24 February 2026
Job No: 1101840.0000

Environmental Protection Authority
Level 10
Grant Thornton House
215 Lambton Quay
Wellington 6140

Attention: Mujahid Musa

Dear Mujahid

Takitumu Northern Link Stage 2
Stormwater/flooding review

1 Introduction

Tonkin & Taylor Ltd (T+T) was engaged to provide independent technical expertise to assist the Takitumu Northern Link Panel ("Panel") in evaluation of environmental implications likely to stem from the proposed Takitumu Northern Link – Stage 2 project. The purpose of this engagement was to cover provision of technical expertise relating to stormwater and flood management relating to the proposed works.

Of relevance to note is that the application is being processed under Fast Track legislation.

2 Background

The application covers effects of construction of a four-lane highway to replace the existing State Highway 2 (SH2) between Te Puna and Ōmokoroa.

Our review has focussed on stormwater and flooding elements of the application.

Documents reviewed:

- Takitimu Northern Link Stage 2 substantive application
- Appendix 9.4.9 Stormwater Assessment July 2025
- Appendix 9.6, focussed on Stormwater Parts 1A, 1B, 1C, 2 and 3

The key issues relating to stormwater and flooding that were identified are:

- The application indicates a net positive effect, which appears reasonable on an "unders and overs" basis.
- The technical approach adopted is reasonable and appropriate.
- While the technical elements of the application were stated to have undergone peer review, this third party review was not included in the application. RFI4 issued to request this detail.
- The application does not present detail on specific localised effects, and review of these was found to be difficult. RFI4 issued to request this detail.

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Following the initial review, and as alluded to above, a Request for Further Information (RFI4) was issued.

3 Technical review

This section contains our review of responses to the RFI4 detailed above, plus opinion on whether or not responses are adequate.

We were provided with the following in response to RFI4:

- Attachment 1: peer review letter by Graham Macky
- Attachment 2: peer review comments (culverts, bridges and streams) by Ruth Goldsmith, with applicant responses
- Attachment 3: peer review comments (downstream flood effects) by Graham Macky with applicant responses
- Attachment 4: peer review comments (stormwater management) by Graham Macky with applicant responses
- Attachment 5: letter from applicant (Eugene Vodjansky) to explain procedure for mapping 1D model results.
- GIS files to show modelled flood performance.

3.1 Third party peer review

Graham Macky of Fluvial Consulting Ltd undertook a peer review of the application, with his review focussed on:

- Culverts, bridges and streams
- Stormwater Management
- Downstream flood effects.

Mr Macky's review found that input data had been correctly applied and that the analyses undertaken were fit for purpose and of suitable accuracy for consenting purposes. We have relied upon this advice and have not, ourselves, reviewed detailed technical modelling inputs. Our review has focussed on the interpretation of results rather than on the accuracy of those results. After review of the application and of the review statements, we are satisfied of the adequacy of the application.

3.2 Flood mapping

Flood mapping provided does not appear to cover all areas within the work site. There are numerous instances where changes to the flood performance in waterways are anticipated as a result of the proposed works (e.g. stream diversions). However, most of these areas are within the current designation. Where flood effects are likely to be adverse (i.e. higher flood levels) outside of the designation, modelling has been used to assess and quantify those effects.

In Figure 3.1 a plan of the proposed works site is shown, with yellow highlighting to show the areas for which modelled effects outputs have been provided.

Flood effects have been assessed quantitatively (using a model) for streams downstream of the new proposed motorway and qualitatively upstream of the proposed motorway. Where existing cross drainage has been upgraded, the qualitative assessment has it that, due to increased conveyance under the proposed motorway corridor, upstream flood effects should always be reduced. In most cases the existing drainage under SH2 has been shown to be a choke point for flood flows, and backing up upstream of each culvert was expected (and has been observed). The proposed works

include upgrading of these culverts to allow higher peak flows to pass without backing up. However, this improved conveyance under the motorway corridor can cause increases to flood depths/extents downstream, beyond the designation extents.

We accept the view that the Tauranga Harbour (estuary) is the receiving environment and that once stormwater flows reach the harbour, no further downstream flood effect assessment is warranted.

