

16 December 2025

File Ref: OIAPR-1274023063-45890

By email: [REDACTED]

Tēnā koe [REDACTED]

Request for information 2025-431

I refer to your request for information dated 8 December 2025, which was received by Greater Wellington Regional Council (Greater Wellington) on 8 December 2025. You have requested the following:

“The flood hazard modelling report that was included in the resource consent application for the proposed cleanfill at 1044 Coast Road. The flood modelling report that was included in the resource consent application is called 1044 Coast Rd, Wainuiomata – Flood Modelling, prepared by River Edge Consulting Limited, dated 8 July 2022.”

Greater Wellington’s response follows:

As requested, attached is the report *1044 Coast Rd, Wainuiomata – Flood Modelling*, prepared by River Edge Consulting Limited, dated 8 July 2022.

We have withheld name and contact information under section 7(2)(a) of the Local Government Official Information and Meetings Act 1987 (the Act) in order to protect the privacy of natural persons.

When withholding information under this section of the Act, we are required to consider the public interest in this information. We have considered this, and we do not believe that the public interest in the information outweighs our decision to withhold the information.

If you have any concerns with the decision(s) referred to in this letter, you have the right to request an investigation and review by the Ombudsman under section 27(3) of the Local Government Official Information and Meetings Act 1987.

Please note that it is our policy to proactively release our responses to official information requests where appropriate. Our response to your request will be published shortly on Greater Wellington’s website with your personal information removed.

Nāku iti noa, nā



Lian Butcher

Kaiwhakahaere Matua Rōpū Taiao | Group Manager Environment



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021 238 7515

8 July 2022

s7(2)(a)

Cuttriss Consultants Ltd.

s7(2)(a)

Dear s7(2)(a)

1044 Coast Rd, Wainuiomata - Flood Modelling

1. Background

As requested, I have carried a flood assessment of proposed filling over portions of a site at 1044 Coast Road, Wainuiomata. The proposed fill platforms are as shown on your drawings 30246 SCH, dated April 2022.

Flood maps prepared by Greater Wellington Regional Council (GWRC) show the site being subject to inundation (<https://mapping.gw.govt.nz/GW/Floods/>). In the Wainuiomata area, I understand that these maps are based on a GWRC model last revised in 2011 (using 1999 river cross-sections) and on LiDAR dating from 2004¹.

The design flood scenario considered is a 1% AEP² event, with a climate change allowance as incorporated in the GWRC model.

2. Model revisions

In 2021, GWRC commissioned a new LiDAR survey of the Wainuiomata river corridor and floodplain, and a new river cross-section survey. The data from those surveys have been made available by GWRC.

I have used this new information to prepare a new and more detailed model of the Wainuiomata river and floodplain. The new model covers the reach from the Leonard Wood Park recorder to the coast (Figure 1, attachments).

The new model uses a 2-dimensional (2-D) representation of the river channel and floodplain, whereas the original GWRC model used only a 1-D representation of the river and floodplain. The software used is the DHI product MIKE 21 FM.

¹ GWRC (2011); *Update of Modelling of Wainuiomata Flood Hazard*. 25 October 2011.

Westlake, S. (2014?); *Dissemination of Flood Hazard Information – Lessons Learnt from Mangaroa and Wainuiomata Rivers*. Water NZ Stormwater Conference

² Annual Exceedance Probability. 1% AEP also referred to as a 100-year event

As the LiDAR survey did not capture river bed levels below the water surface, the 2021 river cross-section survey data have been used to interpolate a model bathymetry along the river centreline. This river bathymetry has been incorporated into the LiDAR topography to provide a single combined river-floodplain model topography.

A fine model resolution has been used: a maximum element size of 9 m² for the river channel as well as for the floodplain in the vicinity of the proposed fill and a maximum element size of 25 m² for the remainder of the floodplain. In total, the model contains over 1 million elements, with an average size of 12.8 m² over the entire model area.

The model hydrology is based on the GWRC model. That incorporated a 20% climate change allowance. The inflow to the new model at its upstream end, at Leonard Wood Park, has been taken from the 2011 GWRC model results at that point. This inflow peaks at 231 m³/s. Additional inflows are applied for Scholl Creek (about 800 m downstream of Leonard Wood Park) and Catchpool Stream (on the downstream boundary of the 1044 Coast Road property); these peak at 23 m³/s and 57 m³/s, respectively.

