

Project Reference: BGL000285

07 August 2026

Environmental Protection Authority
Stewart Dawson's Corner, 366 Lambton Quay
Private Bag 63002
Wellington 6140
New Zealand

Attention: The Expert Panel for Application FTA170 - Alternative to the Brynderwyn Hills

Alternative to the Brynderwyn Hills Fast-Track Consent – Initial Geotechnical Review and Gap Analysis

1 Introduction

Baseline Geotechnical Limited (BGL) were engaged by the Environmental Protection Authority (EPA) to provide specialist geotechnical advice to the expert consenting panel (Panel) for the alternative alignment to the Brynderwyn Hills fast-track consent application.

This letter report presents our initial review of the documents provided within the Substantive Application and identification of information gaps from a geotechnical perspective. Our scope of works was set out in our offer of service dated 14 July 2026.

2 Basis for review

The following documents were considered as part of the initial geotechnical review, which were sourced from the Fast Track website.

- Volume A -FTAA Substantive App - Main Application.
- Vol.A - Appendix D2 - Roads Drawings.
- Vol.A - Appendix D5 - D6 - Geology and Geotechnical Drawings.
- Volume B - RMA Approvals.
- Vol.B - Appendix D12 - Assessment of Effects on Groundwater.
- Vol.B - Appendix E - Designation conditions - 13 July 2026.
- Vol.B - Appendix E - Resource consent conditions - 13 July 2026.

In addition to the documents set out above we have supplemented our initial review findings with observations made during a site visit on 5 August 2026 and discussions with the Project Geotechnical Lead during that visit.

3 Initial Geotechnical Review

3.1 General

Our initial review has focussed on whether the documentation provided in the Substantive Application demonstrates that the proposed construction and operation of the Brynderwyn Hills section of the Alternative to the Brynderwyn Hills project is feasible from a geotechnical perspective. This involves a review of how geotechnical risks have been identified and will be managed within the designation, including natural hazards [i.e., landslides and liquefaction], and the assessment of offsite effects that could occur beyond the designation boundary.

3.2 Review Summary

3.2.1 Geological long sections

Geological long sections have been prepared along the proposed alignment¹ based on project specific site investigations [i.e., boreholes, CPTs and test pits] and, we assume, from the published geology, however, this is not specifically noted on the long sections.

For the northern lowland area, from Chainage 17100 towards Chainage 15650 [northwards], the published geology indicates that the surface geology comprises Ruarangi Formation and alluvial deposits, which is also discussed in the main application document². However, the geological long sections¹ indicate the surface geology is predominantly Waipapa Formation.

The site investigation logs used to develop the long sections are not included in the application and are not available on the New Zealand Geotechnical Database [NZGD] for us to review so that we can address this inconsistency.

We understand from our discussions with the Project Geotechnical Lead that the geological interpretation for this section of the alignment has changed through concept design, to consenting design and then procurement investigation and design, and that this may be the reason that the long sections do not align well with the published geology and the summary of the published geology in the application document.

It is not unusual for geological interpretation to change as investigations provide more site specific data, however the application and drawings should present a unified description of the materials the project is expected to encounter.

We also note in passing that the colours used for the Ruarangi and Pakiri Formations also appear to be the same, making these units difficult to differentiate on the long sections.

¹ Vol.A - Appendix D5 - D6 - Geology and Geotechnical Drawings

3.2.2 Project Summary of Geological and Geotechnical Considerations in Earthworks Zones

As noted in the main application document², the project has been divided into four earthworks zones based on distinct geological domains and terrain characteristics, as described in Table 3 in that document, which has been copied below in Table 1 for completeness.

Table 1: Project Summary of Geological and Geotechnical Considerations in Earthworks Zones²

Earthworks Zone	Extent	Dominant Geological Domains	Key Geotechnical Considerations
Zone 1 – Northern Lowlands	Waipū Flats and floodplain areas	Quaternary Alluvium	Soft, compressible soils; settlement risk; ground improvement likely; extensive fill embankments required.
Zone 2 – Brynderwyn Hills	Steep terrain through Brynderwyn Hills	Waipapa Terrane, minor Waitemata Group	Deep cuts in competent rock; slope stability; rockfall risk; excavation feasibility.
Zone 3 – SH12 to Brynderwyn Hills	Rolling terrain between SH12 and Piroa Stream	Northland Allochthon, Waitemata Group	Widespread landslides; hummocky terrain; alignment optimisation to avoid instability; slope and groundwater management.
Zone 4 – Pukekaroro to SH12	South of SH12 to Baldrock Road	Northland Allochthon, Taurikura Dacite	Similar to Zone 3; slope instability; perched groundwater; spoil management; no material transfer across SH12.

