Appendix B5: Technical Memorandum for Noise and Vibration – Alternative to the Brynderwyn Hills

TECHNICAL MEMORANDUM

To:	Stacey Sharp & Blair Masefield, Beca (consultant planners)
From:	Peter Runcie, Technical Director, SLR Consulting New Zealand Limited
Subject:	Noise and Vibration Technical Memorandum - Alternative to the Brynderwyn Hills (FTAA-2603-1178)
Date:	27 July 2026

EXECUTIVE SUMMARY

1. This memo is prepared on behalf of the Whangārei District Council and contains specialist noise and vibration input on the Alternative to the Brynderwyn Hills fast-track consent application (FTAA-2603-1178) (the Project) as lodged under the Fast-track Approvals Act 2024.
2. I have reviewed the lodged documents as they relate to noise and vibration. I concur that the existing environment is dominated by SH1 traffic and the noise modelling approach is appropriate.
3. I consider the proposed approach and the conditions to manage construction noise and vibration effects to be reasonable, subject to targeted amendments to the proposed conditions. I agree that the mitigation identified at this stage must be re-evaluated and confirmed during detailed design, and consider that clear performance criteria is critical to ensure best practicable outcomes (BPO).
4. I have recommended changes to the condition wording which aims to ensure clear and transparent performance criteria and so that mitigation measures consider all properties present at detailed design stage (not just those which exist today).

Section 1: Author Credentials

1.1. Statement of Qualifications and Experience

5. My name is Peter Runcie and I am a Technical Director at SLR Consulting in New Zealand, specialising in environmental and architectural acoustics. I hold the qualification of a Bachelor of Science Degree with Honours in Audio Technology from the University of Salford in the United Kingdom. I am a full member of both the Institute of Acoustics (UK) and the Acoustical Society of New Zealand, a member of the New Zealand Planning Institute and SLR's New Zealand representative for the Association of Australasian Acoustical Consultants.
6. I have over 18 years' experience in the field of acoustic consultancy working on a range of projects within New Zealand, the United Kingdom, Europe, Middle East, and Australia. I have worked on a wide range of assessments of environmental noise effects from projects across New Zealand, including over 30 roading designations.

7. I have prepared expert evidence and technical assessments for resource consent applications, plan changes, notices of requirement for designation and fast-track applications, and have appeared as an expert witness before consent authorities and the Environment Court on multiple occasions.

1.2. Code of Conduct

8. I confirm that I have read the Environment Court Practice Note 2023 – Code of Conduct for Expert Witnesses and agree to comply with it in the preparation of this memorandum and participation in any subsequent expert conferencing or associated processes. I confirm that the opinions expressed are within my area of expertise and are my own, except where I have stated that I have relied on the work of others.

Section 2: Approvals and Application Material Reviewed

2.1 Approvals

9. From a noise and vibration perspective, Council's interests relate to the Notice of Requirement (designation) sought by the Applicant to construct, operate, maintain, and improve a state highway and associated infrastructure, particularly the associated management plans and conditions that aim to address noise and vibration effects.

2.2 Reference Documents

10. The following application documents have been reviewed and inform this technical memorandum:

    a) *Appendix D02 – Roads - Drawings* of the Substantive Application entitled: Substantive Application under the Fast-track Approvals Act 2024 – Volume A – Main Application, Alternative to the Brynderwyn Hills – Brynderwyn Hills section, prepared by NZTA Waka Kotahi, dated 2 April 2026, Revision A

    b) *Appendix D02 - Assessment of Construction Noise & Vibration Effects* of the Substantive Application entitled: Substantive Application under the Fast-track Approvals Act 2024 – Volume B – RMA Approvals, Alternative to the Brynderwyn Hills – Brynderwin Hills Section, prepared by NZTA Waka Kotahi, dated 2 April 2026, Revision A

    c) *Appendix D03 - Assessment of Operational Noise Effects* of the Substantive Application entitled: Substantive Application under the Fast-track Approvals Act 2024 – Volume B – RMA Approvals, Alternative to the Brynderwyn Hills – Brynderwin Hills Section, prepared by NZTA Waka Kotahi, dated 2 April 2026, Revision A

    d) Northland Corridor – Brynderywn Hills Section Of The Alternative To The Brynderwyn Hills Project – Proposed Designation Conditions- Draft as at 22 June 2026

    e) Northland Corridor – Brynderwyn Hills Section To The Alternative To The Brynderwyn Hills – Proposed Regional Resource Consent Conditions- Draft as at 22 June 2026

Section 3: Technical Assessment

11. The following potential noise and vibration effects have been identified and considered:

    a) Construction noise and vibration; and

    b) Operational traffic noise and vibration.

