5. NOISE

5.1 Introduction

This section of the Environmental Impact Statement assesses the impact of noise emissions from the proposed development on the existing environment and describes the mitigation measures taken to minimise these impacts.

Noise is measured in terms of decibels (dB); a unit of level derived from the logarithm of the ratio between sound power level and a reference value. It is usual to measure noise levels using a frequency weighting (A-weighting) which differentiates between sound of different frequency (pitch) in a similar way to the human ear.

Instantaneous noise levels vary significantly and statistical parameters are used to describe noise levels. The most common parameters are as follows:

- L_{A10} is the dBA level exceeded for 10% of a given time. It is used as a descriptor of intermittent noises such as road traffic.
- L_{A90} is the dBA level exceeded for 90% of a given time. It is used as a descriptor of the background noise.
- L_{Aeq} is the equivalent continuous steady sound within a given time and is basically a measurement of the average noise levels over a period.

The background noise levels are determined in terms of these parameters as are the predicted noise emissions from the plant.

The impact of the noise emissions from the proposed facility are then assessed by comparing the existing and predicted noise levels to standards specified in the EPA Guidance Note on Noise, the EU Green Paper, WHO publications and UK Planning Policy Guidance Notes.

5.2 Existing Environment

The background noise levels were measured continuously over a period of one week by Consultant Acoustic Engineers Eanna O'Kelly & Assoc, whose report is contained in Attachment 6 of this EIS. A single monitoring point was chosen at a distance from the road similar to the distance of the houses from the road.

The locations of the noise monitoring point is shown in Figure 5.1.

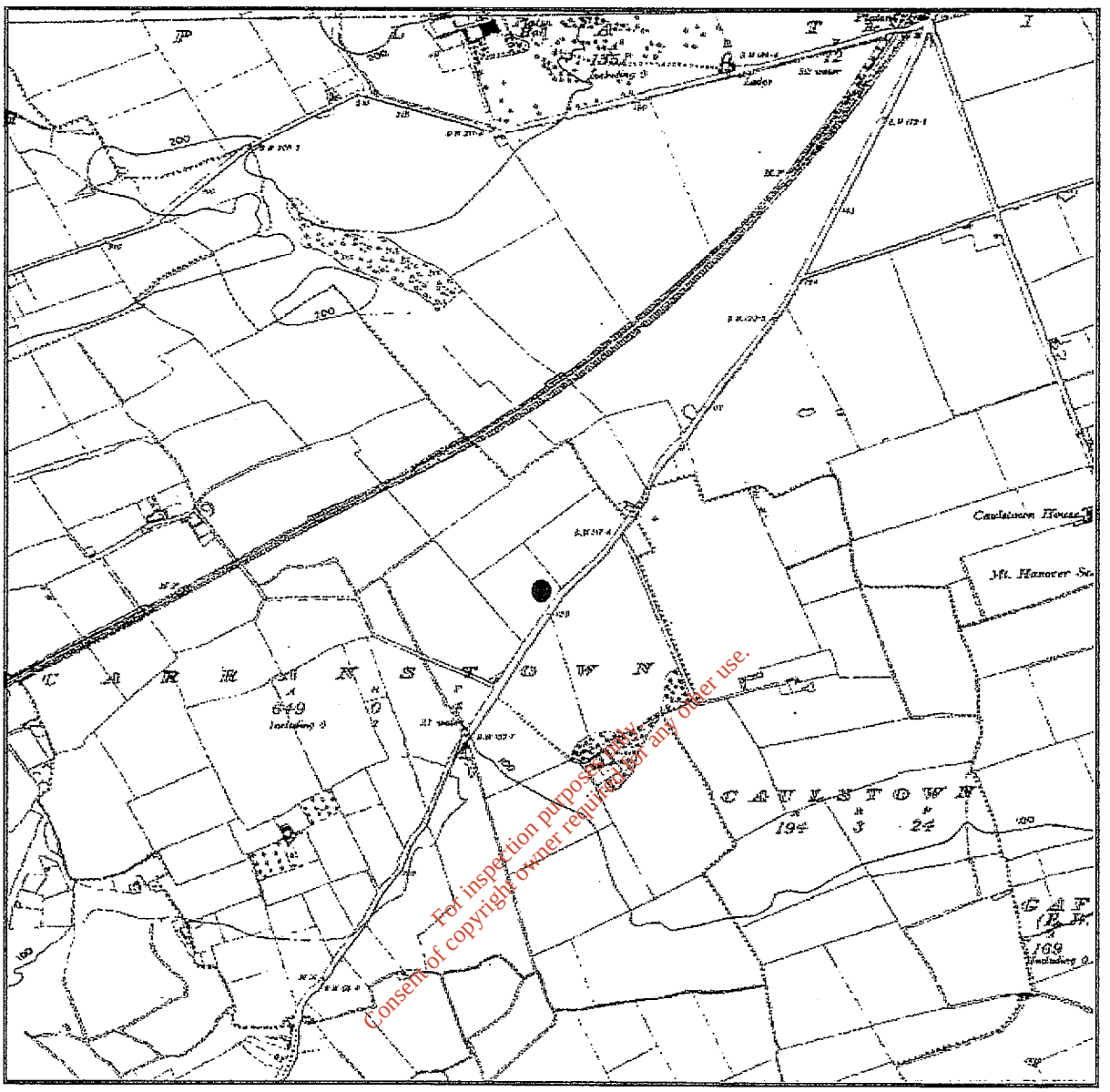

Figure 5.1 – Noise Monitoring Location

5.2.1 Noise Survey

The background noise levels measured during the survey indicate that the noise levels can generally be divided between day and night. For noise measurements, between 8 am and 10 pm is generally referred to as daytime and 10 pm to 8 am as night time. Over the seven days of monitoring the background noise was between 50 dB(A) L_{Aeq} and 60 dB(A) L_{Aeq} between 10pm and 8am and was over 60 dB(A) L_{Aeq} between 8am and 10pm.

However, the noise levels generally increased from 6am onwards and often exceeded 60 dBA after 6 am. This is indicative of increased traffic levels early in the morning.

The average daytime (8am to 10pm) noise level was 61.3 dB(A) L_{Aeq} and the average night time noise level was 55.8 dB(A) L_{Aeq}.

These background noise levels are relatively high and indicate that traffic on the R152 is a significant noise source. Table 5.1 below shows typical noise levels in different situations and gives a general description of different noise levels. The data is sourced from the EPA Guidance Note and from Woods – 'A practical Guide to Noise'.

Table 5.1 Typical Noise Levels

L_{Aeq}*	Woods	EPA
0	-	Absolute silence
25	-	Very quiet room
35	-	Rural night-time setting. No wind
40	Whispered Conversation at 2m	-
55	-	Daytime, busy roadway 0.5 km away
70	Loud radio	Busy restaurant
85	Heavy lorries at 6m	Very busy pub. Voice has to be raised to be heard
100	Platform of underground station	Disco or rock concert
120	Ships engine room	Uncomfortably loud. