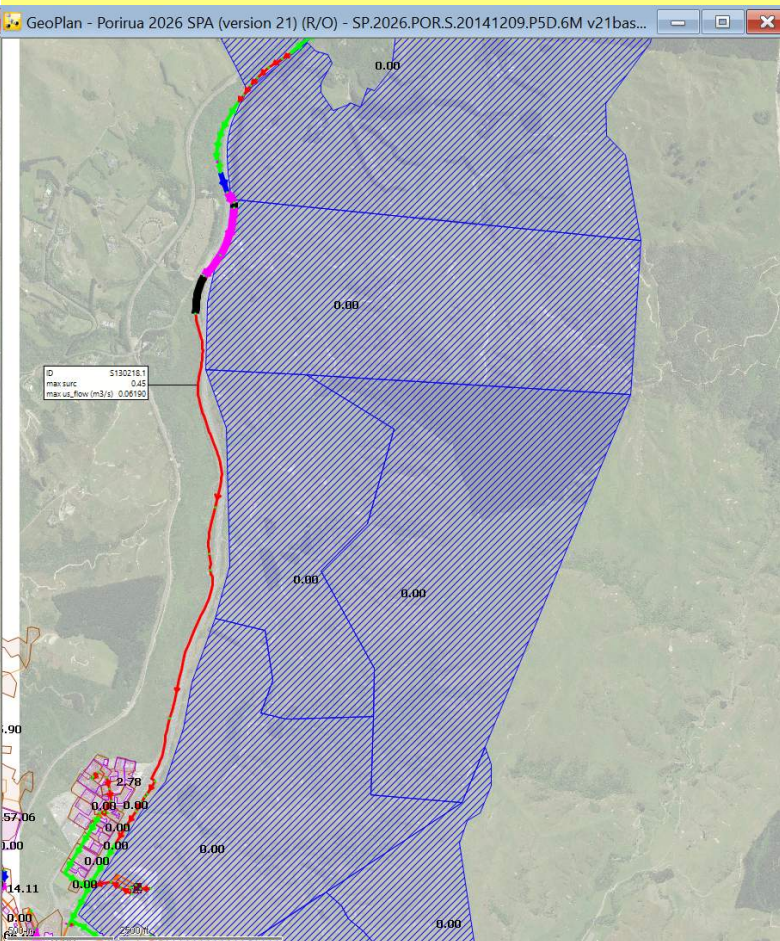




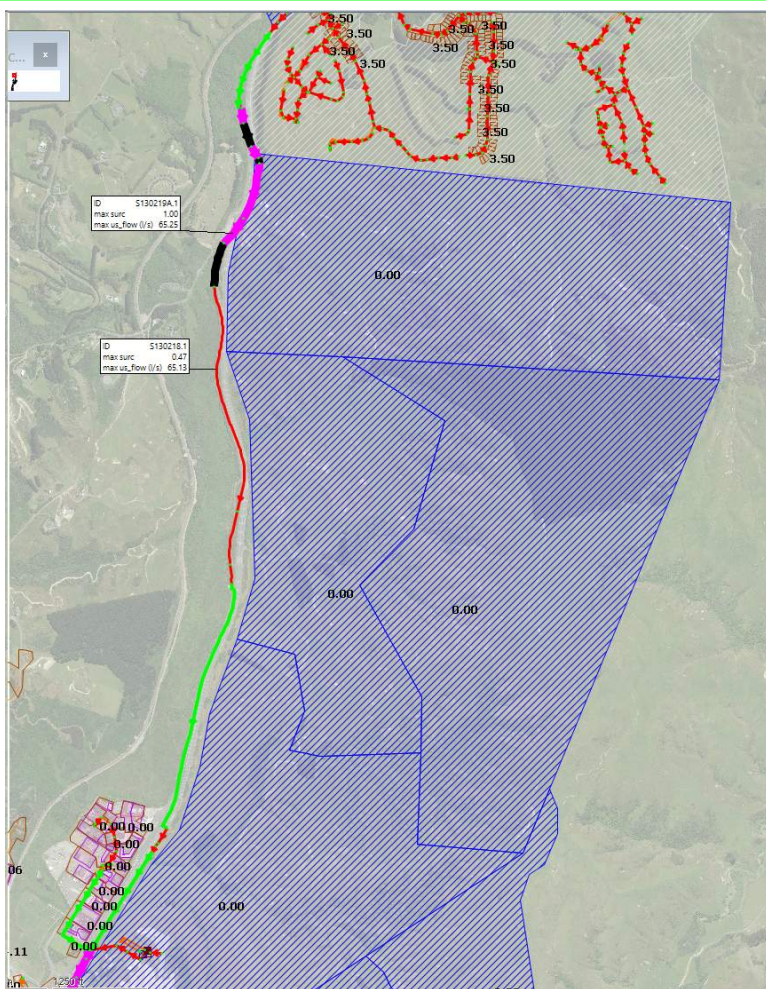
CUR-DWF-Provided