12. In my opinion the relevant potential effects have been identified. The Requiring Authority's key assessment conclusions and my technical review of these findings are outlined below. The following section includes discussion on the assessment methodology and assessment of effects.

13. Mitigation and conditions are addressed in Section 4 below.

3.1 Construction Noise and Vibration

Criteria

14. The key construction noise and vibration criteria for the project are based on the requirements the Waka Kotahi State highway construction and maintenance noise and vibration guide.

15. For specific activities (blasting) and receiving environments (services pipework), criteria are proposed from published international standards.

Assessment of Effects

16. Given the long lapse time the specific future environment and exact details of the type and location of receivers at the time of construction are not known. The assessment therefore seeks to identify potential effects based on existing receivers and set out a process to manage effects at existing and future receivers at the time the works take place.

17. The proposed process to manage construction noise and vibration effects is set out in Section 4 of the Assessment of Construction Noise and Vibration Effects. These include the recommended creation of a Construction noise and vibration management plan (CNVMP) and Schedules to manage and mitigate noise and vibration when exceedance of the limits is identified. The relevant noise and vibration limits are set out in Conditions D11 to D13. Condition D16 requires the preparation of Schedules if an activity is predicted or measured to result in an exceedance of the noise and/or vibration criteria in Conditions D11 to D13.

18. That there is no specific condition requiring an overarching CNVMP is unusual, although meeting the requirements of Condition D14 (Construction Noise and Vibration Management Outcomes) is likely to result in a CNVMP being prepared. Including a formal CNVMP condition could strengthen oversight and improve condition enforceability. Notwithstanding, I am satisfied that Conditions D14 to D20 adequately achieve the same outcome.

19. the requirement for Schedules in the instances when activities are anticipated to exceed the limits of the Conditions D11 to D13 is considered suitably robust requirements to ensure appropriate management of effects from construction.

20. On this basis I consider the proposed approach and the conditions to manage construction noise and vibration effects to be reasonable. I have made targeted amendments to the proposed construction noise and vibration conditions to improve clarity in Section 4 below.

3.2 Operational Traffic Noise

Criteria

21. The assessment of traffic noise has been undertaken in accordance with NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads (NZS 6806).

    a) In brief NZS 6806 sets out the process for managing noise effects from new and altered roads. It follows a process of identifying noise sensitive receptors along the route, predicting noise levels at those receptors, comparing the predicted noise 24 hour L_{Aeq} noise levels against noise criteria in the standard (Categories A, B and C) and applying mitigation measures subject to the results of the predicted noise levels. The category criteria apply as follows:

    b) Where consistent with the best practicable option for the mitigation of road traffic noise, the criteria of Category A (the most stringent criteria) shall apply;

c) Where is it inconsistent with the adoption of the best practicable option to achieve the criteria of Category A, the criteria of Category B shall apply;

d) Where is it inconsistent with the adoption of the best practicable option to achieve the criteria of Category A or Category B and where the internal noise levels of any habitable space would be greater than 45 dB LAeq, the criteria of Category C shall apply;

e) Where it is inconsistent with the adoption of the best practicable option to achieve the criteria of Category A, B or C, the internal noise levels of any habitable space shall be mitigated to the extent that it is practicable.

22. The assessment has considered Protected Premises and Facilities (PPFs) that are within 100 m of the existing SH1 against the 'Altered Road' criteria as they are already exposed to elevated road traffic noise levels, even without the Project. This baseline has been described as consistent with the Puhoi to Warkworth project and other NZTA led roading projects across NZ. I consider this to be a reasonable approach in this instance.

23. The assessment considered noise levels at identified PPFs within 200 m of the Proposed Designation.

24. General subjective perceptions to changes in noise level are provided in Table 2, these descriptors are provided as general indicators of human perception and are not assessment criteria under NZS 6806. I generally agree with those descriptions. Most relevant is that a change of 1-2 dB could be considered as being subjectively insignificant, changes of 3-4 dB being just perceptible, and changes of 9-11 dB representing a halving or doubling in loudness.

Assessment of Effects

25. The existing noise environment along the alignment is noted to be strongly influenced by existing traffic, primarily from State Highway 1.

26. The assessment methodology is set out in Section 2.2 of the acoustic assessment report. I consider that the modelling approach, inputs and software are appropriate for this stage of the application.

27. At most locations the assessment identifies a reduction in noise levels due to a combination of reduction in traffic volumes on the existing State Highway 1 and the newly proposed road being located further from these receivers.

28. The assessment identifies mitigation in the form of a low noise road surface - LN3 (EPA7 40 mm) from approximate chainages CH9400 – CH10800 and CH13900 – CH16900.

