19 November 2024
Job No: 1017033.2003

Auckland Council
Private Bag 92300
Victoria Street West
Auckland 1142

Attention: Leighton Gillespie

Dear Leighton

Te Ararata Blue Green Networks - Walmsley Bridge
BUN60440066 – Clarification

1 Purpose

The following additional information has been provided as requested on your email dated 14th November 2024. Following our conversations with Phil Jaggard on 15 November the following has been agreed. Tonkin & Taylor Ltd (T+T) will provide the following additional information for the TP108 1% AEP 24 hour storm with 3.8 degree allowance for climate change (~250mm rainfall) with and without the preferred bridge option:

- Duplicate Table 2.2 from the effects assessment with Water Levels for these 2 scenarios.
- Duplicate Figure 2.6.
- Flood extents map.

2 Hydraulic Model

Please note that these hydraulic model results are reporting on a similar bridge design to the consent design, but is not exactly the same. The results are considered a good indication of likely reduction from the proposed design[1]. The Walmsley Bridge model reference reported on in this letter is *MPDXXCC001AEPTWX_B2024_WB06* where XX and X refer to different scenario inputs.

2.1.1 Model Results

The floodplains associated with the 24 hour 1% AEP pre-development and post-development scenarios are presented in Figure 2.1 and Figure 2.2 respectively and are suitable for the effects assessment. Figure 2.3 shows the water level difference between the pre-development and post-development scenarios. Changes in flood levels along Te Ararata Creek are shown in Figure 2.4 and summarised at key locations in Table 2.1[2].

[1] The proposed design model reference for further information: MPDXXCC001AEPTWX_B2024_WB08 as reported on in the Te Ararata Creek - Walmsley Rd Bridge Flood Hazard and Risk Assessment.
[2] The results are shown for the 247mm rainfall (TP108 3.8°C climate change), 24-hour rainfall scenario and has been requested on 14th November 2024. Due to the evolving nature of extreme rainfall analysis approaches and statistical

Table 2.1: Comparison of water level results at key locations along Te Ararata Creek (mRL NZVD2016)

Location	Baseline water level (mRL)	Post-development water level (mRL)
Elmdon Culvert	4.48	4.38
Walmsley Culvert	4.06	3.94
SH20 Off ramp Bridge (Coronation Road)	3.22	3.25
SH20 Bridge	3.09	3.11
Mahunga Culvert	2.94	2.96

The results show the small changes in floodplain and flood levels as a result of the bridge widening, noting that the works will completely remove the blockage risk.

There is up to 100 mm reduction in water level upstream of Walmsley Road bridge and 20 – 30 mm increase downstream all within Council reserve. No private property is impacted and SH20 is not overtopped.

outputs, there are a range of credible 24-hour estimates reported on in the remainder of the Blue Green Networks projects.