The downstream boundary condition assumed is a tidal cycle with a 1 m sea level rise assumed³. The site of interest is sufficiently far upstream of the coast, however, that the tidal boundary conditions are not critical.

The GWRC model was calibrated to the large flood event in February 2004. The river channel roughness values used in the GWRC model have been applied to the river channel in the new 2-D model, after adjustment in recognition of the fact that channel meandering (a component of channel roughness in traditional 1-D models) is effectively represented by the 2-D schematisation. Floodplain areas were assigned a surface roughness based on visual inspection of aerial photographs. However, a sensitivity test was also carried out in which the model roughness was increased by 10%.

3. Results – existing situation

For the design scenario (1% AEP flood plus climate change), the peak flood levels show only a limited portion of footprint of the proposed fill areas would be inundated in the existing situation (Figure 2). The results for the sensitivity test (with roughness increased by 10%) show a small increase in the predicted flood extent (Figure 3).

The new model predictions have been compared to the earlier GWRC results on the river centreline at two cross-section locations (Figure 4). Cross-section 640 is near the site of the proposed filling while cross-section 580 is the nearest where the alignment of the 2021 cross-sections matches most closely that of the 1999 sections (Figure 4). Figures 5 and 6 show the flood level hydrographs predicted by the new model for those two locations, for the design scenario and the sensitivity test, along with results from the 2011 GWRC model.

Differences with the 2011 model are expected, as there has been over 20 years of the river alignment and cross-sectional changes, in addition to the different modelling approaches. Nonetheless, peak water levels at section 640 for the new model are within 100 mm of the 2011 model, while the new model appears more conservative at section 580.

³ Based on information in <https://environment.govt.nz/assets/Publications/Files/coastal-hazards-guide-final.pdf>, a sea level rise of 1.06 m could be expected under climate change scenario RCP8.5 to 2120, for example.

The new model results have next had a 600 mm freeboard applied, the same amount that GWRC applied to its model results at the time. Figure 7 shows a comparison of the new model results with freeboard and the published 1% AEP floodmaps available online. Again, the new model results appear reasonably consistent with the GWRC published maps. This gives further confidence that the new model can be used for assessing the impact of the proposed filling.

4. Results – proposed fill

The new model has also been run with 2 m of fill placed over the footprints identified. This would effectively make the fill platforms flood-free.

Figure 8 shows the predicted impact on peak flood depths of the proposed filling. Significant effects are confined to an area next to the northern fill platform, within the property boundary. Outside the property, the predicted impacts are negligible (less than 1 - 2 mm).

For the sensitivity test (i.e., where the existing and proposed cases are both run with the surface and river roughness increased by 10%), significant impacts are again confined to the property at 1044 Coast Road (Figure 9). The predicted increase in depth over the property to the north is no more than 5 mm, again a trivial amount and, as seen in Figure 3, that is in an area already subject to significant flood depths.

I conclude therefore that the effect of the proposed filling on the flood hazard posed by Wainuiomata River to the neighbouring properties would be negligible.