As discussed throughout the Volume B – RMA Approvals document³, *“geotechnical risks will be managed using an observation based approach as detailed design progresses”, and “remote mapping and terrain instability assessments are being carried out to ensure a comprehensive understanding of the locations of geotechnical risks to inform project direction and / or inform appropriate mitigation measures”*.

Considering the above, it is not clear how the land instability risk has been assessed along the proposed alignment as the mapping and terrain stability assessments are described in the application document as still being underway and are not provided in the Substantive Application.

3.2.3 Generic earthworks design cross sections

Cut slope, fill embankment, bridge abutment and spoil disposal typical details are included in the Geological and Geotechnical drawing set¹. A series of varied cut slopes and fill embankment geometries/details have been provided for different geological units. However, these are not supported by any analysis or geotechnical design within the Substantive Application that demonstrates that these typical details [i.e., cut slope geometries or bridge abutment design] are achievable and meet accepted design standards.

² Volume A – FTAA Substantive App – Main Application

³ Volume B – RMA Approvals

3.2.4 Risk of effects beyond the designation

For regional consents to be granted under the RMA (including by way of the FTAA) the risk of effects (i.e., slope instability) that could extend beyond the designation boundary need to be assessed. While the designation largely incorporates a wide buffer from the proposed carriageway, our initial review has identified specific locations along the proposed alignment where there is a higher risk of slope instability, extending beyond the designation boundary. This needs to be assessed.

For example, as shown in Figure 1 between Chainage 20600 and 20900, fill up to 50 m high is proposed on Northland Allochthon material close to the designation boundary to the north. Large geometry changes (i.e., cut/filling) on Northland Allochthon can result in widespread instability that can extend well beyond the earthworks area.

Secondly, as shown in Figure 1, there is a steep cut proposed in the Waipapa Group at Chainage 20100, in close proximity to the existing SH1 carriageway and designation boundary to the south.

Additionally, indicative spoil sites are scattered throughout the designation area, as shown on the drawings⁴, and many of these are near to the designation boundary. No fill heights have been provided for these spoil sites to assess the potential for slope instability that could lead to off-site effects, in particular, where these are located on Northland Allochthon.

