12 May 2018

New Plymouth District Council
Private Bag 2025
NEW PLYMOUTH 4342

For the attention of Rachelle McBeth
Senior Environmental Planner - Consents

Dear Rachelle

STATE HIGHWAY 3
MT MESSENGER
PEER REVIEW OF NOISE INFORMATION

Acousafe has undertaken a peer review of the noise information provided with the documentation in respect of the Notice of Requirement (**NoR**) for the proposed improvements to State Highway 3 (**SH3**) generally between Uruti and Ahititi at Mt Messenger. We originally assessed a draft report prepared by Marshall Day Acoustics Ltd (**MDA**), Technical Report 10, dated October 2017. This was updated to a "final for lodgement" version dated December 2017 (**The Report**).

We have also read the Draft Construction Noise Management Plan (**CNMP**) dated December 2017.

Mt Messenger is approximately 60 km east of New Plymouth (by road). The proposed road will bypass the tortuous current Mt Messenger route and a particularly difficult tunnel on the hill.

The project comprises a new section of two lane highway which is approximately 6 km in length.

Purpose of Report

The purpose of the report is set out in Section 1 and this includes:

- Determine the existing noise environment that is currently received by noise sensitive buildings in the vicinity of the Project;
- Assess the change in noise level with the Project in place;
- Determine the NZS 6806[1] noise criteria category for each dwelling within 200 m of the Project and determine if mitigation is required and practicable;
- Assess traffic vibration in general terms;
- Assess construction noise and vibration.

NZS 6806 recommends noise criteria for new and altered roads. These criteria depend on the noise mitigation measures that are available for noise sensitive activities and whether these mitigation measures represent the best practicable option. The noise

[1] NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads.

sensitive activities are described as Protected Premises and Facilities (PPF) in NZS 6806. What the Standard does not provide for is an assessment to be made of the impact of the proposed road.

The report overcomes this deficiency by not relying solely on an assessment using NZS 6806. The Report also assesses the change in noise levels (both beneficial and adverse) and we consider this to be appropriate.

Statutory Framework

Operational Noise

Section 2 of the Report sets out the Resource Management Act 1991 framework and identifies that there are no noise limits in the Operative District Plan that control traffic noise levels. It is not possible to set limits for traffic noise given the public nature of the road. Noise impacts on surrounding areas can be managed by controlling what new activities occur in the vicinity of the road, where they can be developed, and what degree of noise mitigation is available. Both indoor and outdoor noise needs to be assessed. The Operative District Plan is currently under review and consideration will be given to these aspects as part of this review.

With respect to a new road, the noise impacts on existing noise sensitive activities needs to be assessed. In this case these noise sensitive activities are dwellings. NZS 6806 makes its assessment at the façade (external wall) of the PPFs. No assessment is made of the noise impacts on outdoor areas.

Traffic Vibration

Acousafe claims to have no expertise in vibration assessment. The Report identifies that traffic vibration is caused by defects with the road surfacing and that a comprehensive road maintenance policy will be used to avoid traffic vibration impacts.

Construction Noise & Vibration

Construction noise and vibration is considered in Section 3.2 of the Report. The proposed Project works are *long term* in with multiple sites being worked simultaneously along the route at any one time.

The Operative District Plan refers to the 1984 provisional version of the construction noise Standard[2] which was updated in 1999 to have full Standard status. The Marshall Day Report proposes to use the 1999 version of NZS6803[3] to manage construction noise associated with this project and we agree with this approach. The 1999 version of the Standard provides a comprehensive methodology for predicting, managing and controlling the noise from construction works with an emphasis on noise management planning and maintaining community relations.

We agree with the sentiment expressed in the foreword to NZS6803:1999 which states:

> *The generally acceptable level of intrusive noise in the community is assessed under the provisions of NZS 6802:1999. However, construction noise is outside the scope of NZS 6802:1999 because it usually cannot be kept within the specified limits. Although this may mean that the noise is undesirable, it is not*

[2] NZS6803P:1984 The Measurement and Assessment of Noise from Construction, Maintenance and Demolition Work.
[3] NZS6803:1999 Acoustics - Construction Noise

necessarily unreasonable when all the relevant factors are taken into consideration. Construction noise is an inherent part of the progress of society.

Section 2.3.2 of the Report sets out construction vibration criteria which is commonly used for such projects.

Assessment Methodology

Road Noise

Section 3.1.2 of the Report discusses the subjective perception to change in traffic noise levels and we consider that Table 4 sets out the appropriate reactions that would be expected.