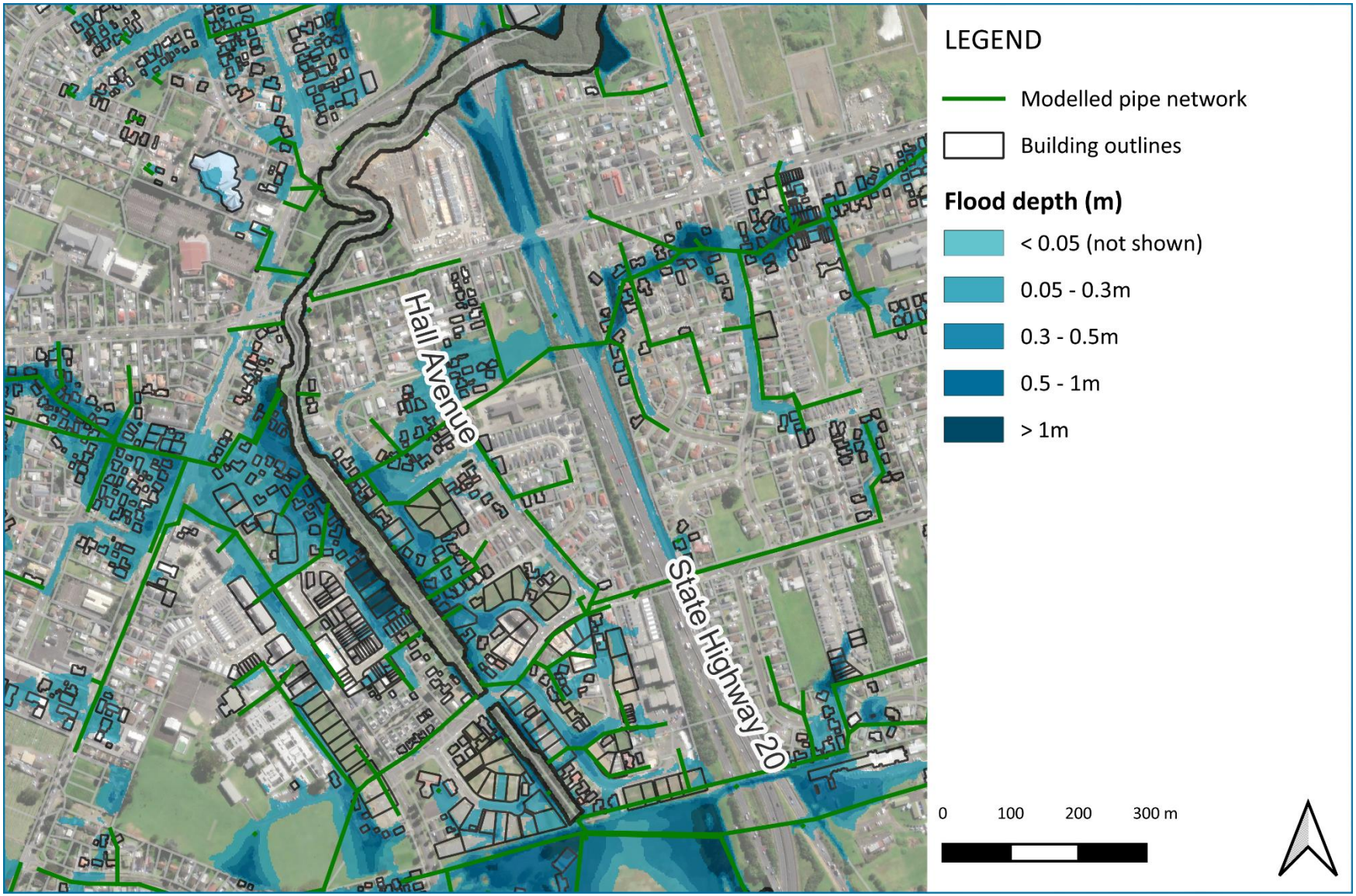

Figure 2.1: 1% AEP pre-development flood depth (TP108 3.8°C climate change 247 mm 24 hour rainfall depth).

