

## 245 Te Puna Station Road

### Summary of Flood Levels – Using the Designed Drain

17<sup>th</sup> July 2023

This is a new memo that follows the 23<sup>rd</sup> March 2023 and 22<sup>nd</sup> June but has now been simplified based on the preferred options.

#### What is new?

The northern drain has been surveyed at 10 locations. This is now in the baseline scenario.

The design for the northern drain has also been implemented. Cross-sections were provided at 10m intervals. However, they were input at 50m intervals since it is mostly prismatic.

An Option 6 has been compiled. The elements are

1. Only the existing Teihana Road culverts are implemented,
2. Designed drain,
3. Remove culvert under Te Puna Station Road connecting the Industrial area to TPIL area,
4. Remove connecting culvert from TPIL to Tinex,
5. Cut a 10m wide drain (1 in 3 side slope) through Tinex land from removed culvert to Te Puna Station Road (was originally thought to be 5m),
6. Flood gates on the existing twin Teihana Road culverts.
7. A flood gate on the Tinex access culvert.

6a, 6b and 6c have also been added.

6a – 3<sup>rd</sup> Teihana culvert

6b – as 6a plus Tinex channel 45m wide

6c – as 6 plus Tinex channel 60m wide.

The differences are described in the following tables.

## Results – peak water levels at locations A

Run#	Description	10-year	Difference	100-year	Difference
	High tide and surge level required	2.03		2.37	
<b>1</b>	Baseline	2.21		2.83	
<b>5p</b>	5o + 3 <sup>rd</sup> Teihana culvert removed.	2.34			
<b>1</b>	Baseline	2.208		2.835	
<b>6</b>	Described above.	2.192	-16mm	2.872	+37mm
<b>6a</b>	3 <sup>rd</sup> Teihana culvert	2.148	-60mm	2.840	+5mm
<b>6b</b>	3 <sup>rd</sup> Teihana Culvert + 45m wide Tinex channel	2.178	-30mm	2.818	-17mm
<b>6c</b>	60m wide Tinex channel + 1.8m culvert at Tinex entrance with a gate.	2.106	-102mm	2.838	+3mm

## Results – peak water levels at locations B

Run#	Description	10-year	Difference	100-year	Difference
	High tide and surge level required	2.03	2.37	2.37	
<b>1</b>	Baseline	2.21		2.83	
<b>5p</b>	5o + 3 <sup>rd</sup> Teihana culvert removed.	2.34			
<b>1</b>	Baseline	2.208		2.839	
<b>6</b>	Described above.	2.193	-15mm	2.882	+43mm
<b>6a</b>	3 <sup>rd</sup> Teihana culvert	2.148	-60mm	2.850	+11mm
<b>6b</b>	3 <sup>rd</sup> Teihana Culvert + 45m wide Tinex channel	2.178	-30mm	2.827	-12mm
<b>6c</b>	60m wide Tinex channel + 1.8m culvert at Tinex entrance with a gate.	2.106	-102mm	2.848	+9mm

## Results – peak water levels at location C

Run#	Description	10-year	Difference	100-year	Difference
	High tide and surge level required	2.03		2.37	
<b>1</b>	Baseline	2.20		2.76	
<b>5p</b>	5o + 3 <sup>rd</sup> Teihana culvert removed.	2.32			
<b>1</b>	Baseline	2.200		2.764	
<b>6</b>	Described above.	2.186	-14mm	2.772	+8mm
<b>6a</b>	3 <sup>rd</sup> Teihana culvert	2.127	-83mm	2.746	-18mm
<b>6b</b>	3 <sup>rd</sup> Teihana Culvert + 45m wide Tinex channel	2.173	-27mm	2.738	-34mm
<b>6c</b>	60m wide Tinex channel + 1.8m culvert at Tinex entrance with a gate.	2.104	-96mm	2.766	-6mm

## SUMMARY

10-year is mitigated for all options 6 to 6c.

100-year

Option 6: All locations are greater than 10mm,

Option 6a: Location at +11mm is the worst,

Option 6b: Fully mitigated,

Option 6c: Location B at +9mm is the worst.