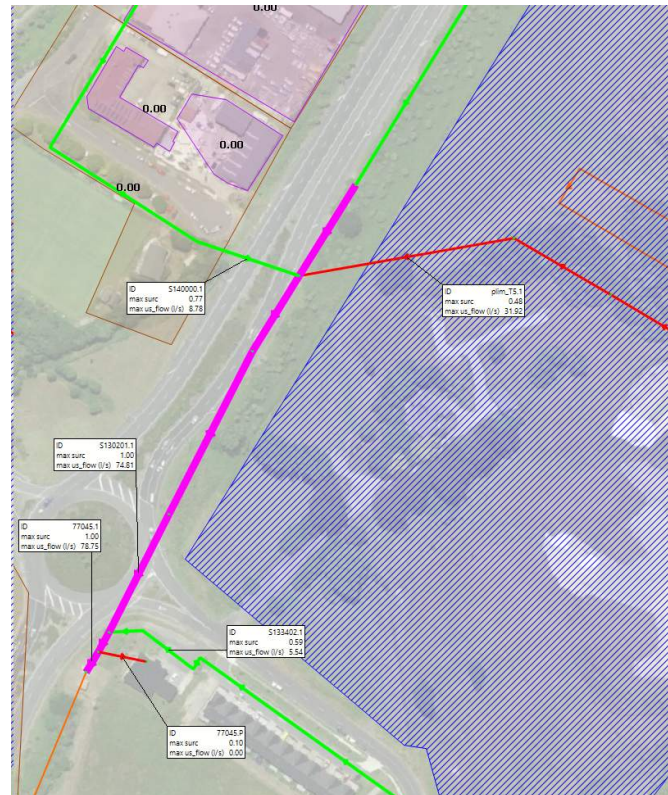
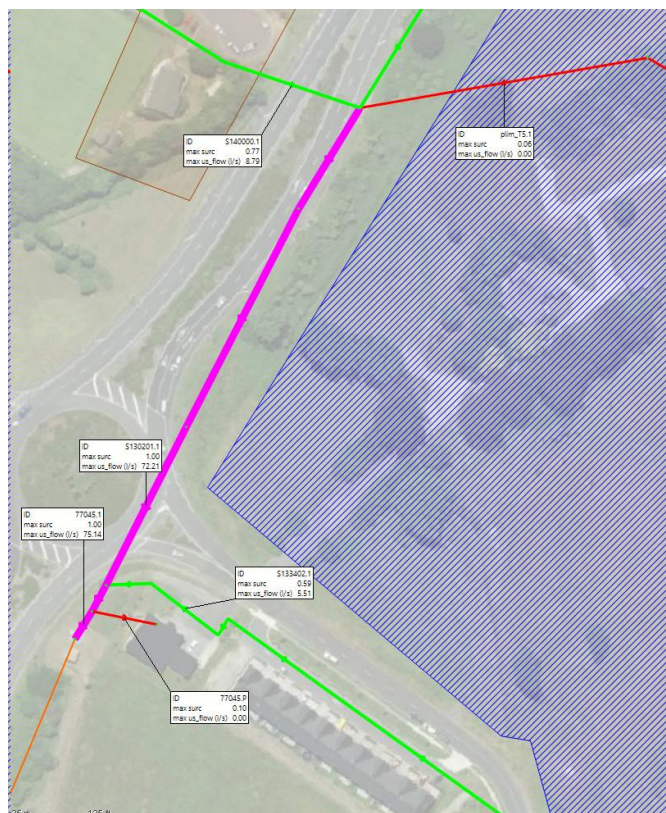
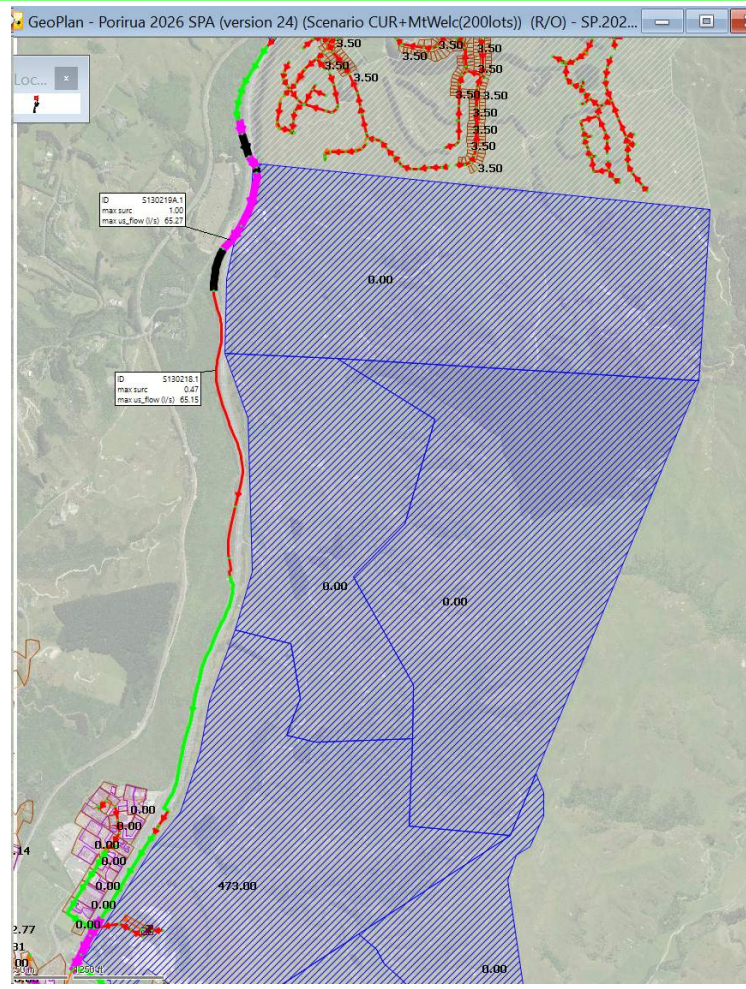
