

From: Alistair Osborne [REDACTED]
Sent: Friday, 25 September 2026 4:45 pm
To: Miguel Hernandez; Kyle Dirse
Cc: land.development; Torrey McDonnell; Zeean Brydon
Subject: RE: Mt Welcome - Updated Flood Modelling - TW Queries 10.09.26 [Filed 04 Oct 2026 21:09]

Categories: Filed by Mail Manager

Kia ora folks,

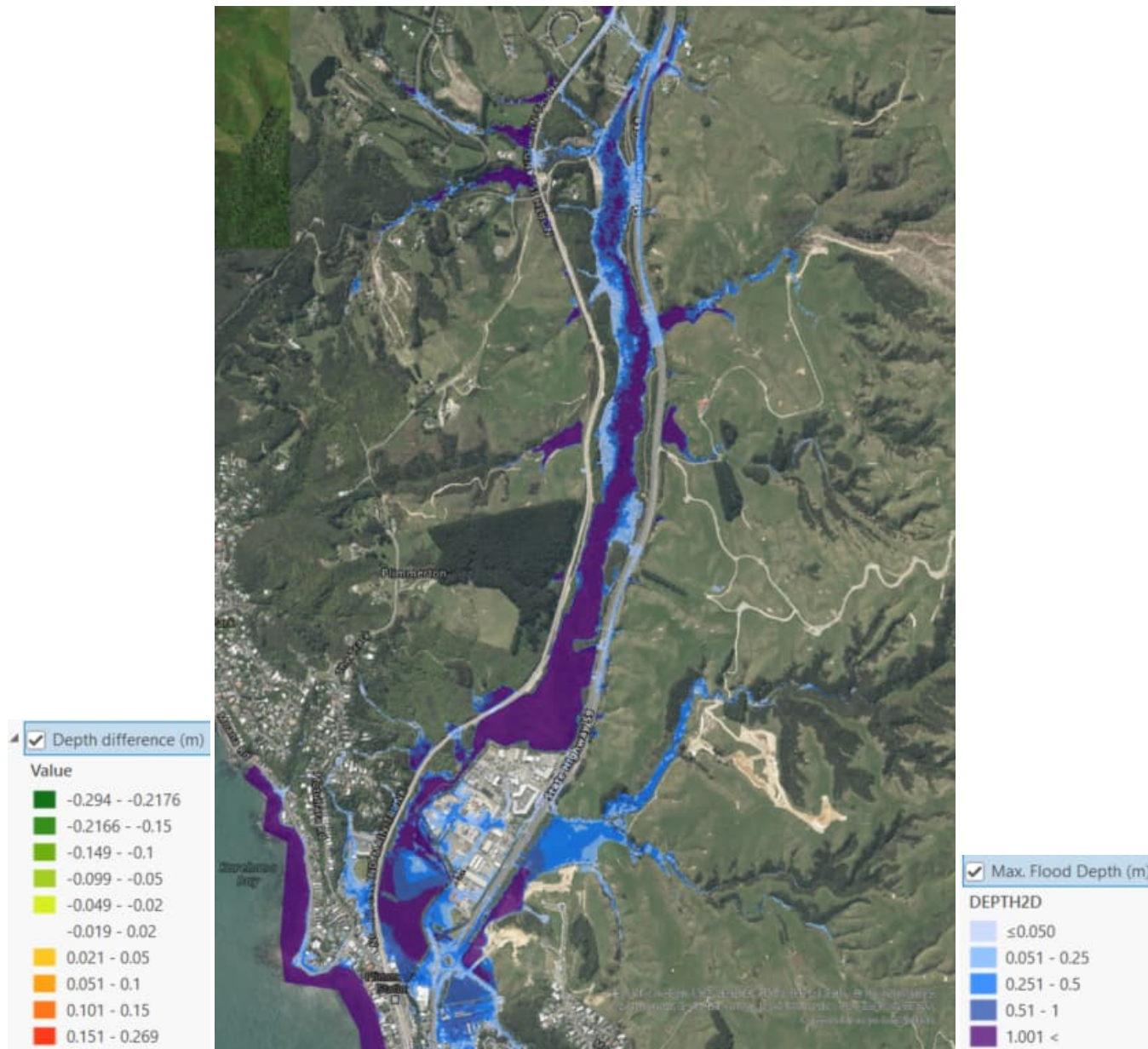
I was able to run full length simulations of the pre and post development flows in the truncated model network I developed. With regard to Miguel's comment below, I did need to re-mesh the network to include the inflow lines, however, I set the lines at the same locations as the network result lines that had already been put in place to extract the East and West flows, so they did not create a "new" mesh structure at their locations. Because the truncated model used inflows at the upstream end, I was able to use the same model network for the pre and post development runs, only changing the Inflow boundary condition file applied to the simulation.

This made the flood depth comparison between the pre and post scenarios very straight forward. The results are shown below. Based on these results I am comfortable with the Envelope conclusion that the effects of the development (as represented in the modelling Envelope supplied on 21/09/26) on flooding in Plimmerton are less than minor. While the flooding does change in the post development scenario, it is primarily by an increase of less than 0.05m, or by a decrease. There is one location where there is an increase of greater than 0.05m. This location is on the southside of the Palmers Garden Centre property. The change varies across the location with very localised areas of increase (see below).

