



Memorandum

To	Ian Mayhew
From	Amanda Kirk
Office	Whakatāne
Date	30 April 2024
File/Ref	3-AWD05.47
Subject	Tauriko West Option 5 – Contributions to Modelled Water Level Increase

This memorandum has been prepared to assess relative contributions to the modelled water level increase for the Tauriko West development based on the landform (Option 5) and land use change. Details of the modelling scenarios used in this assessment, including the climate change scenarios applied, are set out in Table 1 below.

Table 1: Modelling Scenarios

Scenario	Rainfall event	Tidal condition	Development	Climate change scenario
Base scenario 1% AEP	1% AEP	5% AEP	Pre-development	RCP8.5 (2130) river inflow RCP8.5+ (2130) rainfall 1.6m sea level rise
Development scenario 1% AEP	1% AEP	5% AEP	Post-development with Landform 5	RCP8.5 (2130) river inflow RCP8.5+ (2130) rainfall 1.6m sea level rise
Landform 5 Only scenario 1% AEP	1% AEP	5% AEP	Landform 5 only, no change to imperviousness	RCP8.5 (2130) river inflow RCP8.5+ (2130) rainfall 1.6m sea level rise

It is noted that the modelling results presented in this memo are based on an earlier version of the Wairoa catchment base model (v025). Further updates have since been made to the model (currently v026) however, the changes were minor and are expected to have a negligible impact on the findings of this memo.

Modelling results are shown in Figures 1 and 2 on the following page:

- Figure 1: Increase in water level between the base scenario and the Tauriko West Option 5 development scenario (including increased imperviousness to represent the proposed development)
- Figure 2: Increase in water level between the base scenario and the Tauriko West Option 5 landform only scenario (no change to imperviousness)

As shown in the figures below, the increase in water level is marginally higher in Figure 1 than Figure 2. Table 2 provides a summary of the differences in water level increase at various points within the catchment.

The modelling results indicate that the increase in water level is largely driven by landform 5 causing displacement of existing floodplain storage volumes (shown by the landform only option in Figure 2). Increased stormwater discharge due to the change in land use (shown by the difference between Figure 1 and Figure 2) has a relatively small contribution to the total water level increase, generally between 8-16 mm as set out in Table 2.

