N4 Collooney to Castlebaldwin, *Proposed Road Development*

APPENDIX NO. 8.1

Considerations for the potential treatment of spoil material outside the CPO

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1 Considerations for the Potential Treatment of Spoil Material - Outside the CPO

1.1 Relevant Standards

1. *Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Revision 1, 25 October 2004* , National Roads Authority;
2. BS 5228: 2009 – *Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, and*;
3. BS 5228: 2009 – *Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.*

1.2 Methodology

As per NRA guidance noise levels associated with construction may be calculated in accordance with methodology set out in BS 5228: 2009: *Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.* This standard sets out sound power levels for plant items normally encountered on construction sites, which in turn enables the prediction of noise levels at selected locations. However, it is often not possible to conduct detailed prediction calculations for the construction phase of a project in support of the EIS. This is due to the fact that the programme for construction works has not been established in detail. Under such circumstances, best practice involves the consideration of appropriate mitigation measures.

1.3 Noise & Vibration Standard Conditions

1.3.1 **Noise Criterion**

The NRA guidance document specifies noise levels that it typically deems acceptable in terms of construction noise. These limits are set out in Table 1-1. Note that these values are indicative only; it may be appropriate to apply more stringent limits in areas where pre-existing noise levels are low.

Table 1-1: Maximum Permissible Noise Levels at the Façade of Nearby Dwellings During Construction

Days & Times	$L_{Aeq\ (1hr)}$ dB	L_{Amax} dB(A)
Monday to Friday 07:00 to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60*	65*
Saturday 08:00 to 16:30hrs	65	75
Sundays and Bank Holidays 08:00 to 16:30hrs	60*	65*

***Note *** Construction activity at these times, other than required for emergency works, will normally require the explicit permission of the relevant local authority.

1.3.2 **Vibration Criterion**

The NRA Guidelines recommend that in order to ensure that there is no potential for vibration damage during construction, vibration from construction activities should be limited to the values set out in Table 1-2.

Table 1-2: Allowable Vibration Levels During Construction Phase

Allowable vibration velocity (Peak Particle Velocity) at the closest part of any sensitive property to the source of vibration, at a frequency of		
Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
8 mm/s	12.5 mm/s	20 mm/s

Measures shall be taken to minimise vibration due to plant and machinery on the site and no machine which uses the dropping of heavy weights for the purpose of demolition shall be permitted.

1.4 Potential Impacts of the Development

1.4.1 **Noise Impact**

A variety of items of plant will be in use, such as tractors and trailers, dozers, loading shovels and excavators all of which are considered to have the potential to generate significant levels of noise. The flow of haulage traffic to the disposal sites is also a potential source of relatively high noise levels.

Given the current stage of the development it is not possible to determine the exact methods or sites which a contractor is likely to consider for the disposal of this material, nor is it possible to quantify the number of vehicle movements associated, however in order to predict the worst case scenario of such an activity the suitable sites identified in section 10 of the Spoil Management Report (appendix 4.3 of volume 4) outlining a *Range of Options* have been used to predict noise impacts.

Due to the fact that the disposal programme has been established in outline form only, it is not possible to quantify the number of movements associated with each potential site and calculate the actual magnitude of noise emissions to the local environment. However, the following worst case assumptions that have been used in the calculation of the indicative noise levels from each potential site located outside the CPO at the nearest noise sensitive locations:

- 20 HGV movements per hour along the proposed haul roads to each of the disposal sites;
- 400 tractor & trailer movements per day across the disposal sites;
- 100 loading shovel movements per day across the disposal sites;
- 300 excavator movements per day across the disposal sites, and;
- 100 dozer movements per day across the disposal sites.

BS 5228: 2009: *Code of practice for noise and vibration control on construction and open sites – Part 1: Noise* sets out typical noise levels for items of construction plant.

Noise models of the each of the potential sites have been developed.

Again using the Brüel & Kjær Type 7810 *Predictor* package and the assumptions for the frequency of construction activity set out above, predictions have been performed for every building in the vicinity of each potential site.

Table 1-3: Range of predicted cumulative noise levels from disposal sites

Site Location	Site I.D.	Range of Disposal Site Emission Levels ($L_{Aeq,1hr}$ dB)
Outside CPO*	LD CP 01	65
	LD CP 04	56 – 63
	LD CP 05	63
	LD CP 06	58 – 64
	LDAG 01	63-65
	LDAG 02	63-65

***Note** ** The location and possible extents of sites have been made available for the purposes of this assessment. They are not however mapped in order to avoid pre-empting considerations by the contractor.

The predicted levels at all locations assessed were in the range of 56 to 65dB $L_{Aeq,1hr,}$ less than the 70dB $L_{Aeq,1hr}$ daytime criterion presented in Table 1-1.

1.4.2 REMEDIAL AND MITIGATION MEASURES

1.4.2.1 Noise

Whilst no specific requirements for remedial measures have been identified a number of generic mitigation measures are recommended for reducing the potential noise nuisance.

These mitigation measures include:

- perimeter screening berms along boundaries shared with noise sensitive locations;
- limiting the drop heights (where possible) of falling materials, and;
- limiting the speed vehicles travel at the site.

The distance between the sites themselves provides a significant degree of natural acoustic attenuation to the nearest residential dwelling.