Yours sincerely,



s7(2)(a)
Director
RIVER EDGE CONSULTING LIMITED

Attachments: Figures 1-9

Cc: s7(2)(a)
Friday Homes

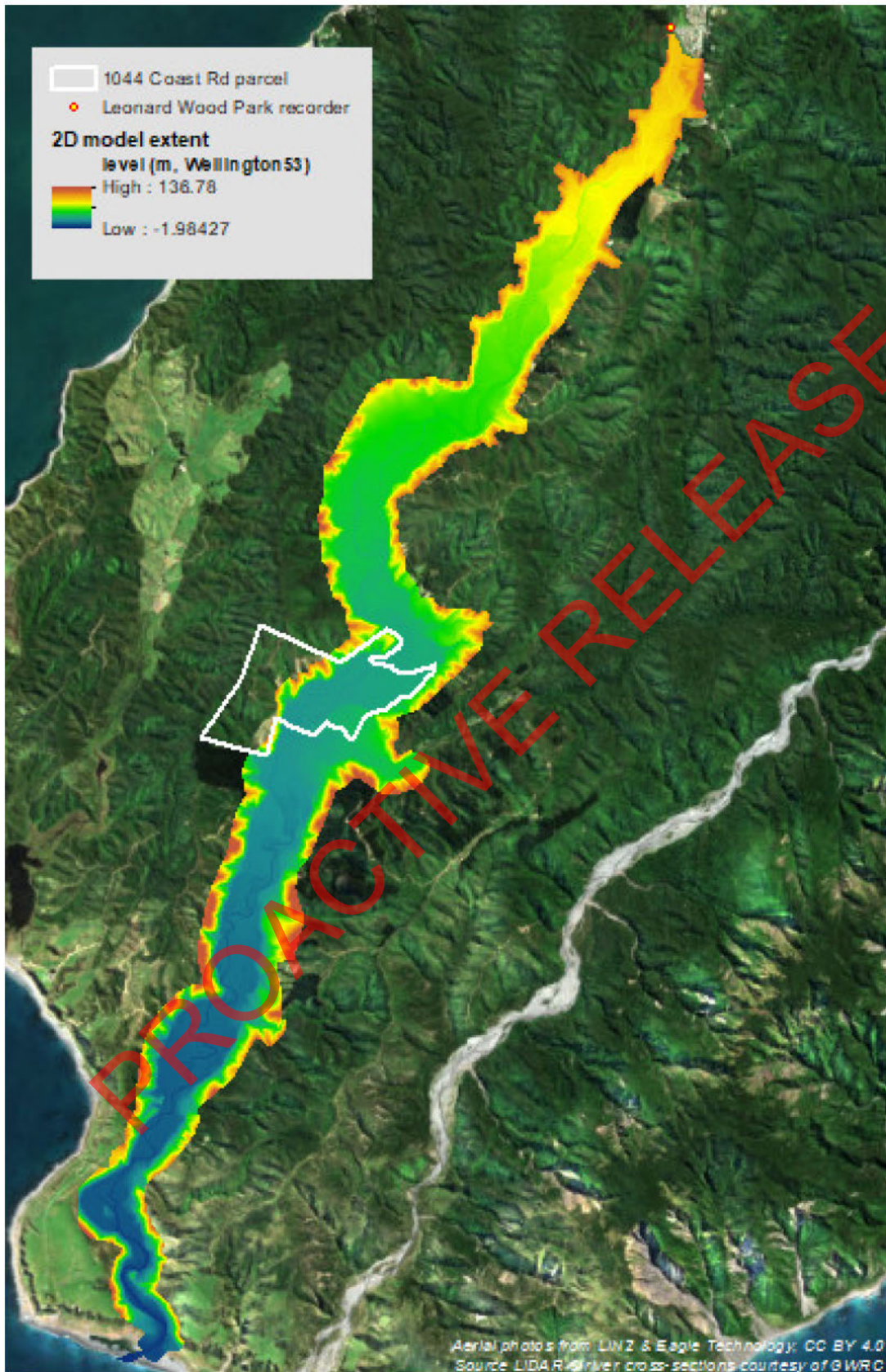