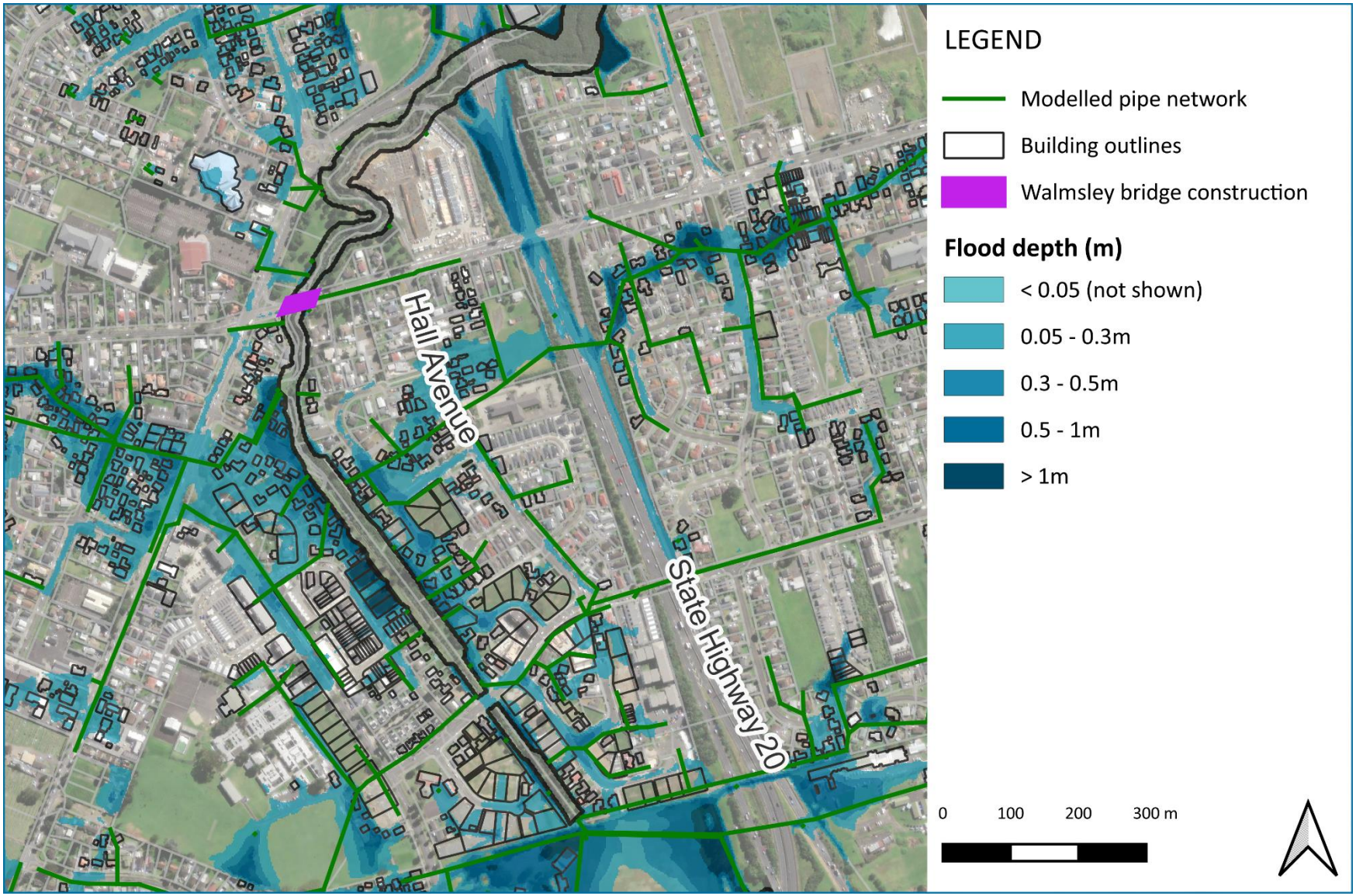

Figure 2.2: 1% AEP post-development flood depth (TP108 3.8°C climate change 247 mm 24 hour rainfall depth).