Base-WWF(6m)-Provided



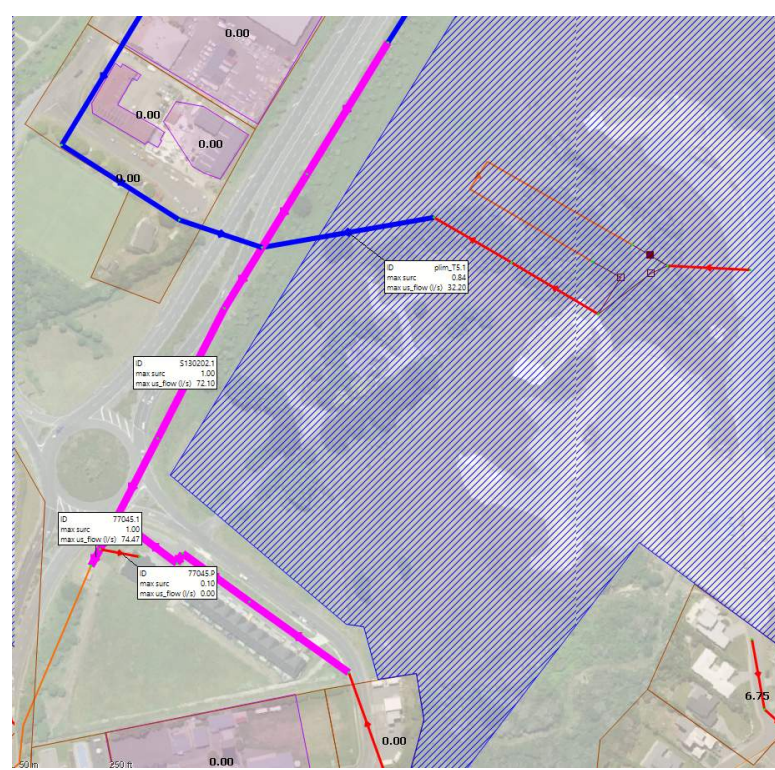
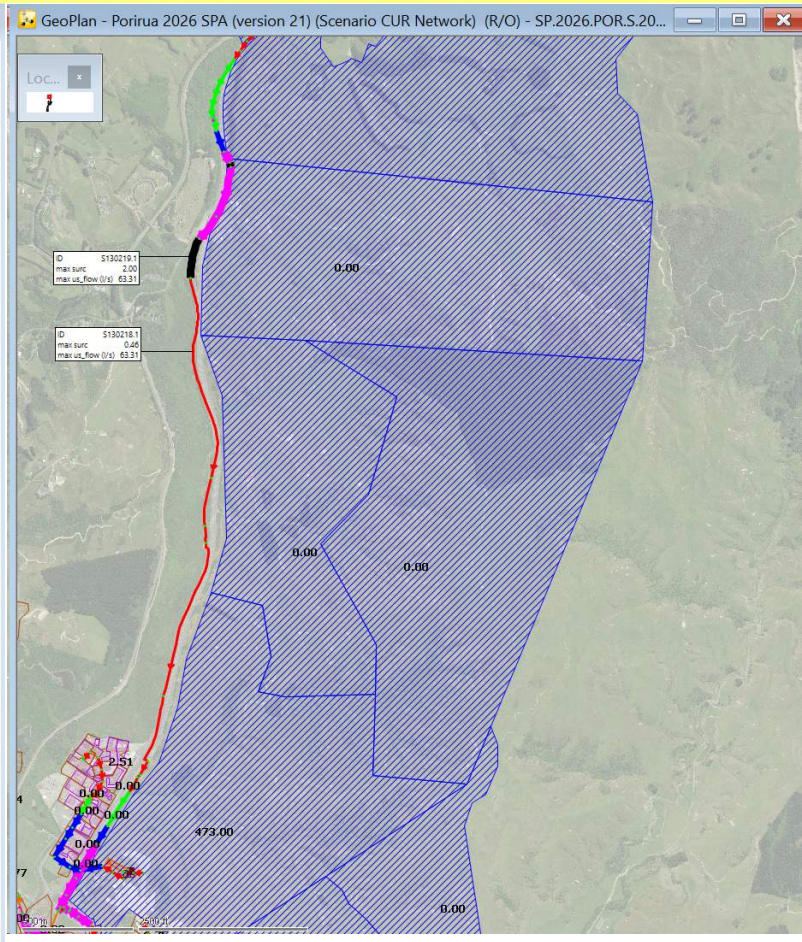