Figure 1 Extent of refined model

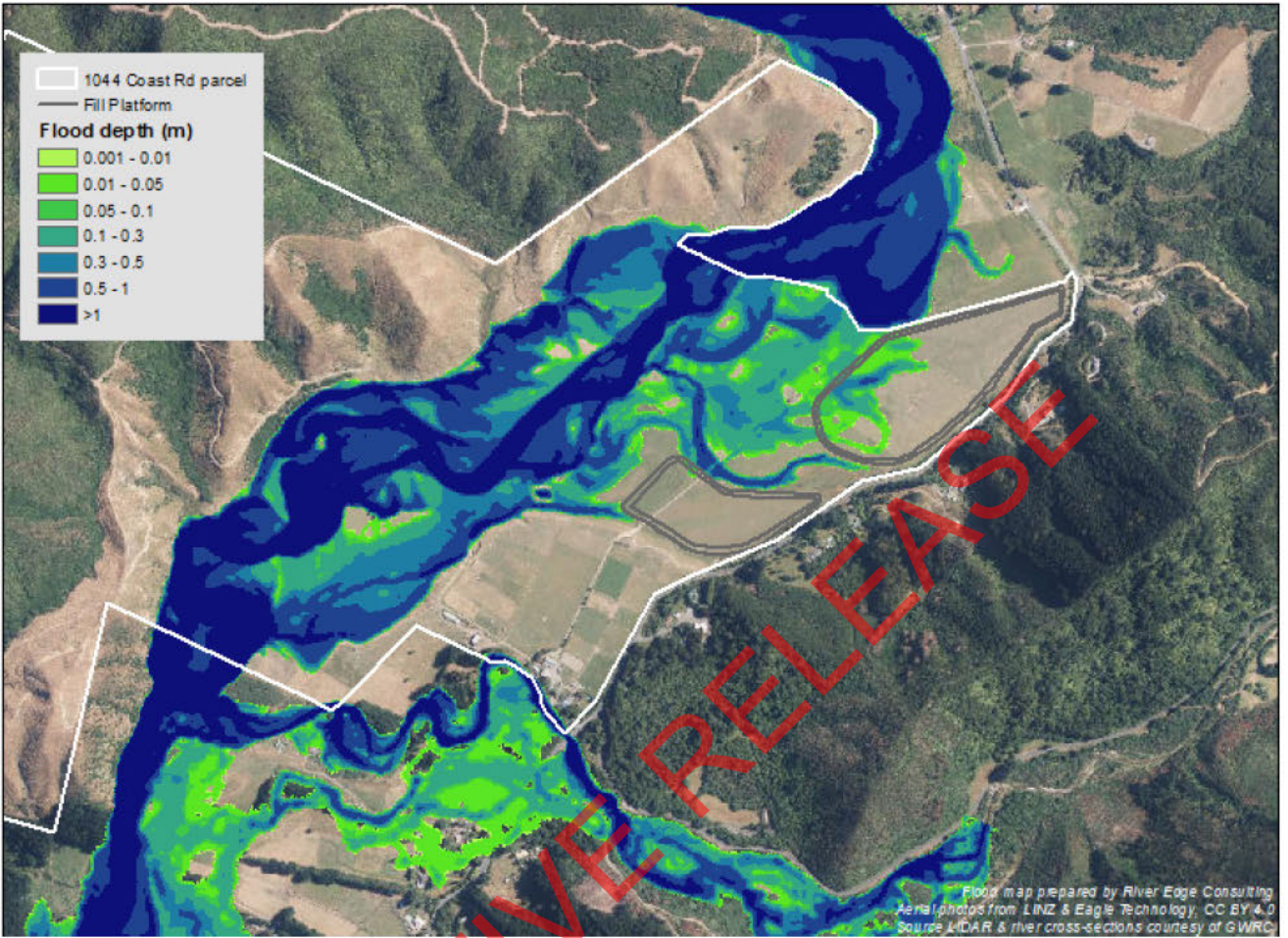


Figure 2 Site location and predicted peak 1% AEP flood depths (with climate change)