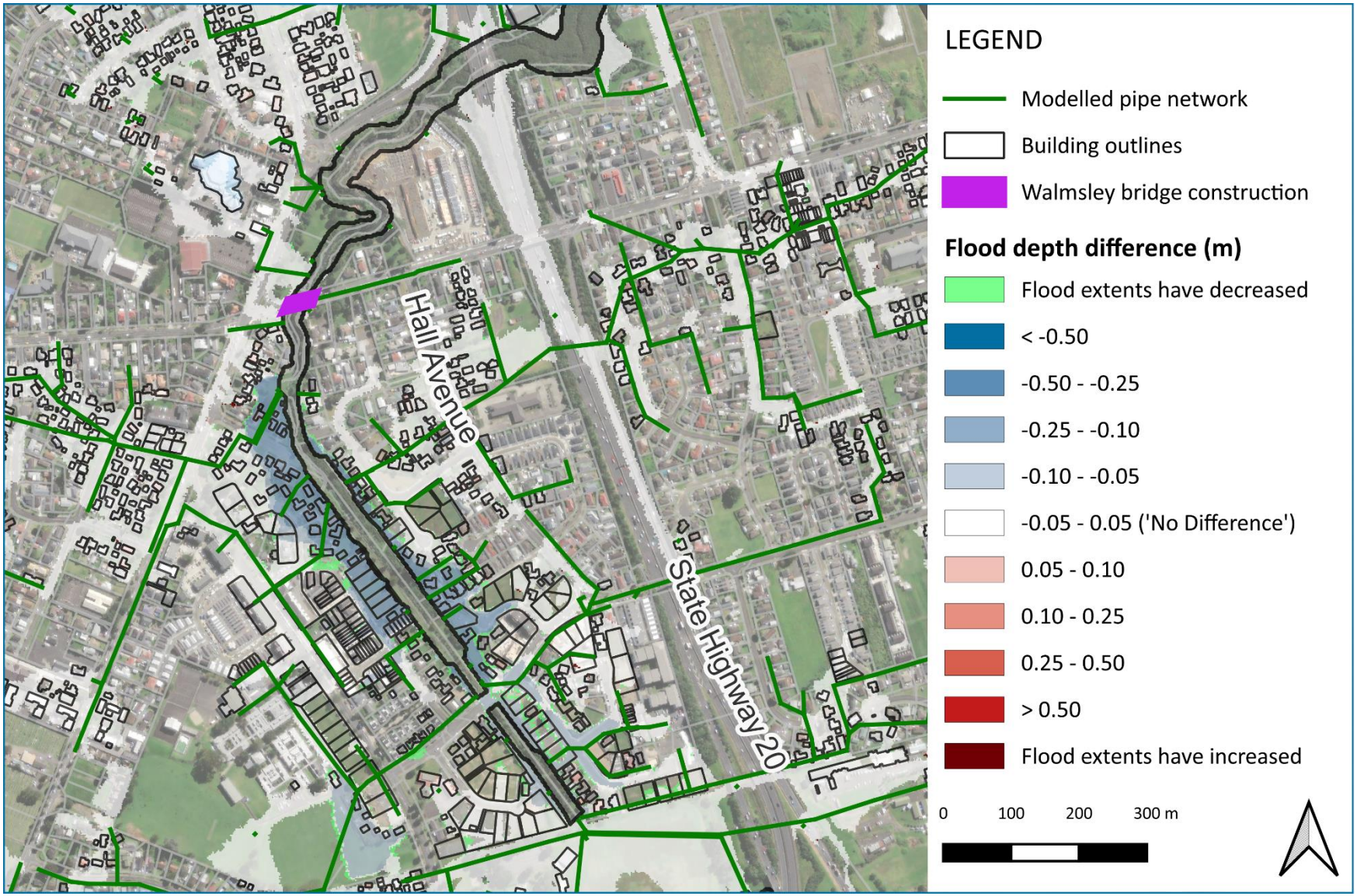

Figure 2.3: 1% AEP Flood depth difference (TP108 3.8°C climate change 247 mm 24 hour rainfall depth post-development minus pre-development).