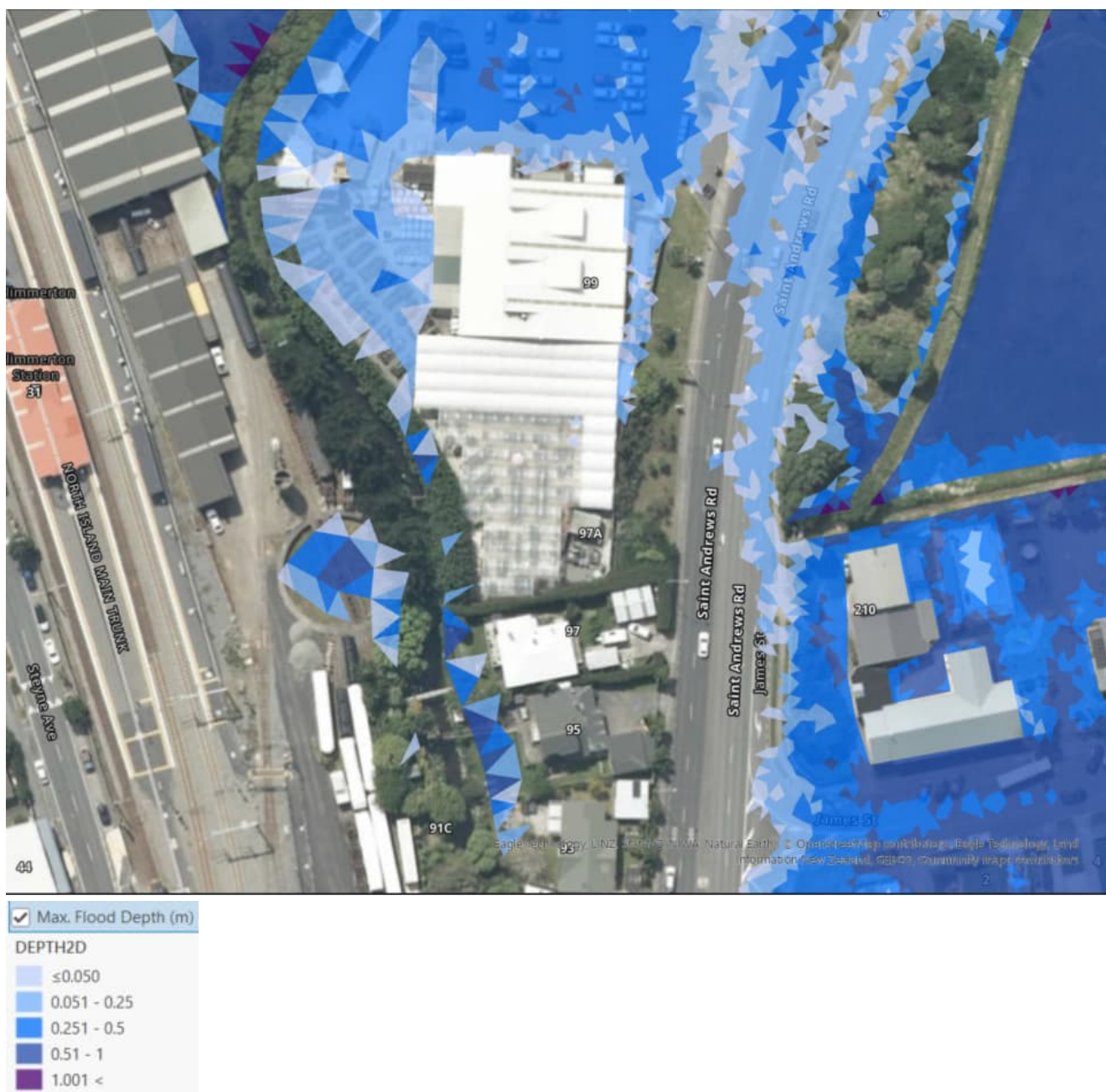
I also tested the possibility of instability in the model simulation impacting the results by running the pre and post scenario simulations a second time and then re-doing the depth difference assessment. This generates slightly different results, which indicates model instability can slight changes in model output.

Depth Difference Maps – 100yr+CC scenario

Depth difference has been calculated by subtracting the pre-development flood depths from the post development flood depths. I have also provided the pre development flood depths to give an indication of the flood depth impacted by the change.







The two images below show the impact of model instability on the results, there are some small, localised changes in the calculated depth difference, indicating different slightly depth results from identical model runs at those locations.



Hi Alistair.

Yes, the model is not very friendly to any change. I was trying to do the same mesh equivalent PRE and POST, and I had to create a bigger DEM with the previous surface (previous surface + LIDAR2025 on the extra area), I can give it to you, it may help in your first approach.

The second approach can work **if** the model results can reach the peak (and bit more) on Palmer's area (very close to the Taupo discharge) . Also, the models would need an inflow line element (and it would need a remesh), that may affect the mesh equivalence, don't they?.