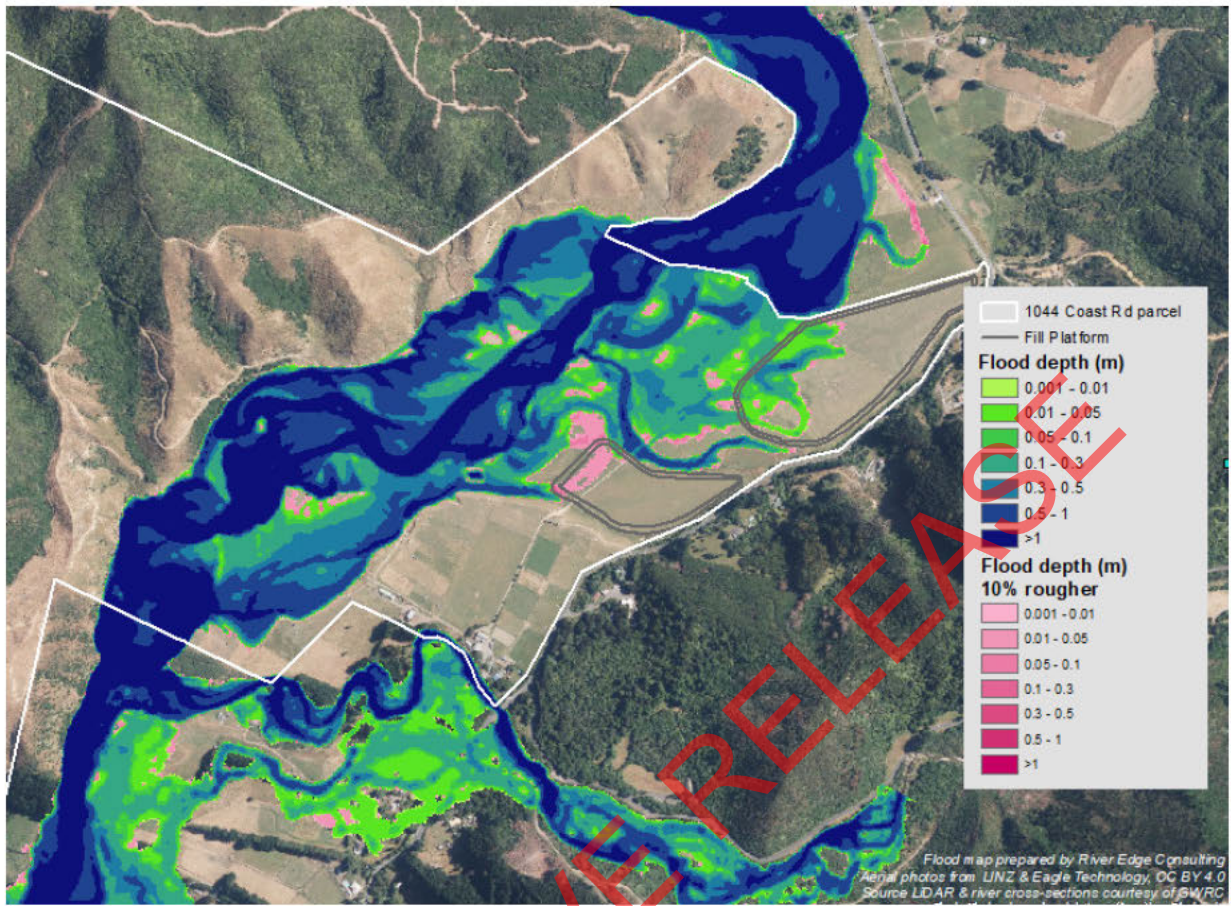


Figure 3 Model predictions – new model and sensitivity test (10% rougher surface)



Figure 4 Cross-section locations in vicinity of 1044 Coast Road

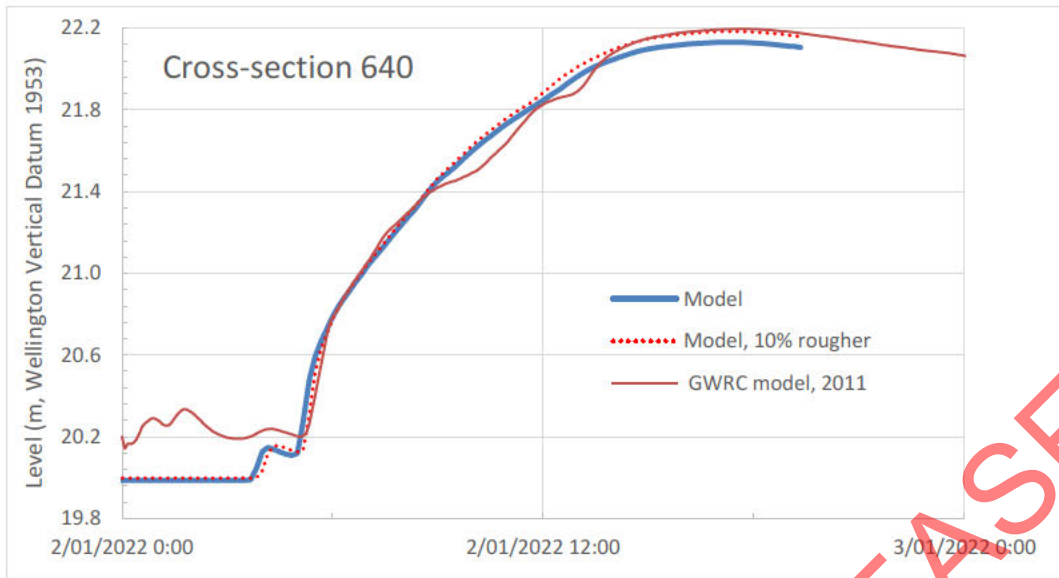


Figure 5 River centreline level at cross-section 640 – new model (base and 10% rougher sensitivity test) and GWRC 2011 model