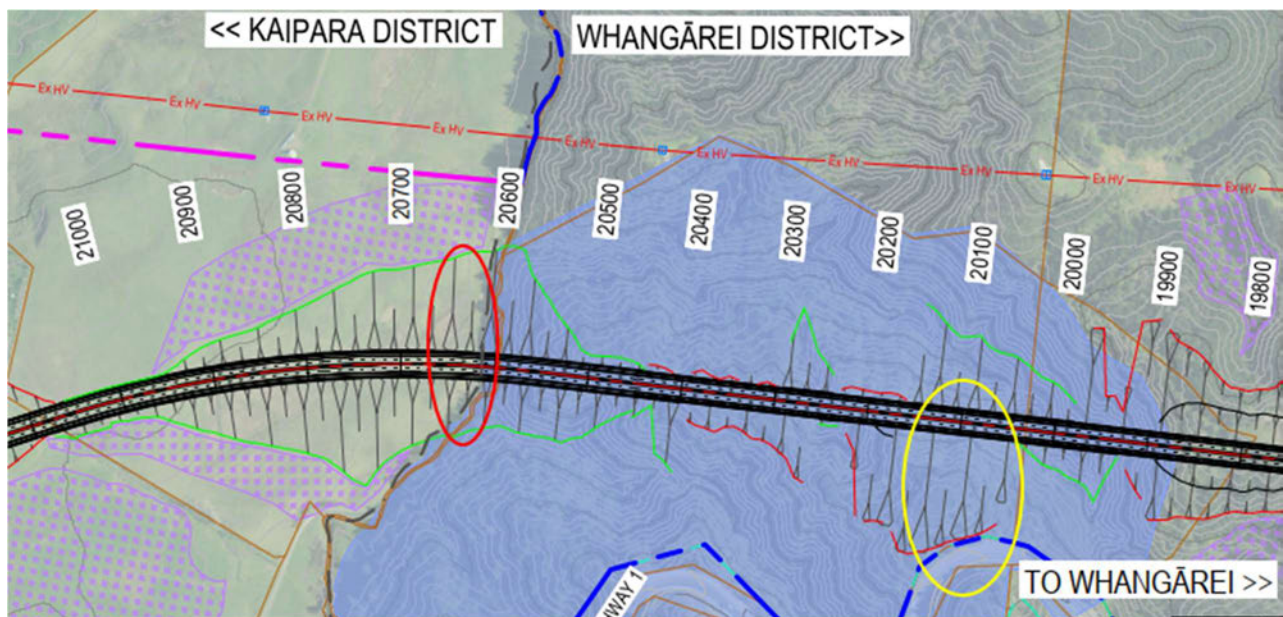


Figure 1: Snippet of proposed earthworks drawing 10722-PTA-2B0-RD-DRG-0302⁴, showing the extent of filling [green outline] and cut [red outline]. The red circled area denotes up to 50 m of fill to be placed on Northland Allochthon material, including an indicative spoil site to the north, within close proximity to the designation boundary to the north [pink dashed line]. The yellow circled area denotes a steep cut in the Waipapa Group in close proximity to the existing SH1 carriageway and designation boundary to the south [blue dashed line].

⁴ Vol.A - Appendix D2 - Roads Drawings

3.2.5 Natural Hazards and the Regulatory context

Under the RMA [Part 2] the management of significant risks from natural hazards are a matter of national importance. Further the National Policy Statement: Natural Hazards directs that natural hazards be managed by a risk based proportionate approach.

In a geotechnical context Natural Hazards include landslides and liquefaction. The Substantive Application refers to several National Policy Statements; however, it does not refer to the National Policy Statement on Natural Hazards that was published in December 2025.

The Whangarei District Council Hazards GIS viewer, which is used for engineering assessment purposes as part of building and resource consent processes, identifies that there is a high susceptibility to land instability in the steep terrain of the Waipapa Group and there is an undetermined risk of liquefaction for the alluvial deposits in the northern lowlands. This is also not addressed in any of the documentation.

Because there is no preliminary liquefaction assessment and no landslide mapping provided as part of the substantive application it is difficult for the panel to assess whether a risk based proportionate approach for these natural hazards has been undertaken at this stage. We note that the background information required to complete this assessment may well have been completed during investigation and design, but it has not been included in the substantive application.

4 Summary

In summary, the documentation provided as part of the substantive application is very light on detail, and some of what is provided is inconsistent with the application document.

The Substantive Application provides no analytical basis for the geotechnical designs provided. While we don't expect detailed information at this design stage, we would anticipate some form of analytical work for typical cross sections to demonstrate that the proposed designs work.

The lack of any form of specific design for the 50 m high embankment at CH20600 is a significant omission given the risks of triggering slope instability in the foundation materials.

It is our view that the risks associated with natural hazards have not been sufficiently well enough assessed to support a consent application [even considering the streamlined process of the FTAA].

We would anticipate that for a project of this scale to have advanced to its current stage a depth of geotechnical information would have been developed including a Geotechnical Factual Report [GFR] and a Geotechnical Interpretative Report [GIR]. From our discussions with the Project Geotechnical Lead during our site visit it is clear that this information exists.

While we understand that investigation and design is ongoing and has evolved past the consenting stage, we recommend that the following information be requested from the applicant to allow the panel [and prospective commentators] to assess the level of geotechnical risk and potential for associated environmental effects. The RFI should include:

- Geotechnical Factual Report [GFR] or equivalent document.
- Geotechnical Interpretative Report [GIR]. This would be expected to include:

-
- A geomorphological plan/ landslide map within the designation, presenting the findings from the remote mapping and terrain assessments, and historical aerial photograph interpretation.
 - Analytical work that supports the cut/fill sketches in the geotechnical drawing set. Including assumed material parameters.
 - Analytical work that demonstrates that effects arising from the proposed construction [i.e., slope instability] are not expected to extend beyond the designation boundary. This includes both the alignment cuts and fills but also potential spoil sites.
 - Preliminary assessment of seismic/liquefaction risk for the alluvial deposits in the northern lowland area near Waipu.

We also recommend that the applicant be asked to provide guidance on how the application addresses natural hazards in the context of the hierarchy of planning instruments as set out in Section 3.2.5 above.

Once this information is made available, we will be able to better consider whether the project geotechnical risks can be managed by way of consent conditions and management plans.

5 Applicability

This report has been prepared for the exclusive use of our client the Environmental Protection Agency and the Fast Track Expert Panel in their capacity as decision makers for Application FTA170 - Alternative to the Brynderwyn Hills. The recommendations and opinions in this report are limited to the purpose stated within the report. It may not be relied upon in other contexts or for any other purpose, or by any person other than those nominated above, without our prior written agreement.

We trust that this letter report meets your present requirements. If you have any queries or wish to discuss any aspect, please contact the undersigned.

For and on behalf of Baseline Geotechnical Limited



Cameron Lines

Director