Base+MtWelc(200lots)-WWF(6m)



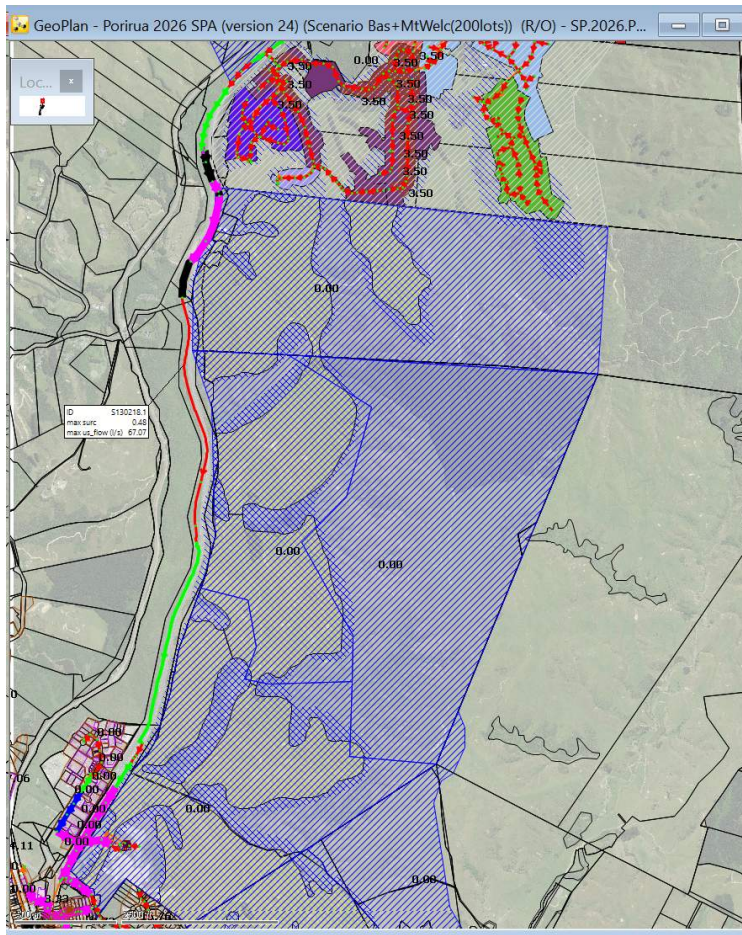
CUR+MtWelc(200lots)-WWF(6m)



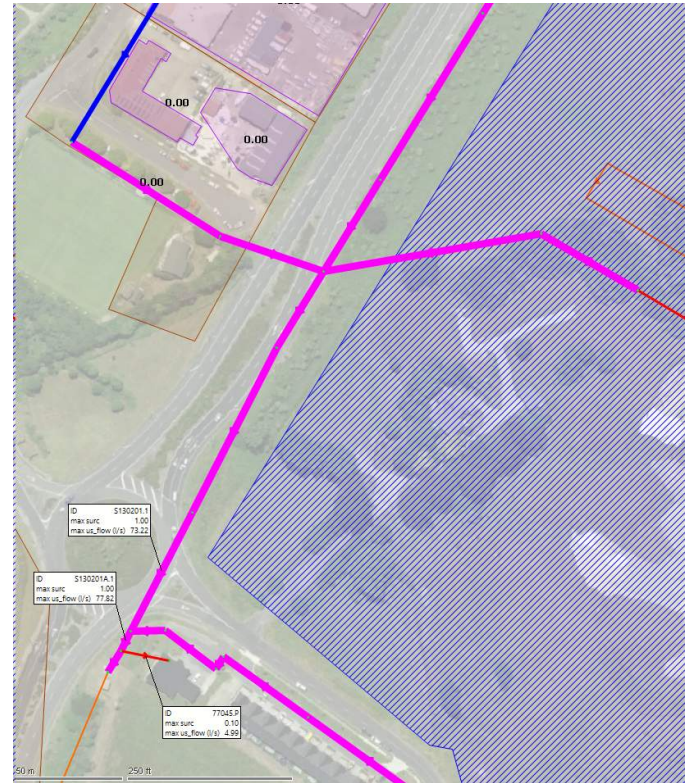