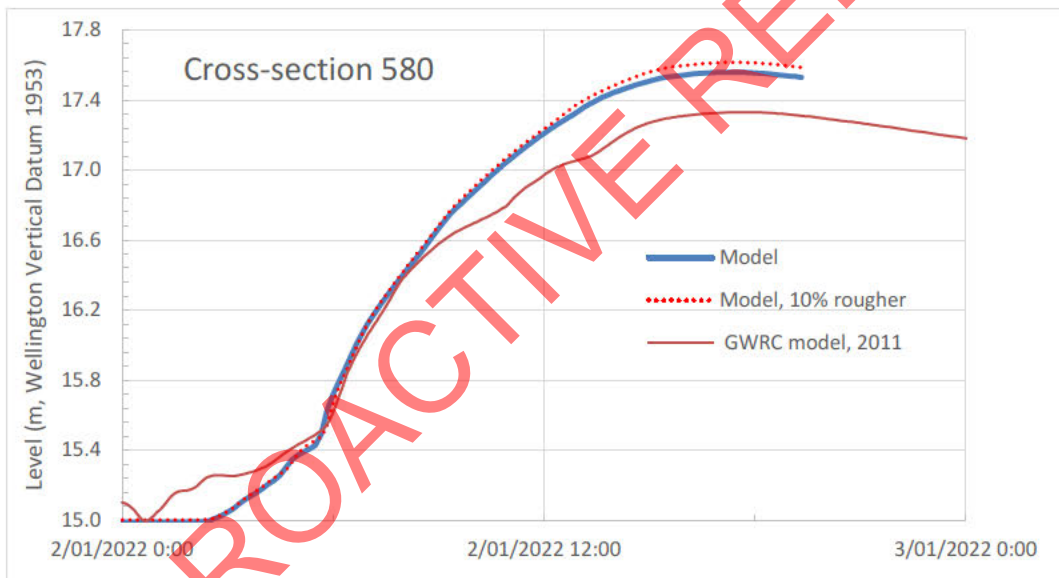


Figure 6 River centreline level at cross-section 580 – new model (base and 10% rougher sensitivity test) and GWRC 2011 model