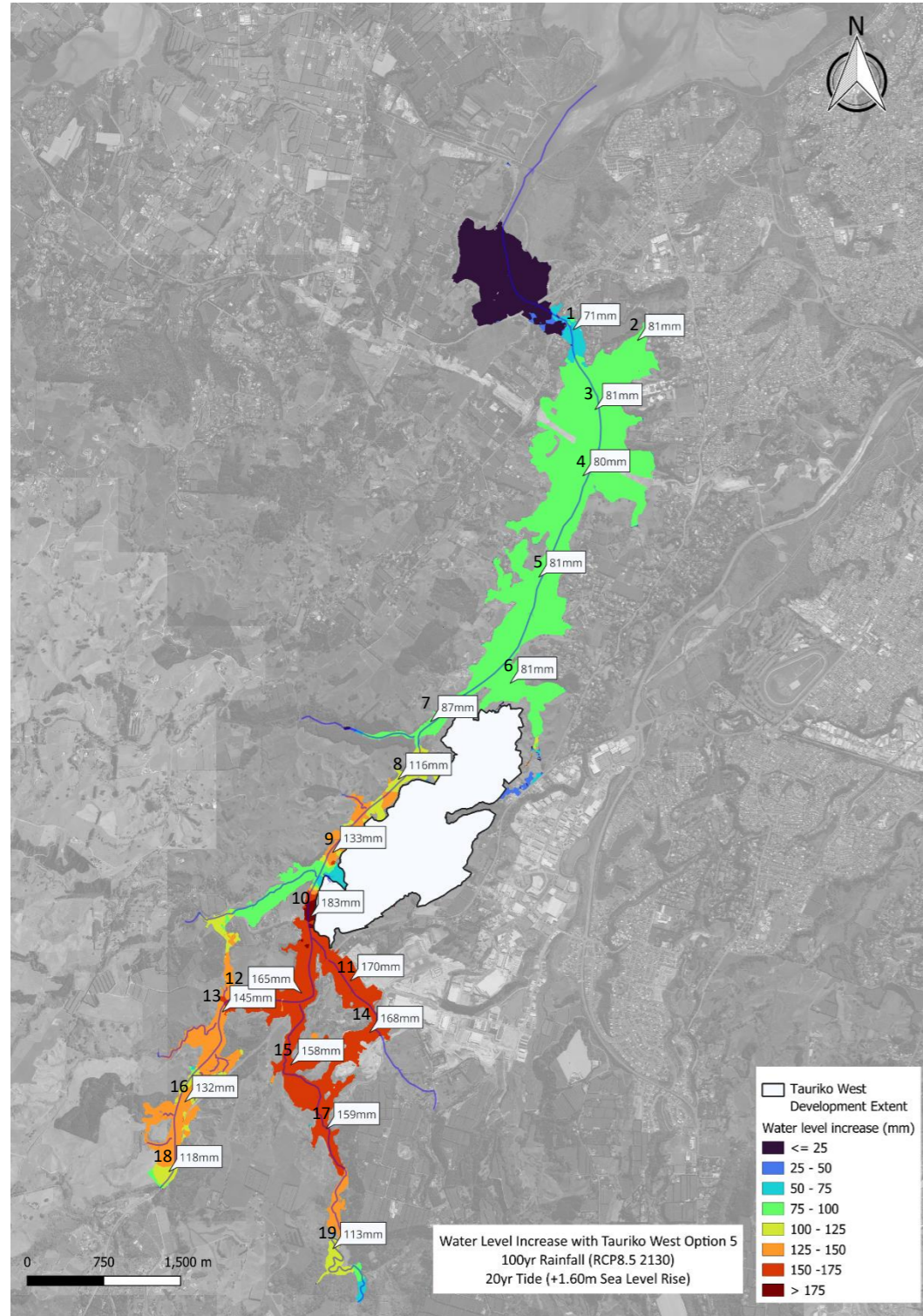


Figure 1: Water Level Increase with Tauriko West Option 5 (100yr rainfall, 20yr tide)