Please let us know if need the PRE surface and if you could have the full-time competition.

Cheers

MIGUEL HERNANDEZ

SENIOR HYDRAULIC ENGINEER

M [REDACTED]

A 31B Drake Street (inside Victoria Park Market)
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From: Alistair Osborne [REDACTED]
Sent: Wednesday, 23 September 2026 2:48 pm
To: Kyle Dirse [REDACTED]; Zeean Brydon [REDACTED]
Cc: Land Development <Land.Development@tiakiwai.co.nz>; Torrey McDonnell [REDACTED]; Miguel Hernandez [REDACTED]
Subject: RE: Mt Welcome - Updated Flood Modelling - TW Queries 10.09.26

Kia ora Kyle (Miguel),

This is a quick update to let you know where I am at with the modelling.

I have been working through making changes to the modelling to create suitable pre-development and post-development datasets for comparison. My initial idea of updating the Base scenario network to have the same mesh alignment/layout as the post-development scenario network was unsuccessful as I had not accounted for the limited extent of the original DEM used for meshing.

I have now taken a different approach and opted to apply the pre and post upstream catchment flows at the East and West comparison locations as model inflows. I extracted the hydrographs for the two locations from the completed sims supplied in the icmt. I then “turned off” the hydrological subcatchment upstream of these

locations by ensuring they receive no rainfall. This I meant I could run the pre and post flows in the same network allowing for a direct comparison of the flooding in Plimmerton. Unfortunately, both the pre and post flow scenarios did not run to completion, but they did run past the peak. I have done a comparison of the results from these sims, but I have also made changes to the model network (truncating it above the inflow locations) to see if I can get complete sims. I am running the updated network now.

Please let me know if you (and/or Miguel) have any concerns regarding the approach I have outlined above.

cheers

Alistair Osborne | Principal Stormwater Modeller

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www.tiakiwai.co.nz

TIAKI WAI

Care in every drop | He wai whakauka

From: Kyle Dirse [REDACTED]
Sent: Monday, 21 September 2026 2:36 pm
To: Zeean Brydon [REDACTED]; Alistair Osborne [REDACTED]
Cc: Land Development <land.development@tiakiwai.co.nz>; Torrey McDonnell [REDACTED]; Miguel Hernandez [REDACTED]
Subject: RE: Mt Welcome - Updated Flood Modelling - TW Queries 10.09.26

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Hi Zeean & Alistair,

Happy for Tiaki Wai to run and verify the outputs. Let's touch base by Friday at the latest to see how its progressing.

ICMT and the flag files here: <https://envelope.egnyte.com/fl/6FCBhrKwJDPK>

Below the element inside the ICMT. In yellow highlighted the ones related (edited) to Mt Welcome dev.

InfoWorks ICM 2026.3.0 : D:_Projects\1753-02 Mt Welcome\99 Outputs\ICMT model\SW_PCC-TaupoStream_MtWelcDev_ICMv					
Item	Type	ID	User	Descr...	Date
Transportable database [2026.3]	Database				
PCC Taupo Stream Stormwater Model	Group	2	Modeller		15/03/20
02 Model Runs	Model group	1	Modeller		13/06/20
Provided	Model group	2	Miguel...		27/01/20
Provided+ Post MtWelc	Model group	3	Miguel...		29/06/20
100yrCC_v74-ENV72hrs	Run	2	Miguel...		4/09/20
Mt Welc 100yr CC (2.5°C)	Sim	2	Miguel...		4/09/20
100yrCC_v73-ENV72hrs	Run	1	Miguel...		4/09/20
100yr CC (2.5°C)	Sim	1	Miguel...		4/09/20
08 Tidal Boundary	Model group	4	Modeller		13/06/20
Tide CC (+1m)	Level	1	Modeller		17/06/20
09 Inflows	Model group	5	Modeller		13/06/20
Inflow (0.082m3/s)	Inflow	1	Modeller	14/11/...	15/06/20
01 Model Build	Model group	6	Modeller		13/06/20
TaupoStream	InfoWorks ne...	1	Modeller	base v...	16/04/20
07 Initial Boundary	Model group	7	Modeller		13/06/20
Initial conditions 1D CC	Initial conditi...	1	Modeller		8/06/20
Initial conditions 2D CC	Initial conditi...	1	Modeller		14/06/20
Initial conditions 2D CC-Mt Welc	Initial conditi...	2	Miguel...		10/02/20
06 Rainfall Data	Model group	8	Modeller		13/06/20
100yr CC (2.5°C)	Rainfall event	1	Modeller		17/06/20
05 Ground Model	Model group	9	Modeller		13/06/20
Bathy Validated Filled	Ground mod...	1	Modeller		26/08/20
Bathy Validated Filled - Model Provided SurfacePLUSFGL	Ground mod...	2	Miguel...		26/06/20
LiDAR2023 Survey Mt Welc FGL 500mm NZTM WGN53	Ground mod...	3	Miguel...		3/02/20
Recycle Bin (*)	Recycle Bin				

KYLE DIRSE

DIRECTOR

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 **ENVELOPE**