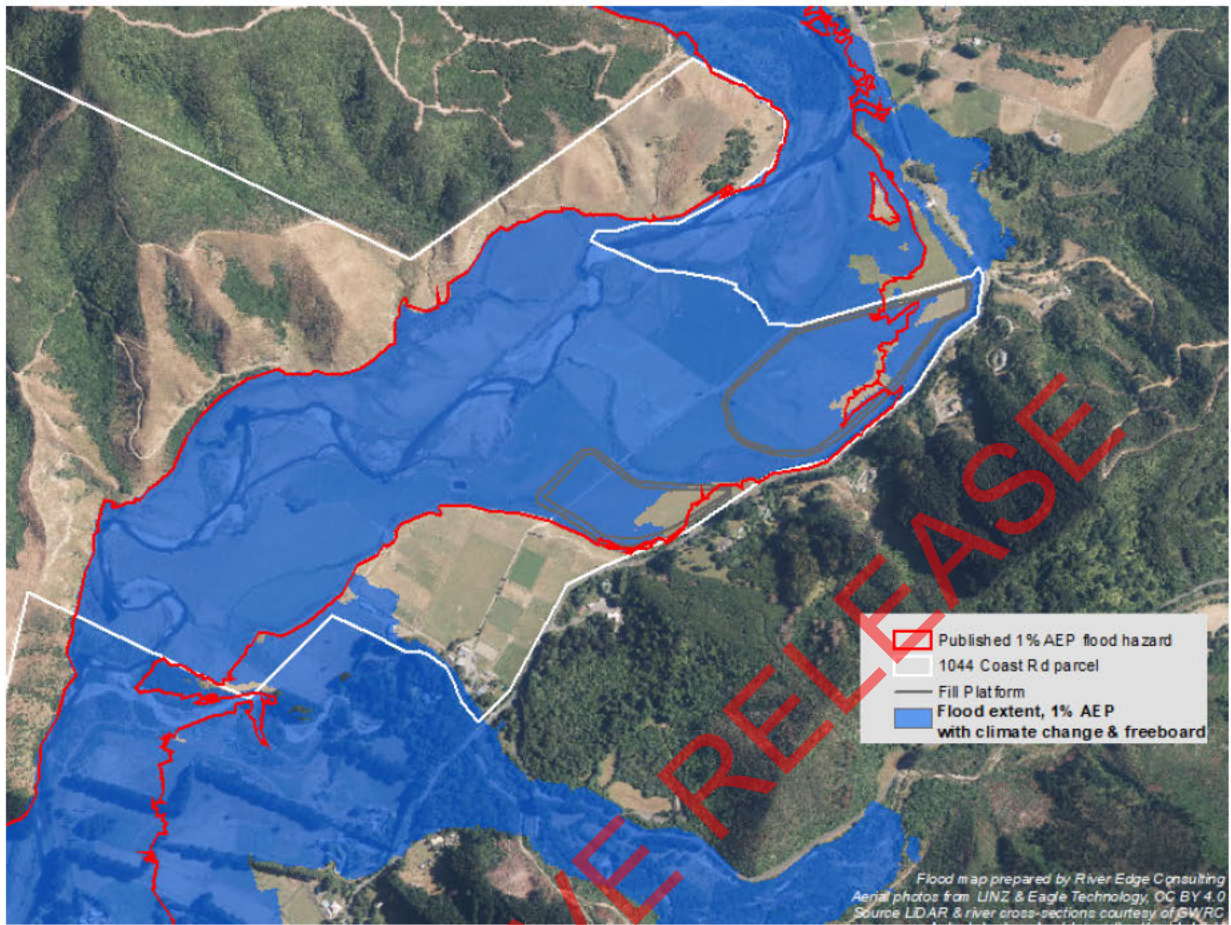


Figure 7 1% AEP flood, with climate change and with freeboard: new model predictions and published hazard map based on 2011 GWRC model