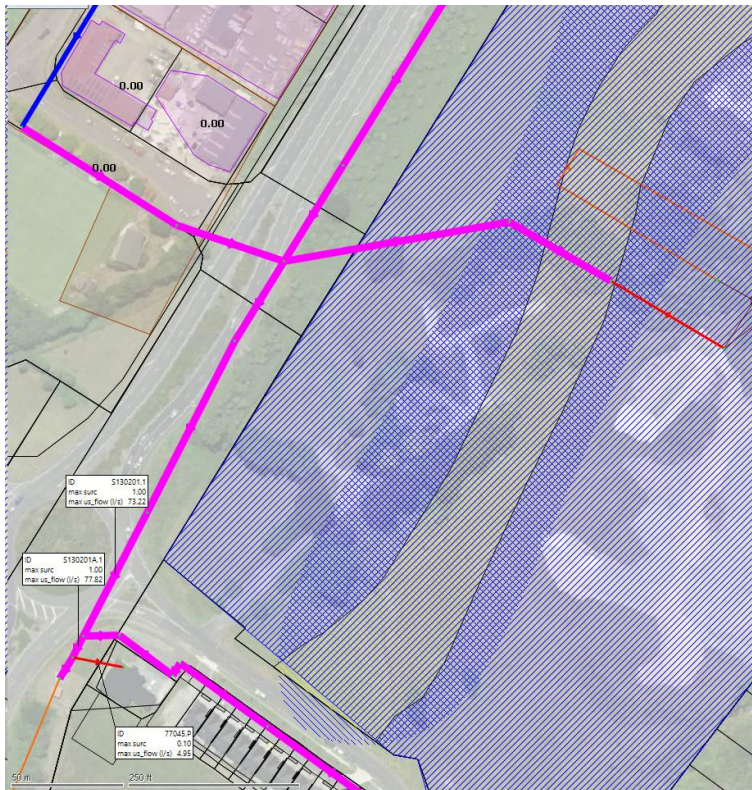
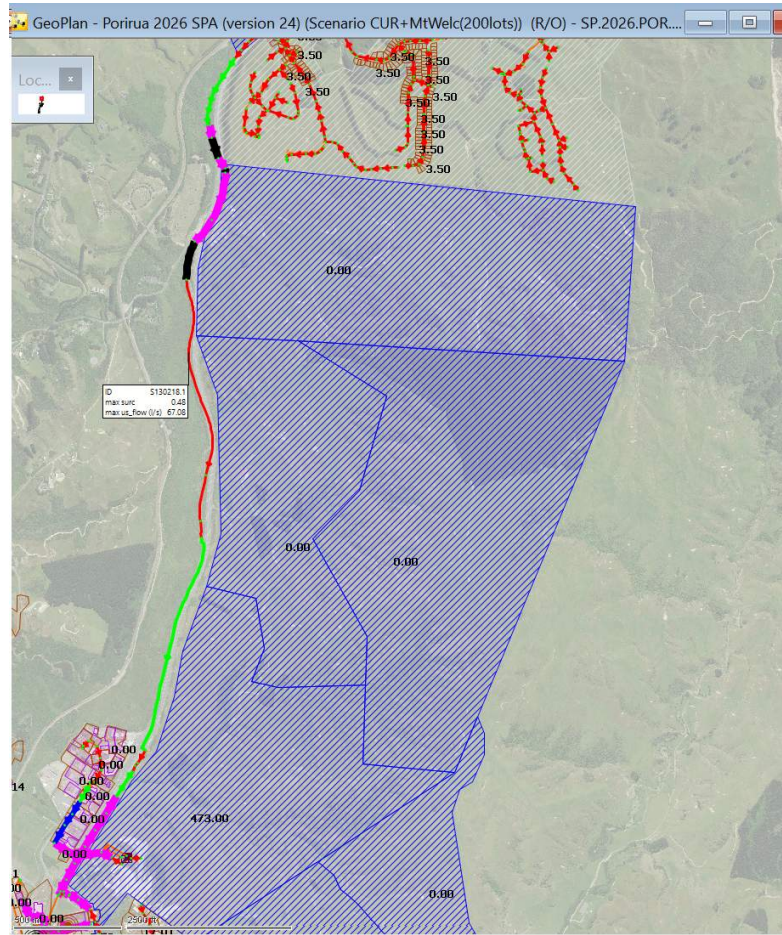
CUR-WWF(1yr)-Provided