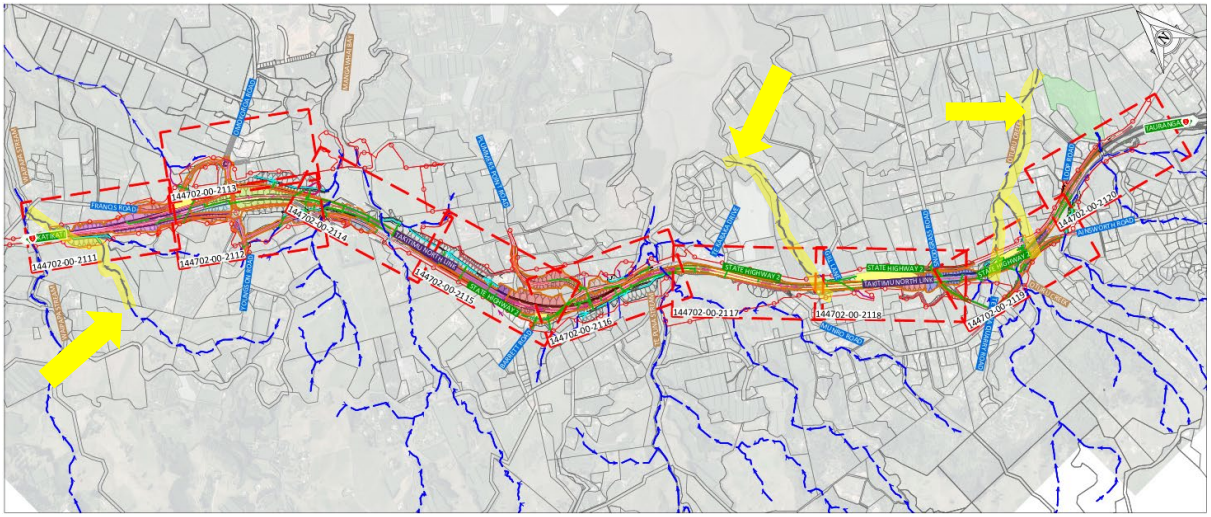


Figure 3.1: Works area showing modelled outputs (yellow highlight)

An explanation of the flood mapping procedure has been provided and following our review we agree that this is sufficient for the consent application. GIS files provided by the applicant have been examined, and differences in flood performance outside of the designation have been shown to be small. An example is shown in Figure 3.2.

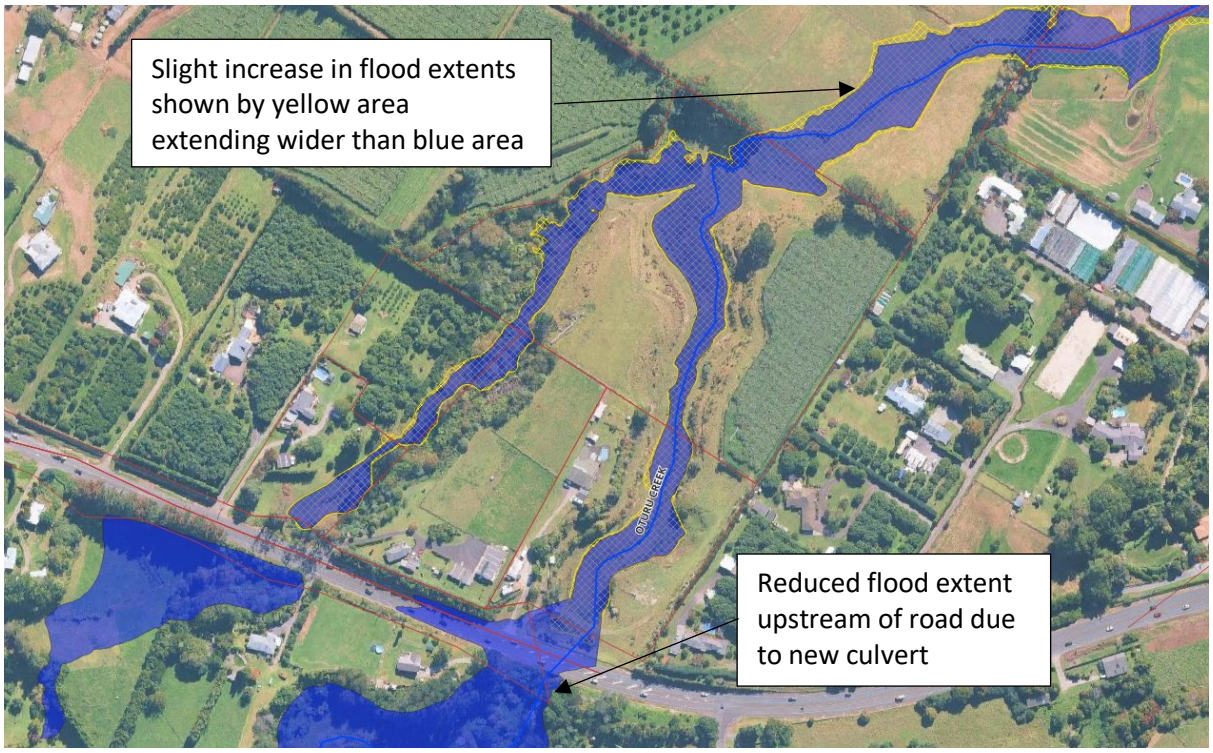


Figure 3.2: Mapped flood extents from model (blue is pre, yellow is post proposed works)