Traffic noise prediction has been undertaken using SoundPLAN software and this is an internationally recognised computer noise modelling programme. This software undertakes a three-dimensional modelling of noise based on the local topography (modified by the proposed road). The calculation uses the "Calculation of Road Traffic Noise" methodology which has been adapted for use in New Zealand. Local noise monitoring undertaken by MDA has been used to calibrate the model.

Section 3.1.5 describes the modelling parameters and these include an assessment for a 20-year time frame with the predicted traffic volume assumptions set out in Table 3.2. This is a reasonable timeframe to adopt and provides a suitably conservative assessment.

Assessment of Effects

Traffic Noise

Table 5.1 predicts future Traffic Noise Levels for Do-Nothing and Do-Minimum scenarios. These scenarios are in accordance with the NZS 6808 and are described in 2.2.2.4 of The Report. The Do-Nothing scenario is for the current road alignment with a predicted traffic volume increased to the design year (2037). The Do-Minimum scenario is with the proposed new alignment modelled with traffic safety barriers in place and no other noise mitigation measures i.e. no special noise bunds or noise barriers.

The Report identifies the three dwellings that are located within 200 metres of the proposed road. It is understood that 3072 Mokau Road is to be purchased prior to construction but that this dwelling may be reoccupied after the new road is opened. The Report identifies that traffic noise levels will increase "*just perceptibly*" at this dwelling when comparing the Do-nothing with the Do Minimum scenario. There will be a shift in noise from the north-western façade, which is currently exposed to SH3 noise, to the south-eastern façade, which will then be facing the new road.

The actual road traffic noise will not exceed 54 dB $L_{Aeq(24\ hours)}$ which will provide acceptable internal noise levels even with windows open. The noise impact is not predicted to change significantly from the Do Minimum scenario.

Of the two remaining dwellings 2528 Mokau Road is predicted to experience a negligible (1 dB) reduction in noise while 2750 Mokau Road is predicted to experience a slight (4 dB) reduction in noise. Importantly, the new route is not predicted to increase the noise for either of these dwellings.

Construction Noise and Vibration

Section 5.3 of the Report describes the variations in construction noise which may occur. Table 5.2 sets out the separation distances that are required to ensure that the different construction activities comply with the daytime and night-time noise limits. These are expanded upon in the CNMP. Some concern is expressed about 2397 Mokau Road which is the nearest dwelling to the proposed spoil area.

The following request for further information was made regarding 2397 Mokau Road and the response by the Alliance in their correspondence of 6 April 2018 is shown:

Noise

4. A detailed assessment of the construction noise impacts on 2397 Mokau Road resulting from the use of the spoil area is requested. Please identify the possible location of haul road(s) and predict construction noise resulting from the use of the haul road(s) and the spoil area including earthworks activities, and identify what mitigation measures are appropriate and where these should be located. Include the separation distances between the dwelling and the haul roads and the spoil area. Identify the permitted hours of operation for the spoil area as night-time activity is of particular concern.

   Response: There is a possibility for exceedance of the daytime criteria of NZS6803:1999 near 2397 Mokau Road which is in close proximity to the southern spoil disposal area. The Construction Noise Management Plan (CNMP) (which the draft conditions require compliance with) includes the recommended mitigation of the Alliance's noise expert which is that if such exceedance occurs, the following measures are implemented:

   - the spoil site only operates Monday to Saturday 7:30am to 6:00pm (no Sunday or night works at this spoil site);
   - a solid site hoarding is constructed; and
   - there is appropriate on site management to avoid unnecessary noise.

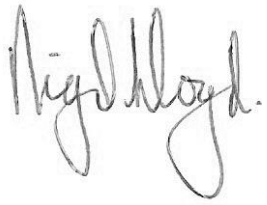
   The CNMP includes proactive noise monitoring and reactive complaint procedures that must be followed.

It is clear from the assessment that has been undertaken that the construction noise limits could be exceeded at 2397. Relying on the CNMP will mitigate the adverse construction noise impact but, because no assessment of the noise has been undertaken, it is unclear whether the construction noise represents a significant impact on health and amenity effect for residents of this dwelling.

Draft Conditions

The Assessment of Environmental Effects contains draft condition for the Designation and for the resource consent. These conditions concentrate on construction noise management and control which is appropriate given the setback distance of the noise sensitive activities.

Yours faithfully
ACOUSAFE CONSULTING & ENGINEERING LTD



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