



---

## Appendix 10B

### 10B.1 Modelling Assumptions and Inherent Mitigation Measures

This Technical Appendix document outlines the protocols and methodologies employed within the scope of the 3D acoustic modelling informing the prediction of noise levels from the proposed facility.

#### ***Prediction Protocols***

As the TRRC is neither in situ nor operational at the current time, noise associated with the usage of such has therefore been required to be calculated. As detailed in the main ES the calculations have been undertaken utilising a 3D noise model, constructed using the SoundPLAN 7.3 software.

Within the UK the current methodology for environmental noise prediction over distance is contained within the document BS5228. However, within paragraph F2.2.2.2 of Annex F it is stated with regard to distance adjustment that *“at distances over 300m noise predictions should be treated with caution, especially where a soft ground correction factor has been applied, because of the increasing importance of meteorological effects”*. Therefore, within the modelling exercise informing this study acoustic propagation has been calculated in accordance with ISO 9613-2: *Acoustics – Attenuation of sound during propagation outdoors: Part 2: General method of calculation*. The SoundPLAN software implements this methodology in full.

The prediction methodology of the ISO Standard takes account of wind and meteorological conditions in the following ways.



---

Wind Direction -	The software assumes a positive wind vector in all directions from the source. The assumption is therefore made within the calculation protocol that the wind is emanating from the centre of the sources and blowing in all directions simultaneously.
Humidity -	70%
Air Pressure -	1013.5mbar
Temperature -	10°C

### ***Foundation of the Model***

The noise model was constructed utilising the following information:

- Detailed OS Mastermap Vector 1:1 scale commercial topographical data;
- Site layout preliminary general arrangement as supplied by GSDA;
- Noise levels for the equipment proposed on site as supplied by O-Gen UK Ltd
- HGV and vehicle movements associated with the site as supplied by the traffic consultants on the project, SK Transport Ltd (Chapter 6).

### ***Modelling Assumptions***

Within the construction of the noise model, certain assumptions have been required to be made due to incomplete information as a result of the early stage of the development and facility design.



---

Key noise sources associated with the facility as used within the noise model are detailed below:

- 4No. Air Cooled Condenser (ACC) Fans located at 15m above ground level. The fans are shrouded in a 10m band of acoustically cladded material similar to that specified within the façade construction of the building structures with an open top and bottom to allow air flow. The ACC fans were specified within the information supplied by O-Gen UK Ltd as generating a broadband noise level of 90dB(A);
- Internal noise generation by the Timber Resource Recovery Centre has been assumed to be below 85dB(A) in accordance with the requirements of the Control of Noise at Work Regulations 2005;

#### ***Inherent/incorporated Mitigation Measures***

Furthermore as a minimum Northern Bio Ltd is committed to incorporate the following mitigation measures into the design of the power facility, and hence these measures have been assumed to form part of the development proposals within the impact assessment.

All assumptions and incorporated mitigation measures embodied within the scope of the modelling exercise are as detailed below.

1. The façade construction of the building envelopes have been assumed in all cases to provide an  $R_w$  sound reduction index of at minimum -38dB(A) based upon the usage of a standard cladding product (Kingspan KS 1000RW/40 including I (insulation) and L (perforated steel liner sheeting)).
2. The roof construction has been assumed to provide an  $R_w$  sound reduction index of at minimum -38 dB(A). This could be supplied by the use of a Kingspan KS 1000RW/30 or 50 both including I (insulation) and L (perforated steel liner sheeting).

- 
- Noise associated with the 4No. ACC fans requires to be reduced by 6dB by appropriate acoustic or design measures from the level quoted within the Modelling Assumptions Section of this appendix:

ACC Fans: Attenuated down to 90Db(A) LWA.

- Vehicle access doors will be closed when not required for access.
- All personnel doors have been assumed to provide the same sound attenuation as the surrounding wall construction. It has further been assumed that all personnel doors to the facility will remain closed at all times when not in use.
- All noise sources on site, with the exception of the following detailed sources, have been assumed to be within the building envelope
  - 4no. Air cooled condenser fan units
  - HGV and vehicle movements.
- It has been assumed within the scope of the calculations undertaken that noise from all activities on site will remain continuous for 100% of the assessment period of 1 hour (100% on time);
- The model has been constructed assuming the 60 HGV's accessing the facility per day, comprising:
  - TRRC facility deliveries: 60HGVs per day.
- It has also been assumed within the calculations that the sound power level of an HGV under acceleration is 105.5 dB as stipulated as a maximum permitted value in EC Directive 92/97/EC. This value has been corrected within the modelling in



---

accordance with the haul road methodology of BS5228 to take account of the number of vehicles per hour and the speed of travel (assumed 16kmph/10mph)

10. All mobile plant operating within and around the ERF will be fitted with either “smart” or broadband reversing alarm systems, or at sensitive times will be manoeuvred with the support of a qualified banksman to minimise the disturbance associated with this aspect of the operations.