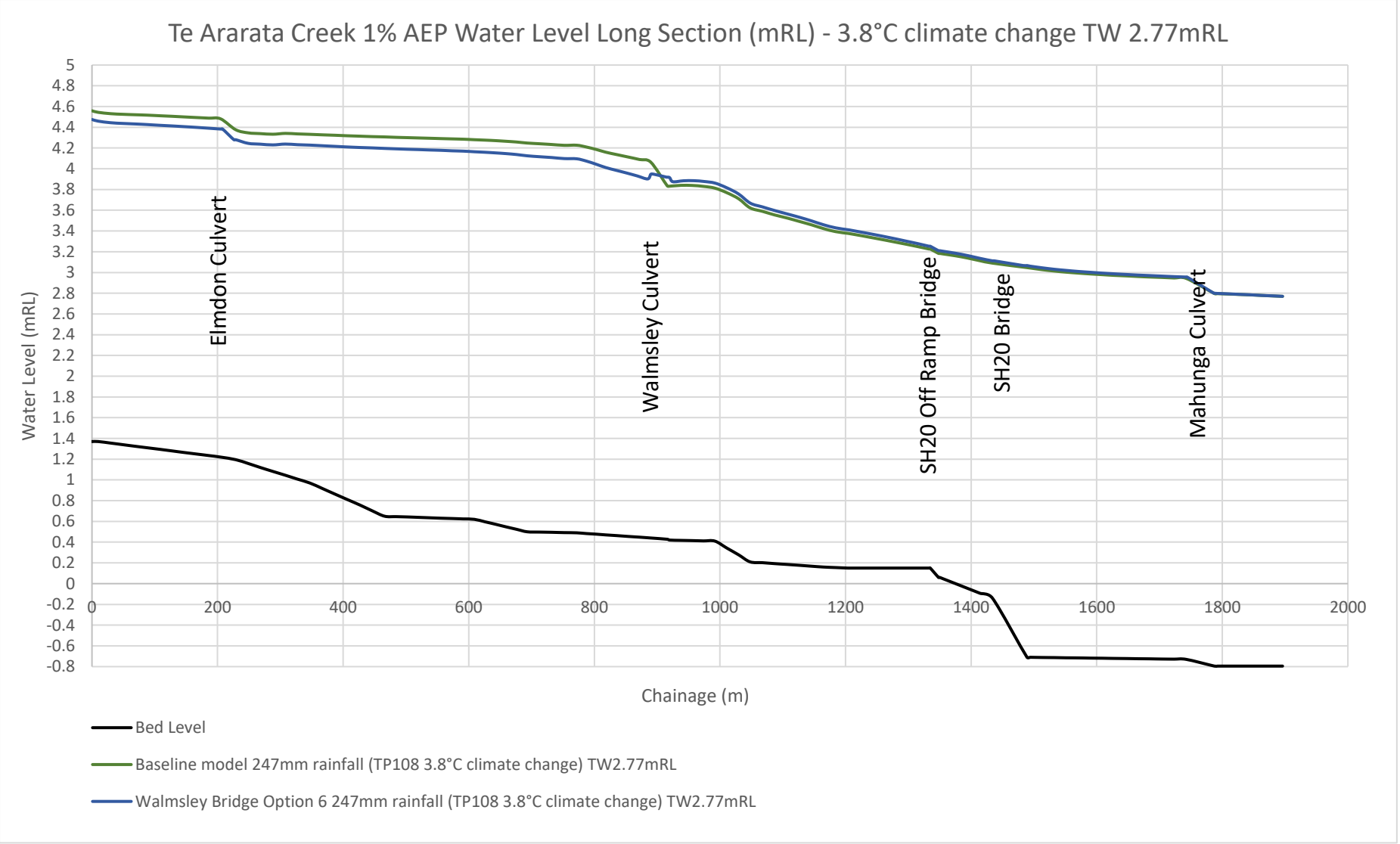

Figure 2.4: Te Ararata Creek flood levels for the 1% AEP pre-development and post-development scenarios (TP108 3.8°C climate change 247 mm 24 hour rainfall depth post-development minus pre-development).

Yours sincerely,

Tonkin & Taylor Ltd

Report prepared by:

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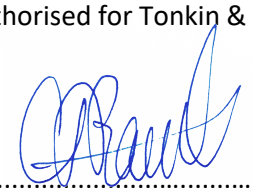
Nico Flores Lim
Water Resources Engineer

Authorised for Tonkin & Taylor Ltd by:



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Chris Bauld
Project Director

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