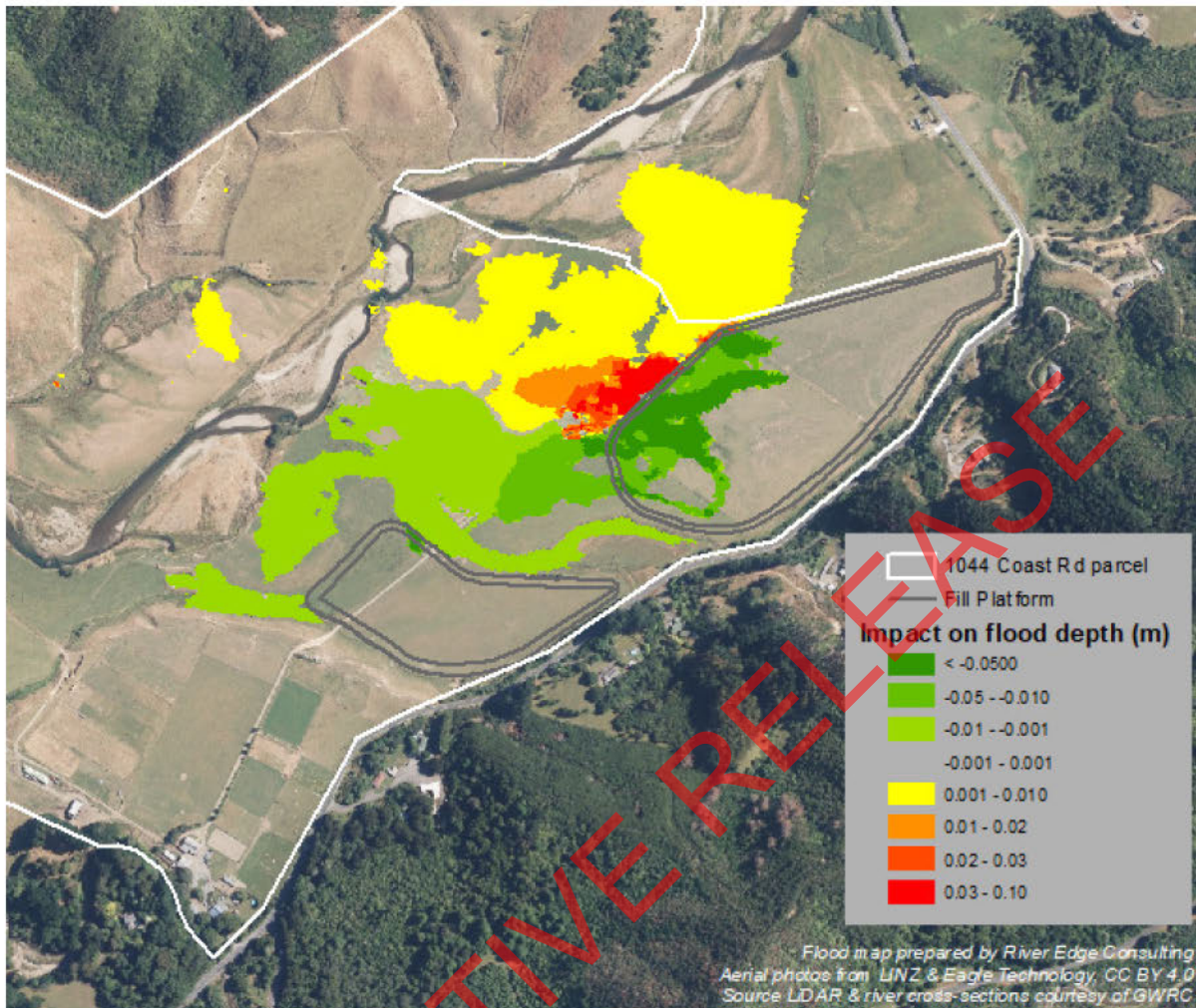


Figure 8 Predicted impact of proposed fill platforms on 1% AEP flood levels

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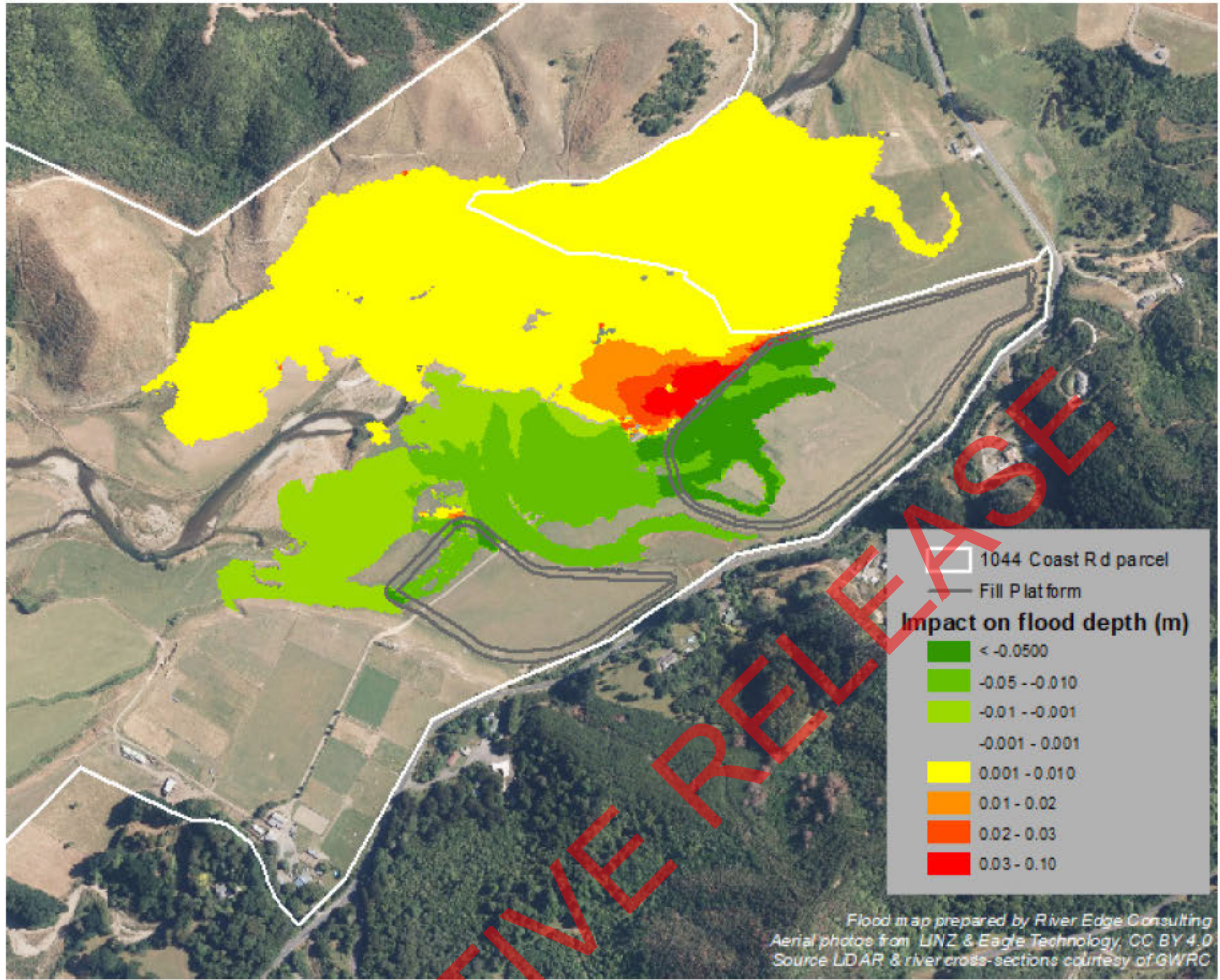


Figure 9 Predicted impact of proposed fill platforms on 1% AEP flood levels (sensitivity test, 10% rougher surface)

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