

IMMINGHAM EASTERN RO-RO TERMINAL



Environmental Statement: Volume 3
Appendix 14.2: Construction Noise Levels and Assumptions
Document Reference: 8.4.14 (b)

APFP Regulations 2009 – Regulation 5(2)(a) and 5(2)(e)
PINS Reference – TR030007

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Appendix 14.3

On-site operational sound levels and assumptions

- 14.1.1 Sound level measurements were undertaken in March 2022 of a Roll on-Roll off (Ro-Ro) vessel arriving, unloading, loading and departing in the inner harbour at the Port of Immingham. Short-term measurements of other on-site sound sources, including land tug movements, Heavy Goods Vehicle (HGV) drive-bys, reach stacker and diesel refrigerated cargo were also undertaken during the same visit.
- 14.1.2 The sound from unloading and loading the vessels, with the associated on-site HGV and land tug movements, is likely to be one of the noisiest sources during the operation of the proposed development and therefore operational sound levels have been predicted for the following scenario during arrival of up to three vessels. The scenario includes three ships arriving into dock, mooring up, vessel doors opening, vessel unloading (either accompanied HGVs or by land tugs), HGV and land tugs movements on port roads and over the proposed bridge (travelling to the southern compound), a reach stacker operating in the Northern compound and HGV trailers with refrigerated units parked in the trailer parks.
- 14.1.3 CadnaA (version 2021 MR2) 3-dimensional acoustic modelling software has been used to predict the L_{Aeq} noise levels from the on-site operational activities of the IERRT project. Operational sound is predicted using the method described in ISO 9613-2:1996(en) "*Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation*".
- 14.1.4 As a worst case the sound levels have been predicted based on the activities and equipment operating at the closest approach to the noise sensitive receptors (NSRs). The sound sources have been modelled as point sources, with the exception of HGV and land tugs which have been modelled as line sources that travel along the site roads and proposed bridge.

Noise Model Setup

- 14.1.5 The following noise modelling parameters, data and assumptions have been used:
- The layout of the IERRT site is based upon the General Arrangement Plans (Doc. Ref 2.7).
 - The height of the proposed bridge is taken from Engineering Sections, drawings and plans (Doc. Ref 2.8).
 - The 3D digital terrain model (DTM) has been created using LiDAR data from www.environment.data.gov.uk.
 - In the absence of scheme design topographic information, some areas of locally elevated ground from the LiDAR data within the scheme outline have been flattened to fit the proposed scheme layout.
 - Acoustically hard surfaces, which includes roads, other areas of hardstanding and water have been modelled to reflect sound. Acoustically

soft surfaces, which includes areas covered in vegetation have been modelled to absorb sound.

- All existing building outlines have been taken from the OS MasterMap provided by the client. Existing building heights have been determined using the OS MasterMap Building Height dataset.
- The proposed buildings have been modelled as two-storey (6.5 m high).
- Sound from site activities have been modelled using spectral L_{Aeq} data to allow more accurate prediction of sound propagation.
- The sound level data have been taken from on-site measurements taken in the inner harbour, Port of Immingham.
- ABP have provided the indication of the number of HGV and land tug movements in the worst-case hour during vessel unloading (which assumes that this activity takes place within a 4-hour unloading window and that each vessel is unloaded at the same time – i.e., three vessels are unloaded simultaneously).
- The HGV and land tugs have been modelled travelling at 32 kph (20 mph).
- The model included the following plant/ vehicle movements:
 - Vessel arrival mooring and door opening
 - Unloading cargo
 - One reach stacker located in the northern compound
 - Refrigerated units (diesel) parked and operating on the closest trailer parking spaces to the NSRs
 - 177 HGV movements and 324 land tug movements per hour over the proposed bridge
 - 177 HGV movements and 107 land tug movements per hour past the main entrance into the southern compound
 - 252 HGV movements per hour along the terminal access road near to the Nippon Gas Office building
 - 214 HGV movements per hour along Robinson Road by the People Asset Management Ltd (PAM) building (a port occupational health services building).
- Operational sound levels have been predicted by the NSRs at 4 m above ground, representative of first floor level, apart from the PAM building which is a single storey building and therefore sound levels have been predicted at 1.5 m above ground.

14.1.6 The table below shows the measured noise level for each activity, corrected to a distance of 1 m, and the modelled height of the noise source and duration over a 1-hour period.

Activity	Sound Level at 1 m $L_{Aeq,T}$ dB	Modelled source height	Duration
Arrival-mooring and door opening	98	1 m	6 minutes
Arrival-unloading	106	1 m	60 minutes
HGV Drive-by (accompanied)	91	1.5 m	n/a
Land Tug Drive-by	95	1.5 m	n/a
Reach Stacker	95	1 m	30 minutes
Refrigerated Units	78	2 m	30 minutes

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