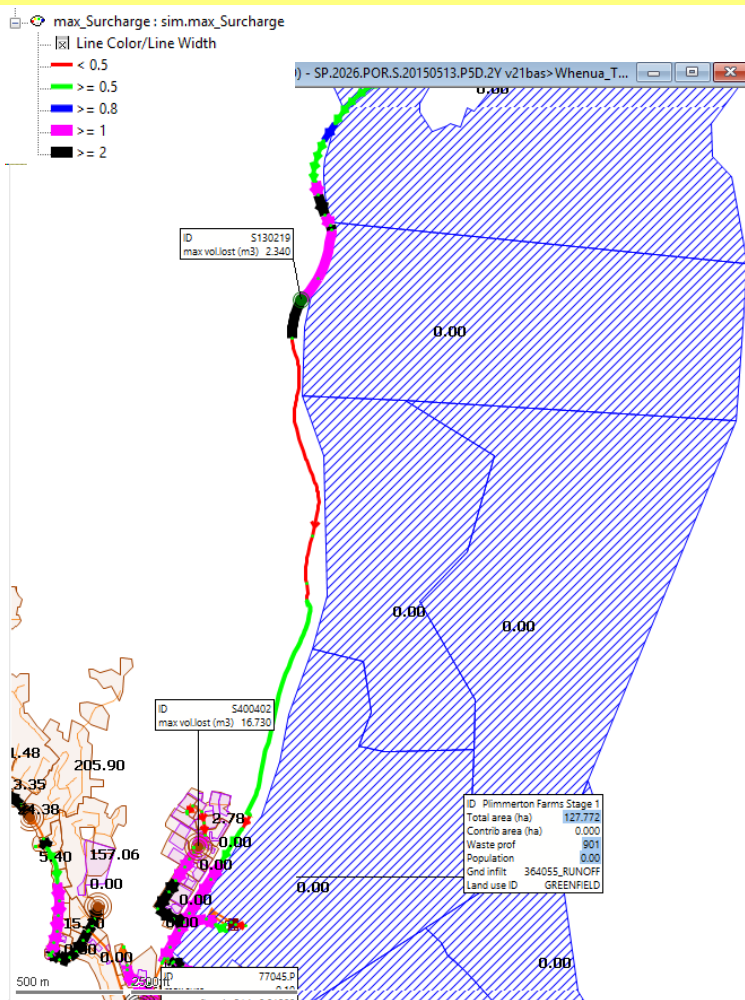
Base+MtWelc(200lots)-WWF(1yr)



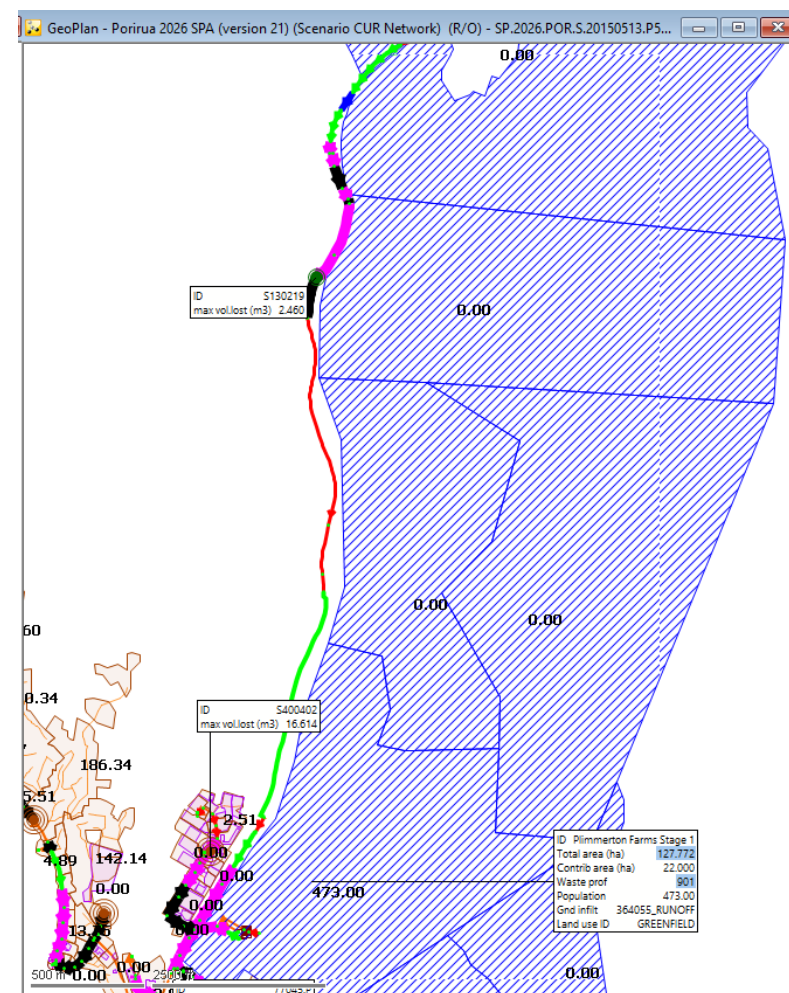
CUR+MtWelc(200lots)-WWF(1yr)



Base-WWF(2yr)-Provided



CUR-WWF(2yr)-Provided



CUR+MtWelc(200lots)-WWF(2yr)