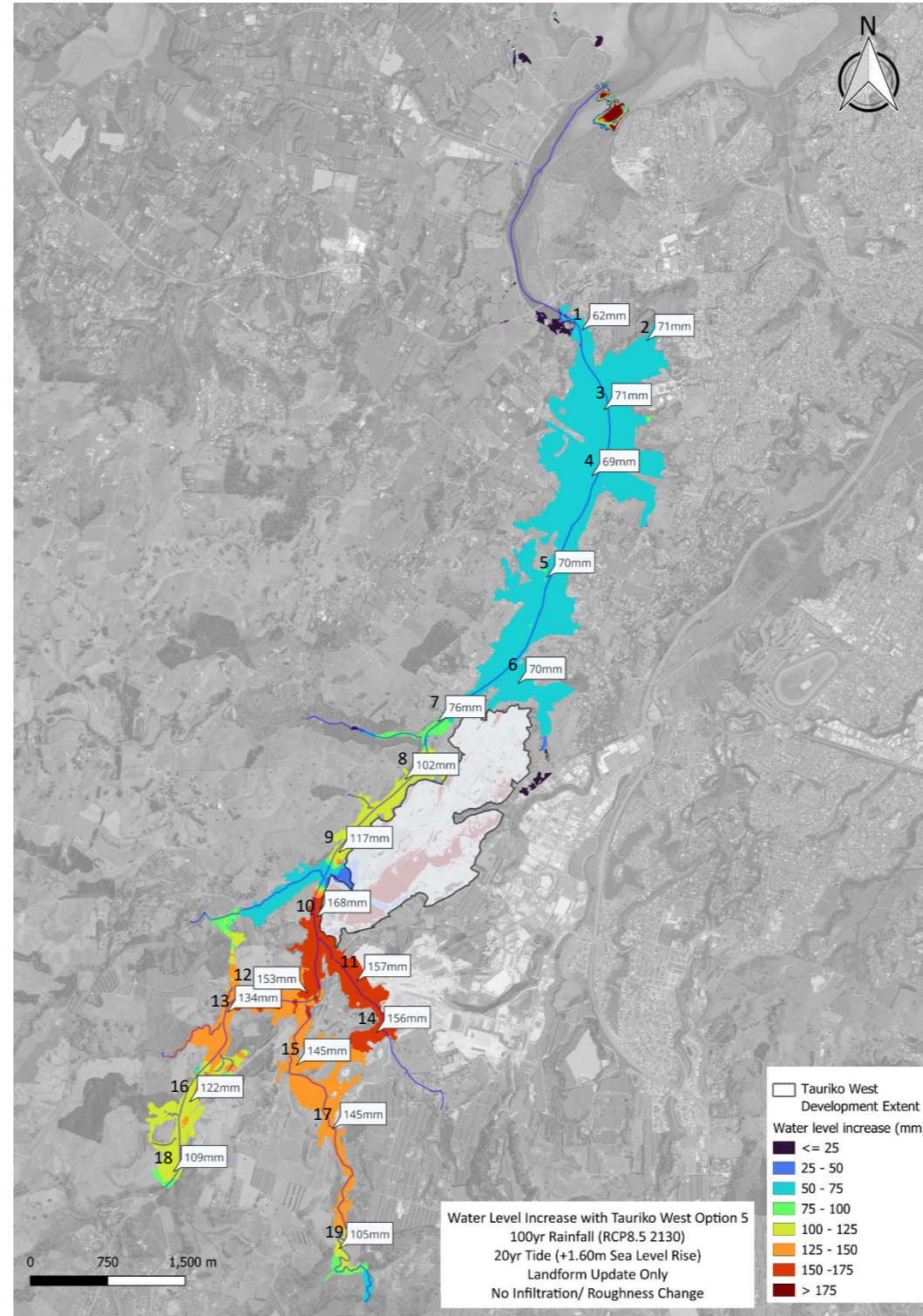


Figure 2: Water Level Increase with Tauriko West Option 5 Landform Only (100yr rainfall, 20yr tide)

Table 2: Summary of Water Level Increase Results

Point	Water Level Increase from Baseline (mm)			
	Development Scenario	Landform Only	Difference (mm)	% Difference
1	71	62	9	13.5
2	81	71	10	13.1
3	81	71	10	13.1
4	80	69	11	14.7
5	81	70	11	14.6
6	81	70	11	14.6
7	87	76	11	13.5
8	116	102	14	12.8
9	133	117	16	12.8
10	183	168	15	8.5
11	170	157	13	8.0
12	165	152	13	8.2
13	145	134	11	7.9
14	168	156	12	7.4
15	158	145	13	8.6
16	132	122	10	7.9
17	159	145	14	9.2
18	118	109	9	7.9
19	113	105	8	7.3



Disclaimers and Limitations

This memorandum ('Memo') has been prepared by WSP New Zealand Limited ('WSP') exclusively for Tauranga City Council ('Client') in relation to the flood risk assessment for the Tauriko West Urban Growth Area ('Purpose') and in accordance with the Statement of Work Agreement with the Client dated 23rd March 2023 ('Agreement'). The findings in this Memo are based on and are subject to the assumptions specified in the Memo and the Statement of Work dated 23rd March 2023. WSP accepts no liability whatsoever for any use or reliance on this Memo, in whole or in part, for any purpose other than the Purpose or for any use or reliance on this Memo by any third party.