In Figure 3.3 a zoomed in plot of flood extents is shown. In blue is the flood extent under existing conditions (without the proposed motorway) and in yellow hatch is the flood extent for the same event, but with the proposed motorway in place. As can be seen, there is an increase in flood extent (and therefore level) that has been modelled to occur under the proposed conditions for the area shown. This area is downstream of the proposed motorway and the mapped increase is small. Detailed inspection over all of the modelled areas has revealed similarly small differences.

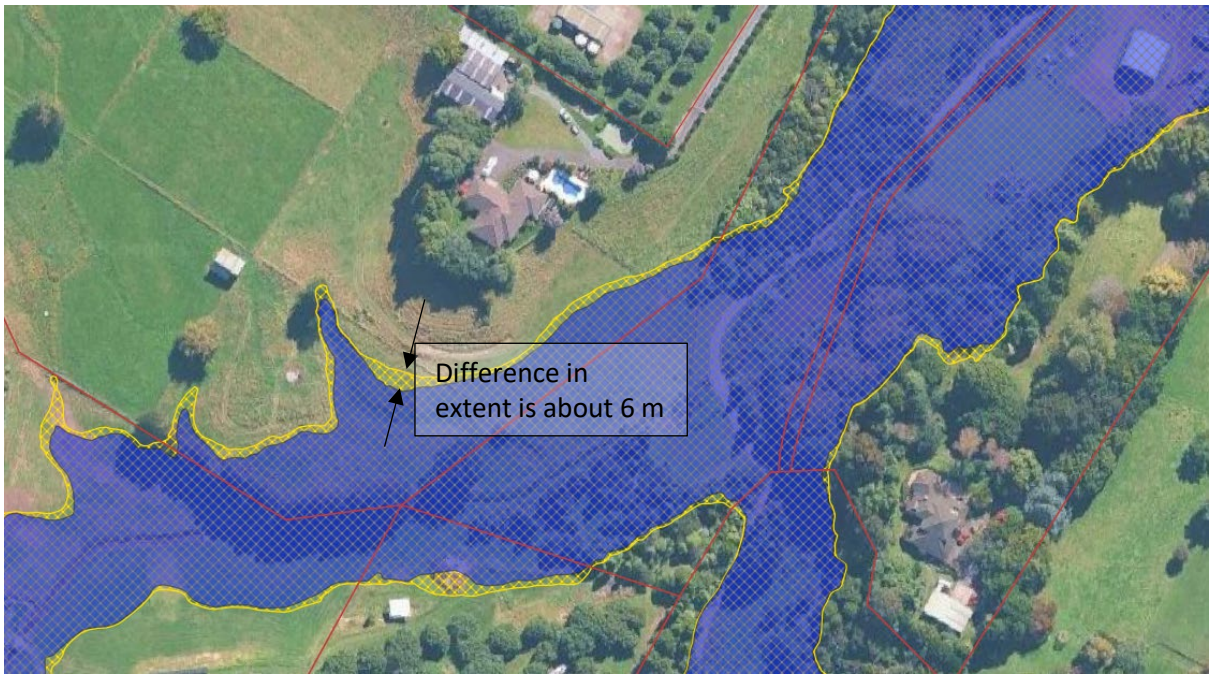


Figure 3.3: Example of flood extent differences downstream of proposed motorway

After detailed examination of (1) the methodology applied to map flood extents and (2) the magnitude of the differences in flood performance due to the proposed works, we agree with the applicant's assertion that the downstream effects are small.

3.3 Stormwater quality

We note the applicant's suggestion that all stormwater quality/treatment thresholds are to be detailed in management plans that are yet to be developed. We also note that concern over this has been expressed by Bay of Plenty Regional Council (BoPRC), especially in regard to the lack of up-front certainty in outcomes using this approach.

Of importance in this regard is that adequate space exists within the current designation within which the appropriate degree of treatment can occur, even if the final treatment design has not been completed and relies on performance-based metrics. This way the treatment approach can be applied by conditions of consent – as long as sufficient space is available.

Examination of the drawings that have accompanied the proposed road layout, with the locations of proposed treatment areas, reveals that there should be sufficient space within the designation to achieve the required outcomes.

3.4 Groundwater

While not part of our initial instruction, on request we have considered comments by BoPRC relating to monitoring of groundwater levels. We agree that it is advantageous to establish baseline

monitoring of groundwater levels prior to possible changes to groundwater levels being incurred by construction activities.