29. The assessment notes that the mitigation will need to be reevaluated and confirmed during detailed design to ensure that the BPO mitigation is implemented. This is appropriate. It is critical that the conditions set clear performance criteria to ensure consistency of outcome as part of the detailed design review of mitigation measures. I discuss this further below.

Future Protected Premises and Facilities (PPFs)

30. Given the lapse period sought it is likely that new PPFs are likely to be built between now and the construction of the Project. The proposed conditions only require mitigation to be considered for dwellings existing at the time of the designation assessment.

31. The Applicant identifies an expectation that the design of new dwellings should consider the future noise environment on the basis that the noise contours from the application are publicly available. Whilst the designation itself provides notice of future infrastructure, how noise contour information would be provided and developers/land owners outside the designation made aware of the noise across their properties, is not clear. Consideration of traffic noise is a requirement in the Whangārei District Plan, but only for specific activities (largely aligning with the NZS 6806 definition of PPF) within the *State Highway*

Noise Control Boundary. It is my understanding that a plan change would be required for the *State Highway Noise Control Boundary* to apply to the proposed designation; such a plan change does not form part of the proposal. On this basis there is a chance that awareness and consideration of this potential effect could fall through the gaps. This potential impact is further potentially exacerbated due to the lack of certainty regarding where the final road location may sit within the designation. A large change in road location could result in developers basing their design on inaccurate representations of the future noise environment.

32. The proposed conditions limit the future BPO assessment to confirm mitigation measures to the properties which exist at the time of the assessment. It is my recommendation that the conditions include a requirement for the future BPO assessment to determine the BPO for the environment that is present at the time of the detailed design. This would ensure the most appropriate source noise mitigation measures are identified and able to be incorporated into the design, i.e., in the form of road surfaces and/or barriers as necessary. If there is a clear mechanism in place making future road noise level information clearly and easily available to developers such that they are able to consider those effects in their designs I consider it reasonable that the Requiring Authority is not responsible for acoustically treating dwellings that are constructed following the lodgment of the NoR (the intent of this has been captured in Project Information or Land Use Integration Process Conditions on other similar projects). However, this approach is not currently proposed.

Section 4: Mitigation and Conditions

33. Following my review, I recommend the following targeted amendments to the conditions of consent.

34. That the column 'Type of Blasting' is removed from D13 to avoid unintentional confusion or misinterpretation. The applicant has confirmed that the works would last longer than 12 months and so the Sensitive Site requirements would apply to all blasts, in which case there is no value in including this column.

D13 Any blasting shall:

(a) only occur between 0730h – 1800h; and

(b) be designed to comply with the following noise and vibration limits:

Category	***~~Type of blasting operations~~***	***Peak component particle velocity (PPV)***	***Peak sound pressure level***
Sensitive Site	*~~Operations lasting longer than 12 months or more than 20 blasts~~*	*5 mm/s for 95% blasts per year, 10 mm/s maximum unless agreement is reached with the occupier(s) of the relevant Sensitive Site that a higher limit may apply*	*115 dBL for 95% blasts per year, 120 dBL maximum unless agreement is reached with the occupier(s) of the relevant Sensitive Site that a higher limit may apply*
Occupied non-Sensitive Sites	*~~All blasting~~*	*25 mm/s maximum unless agreement is reached with occupier(s) of the Relevant Sensitive Site that a higher limit may apply.*	*125 dBL maximum unless agreement is reached with occupier(s) of the relevant Sensitive Site that a higher limit may apply.*

35. That D18 is modified to include reference to the Ahuroa Treatment Plant and water supply pipeline, for the avoidance of doubt.

D18 A Schedule shall be prepared if a vibration inducing construction activity during Project Works is proposed to occur within:

(a) 50m of National Grid Transmission Assets; ~~or~~

(b) 20m of the Gas Pipeline (where operational); or

(c) 20m of the Ahuroa Treatment Plant and water supply pipeline (where operational).

36. That D38 is modified to include reference newly constructed PPFs 200m from the road edge (aligning with the acoustic assessment) between the time of the assessment and the BPO assessment to confirm mitigation measures.

D38 The Project shall be designed or have noise mitigation measures constructed so that the predicted operational noise levels comply with the Noise Criteria Categories in Table [2] at each of the identified PPFs. Any new PPFs which have been constructed within 200 m of the edge of the closest traffic lane of the Project prior to the BPO assessment to confirm mitigation measures shall be assessed in accordance with NZS6806. If, at the start of Project Works, any of the PPFs listed in Table [2] do not exist or are on land owned by the Crown, this condition no longer applies to that PPF. Compliance is to be assessed using traffic forecasts provided by a Suitably Qualified Person for a high growth scenario in a 2054 design year.