4 Conclusion

All information/clarification that was sought in RFI4 has been provided as summarised in Table 4.1 below.

Table 4.1: Summary of information/clarifications sought in RF14

Issue	Response	Conclusions/recommendations
Provide peer review statements and comments close-out	Provided	Agree with peer review findings
Mapping 1D model results	Procedure has been explained	Approach is suitable, result accuracy is understood
Provide mapped flood extents	Provided	Change in mapped flood extents has been examined, agree with assessment that effects are small

5 Conditions of consent

We have examined the proposed conditions of consent in the following:

- BC.01 Works in Waterbodies
- DC.01 Temporary Discharges
- DC.03 Permanent Stormwater

It is understood that while consent for the proposed works has been sought, detailed design and, ultimately, construction may occur some time into the future. Over the period of time between potential granting of consent and commencement of detailed design, there may be changes in both guidance and available data that could positively affect the ultimate design. It is suggested that allowance for these changes be made by:

- In reference to any design guide being put forward, ensure that the most recent version of any such guidance is used at the time (design guidance is under a continual state of improvement);
- Hydrometric data will continue to be collected over time, and making use of the most recent data available at any time ensures the outcomes are up-to-date. It is also possible to collect additional data over time to reinforce the certainty in design being applied.

An over-arching suggestion is that NZTA considers the benefits of using fully calibrated models in the detailed design. As explained in the application, sufficient data for such calibration is not currently available. However, should such data be collected then this may be able to be used at the time that detailed design is commenced. This “adaptive monitoring” is recognised in the Closing Legal Submissions by the Applicant, dated 16 February 2026 where paragraph 110.1 states:

> 110.1 *Design Certainty and Best Practice*: The Project's stream realignments will be subject to detailed design and outcomes-based performance requirements. These are to be assessed and confirmed by a Suitably Qualified and Experienced Practitioner (*SQEP*) through the Culvert and Stream Hydraulic Design Report and Stream Monitoring and Management Plan and certified by BOPRC. These documents will specify requirements such as natural substrate gradations, appropriate grade control, hydraulic performance, habitat complexity, and fish passage, and will include adaptive monitoring and triggers for remedial action.[82]

We have suggested the changes to proposed consent conditions, tracked in the attached documents. In summary these changes involve:

- A suggestion that the most current version of any advisory guideline is referenced at the time of detailed design;
- That models used for hydrological and hydraulic analysis are calibrated as far as is practicable, at the time of detailed design (with an advice note suggesting that the applicant may find it advantageous to collect data for model calibration over time);
- That in the absence of full calibration, an appropriately conservative approach in design is adopted to account for the uncertainty associated with the use of uncalibrated models.

Further to the above, we understand that there are a few remaining conditions where there is some disagreement between NZTA and BoPRC.

In relation to DC.01, BoPRC seeks conditions requiring:

> *(a) a winter earthworks plan for the discharge of sediment contaminated stormwater during winter; and*
>
> *(b) set limits on the concentration of Total Suspended Solids (TSS) in stormwater discharges.*
>
> *NZTA opposes the inclusion of the condition relating to winter earthworks as requirements relating to winter earthworks (and therefore any associated discharge) are managed through Condition 21 in LC.01. The insertion of this condition on DC.01 would be a duplication.*

T+T response

We agree that this would be duplication and that Condition 21 in LC.01 sufficiently covers this.

Furthermore, disagreement still exists as follows:

> *NZTA's expert has advised that any numerical standards on temporary discharges such as this, including limits on TSSs, are not possible to guarantee compliance with. Accordingly (and as set out above), the proposed condition from BOPRC would not be legally valid as it would have the effect of frustrating the consent. 179.4 NZTA considers that the existing approach proposed in the conditions, including requirements to comply with the relevant BOPRC guidelines as per the conditions on LC.01, is sufficient.*

T+T response

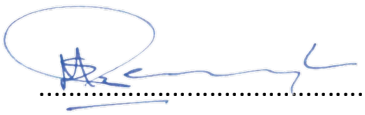
We agree that the conditions of LC.01 are sufficient here. The way we read Condition 21 of LC.01 is that no earthworks (which is the activity likely to cause sediment mobilisation) can be undertaken during winter, unless a bespoke management plan is prepared by the applicant and certified by BoPRC. We expect that this bespoke management plan would include measures for reducing TSS in stormwater discharges from the site. Outside of the winter earthworks period, condition 11 of LC.01 provide sufficient certainty around minimising TSS concentrations in temporary discharges.

6 Applicability

This report has been prepared for the exclusive use of our client Environmental Protection Authority, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd

Report prepared by:



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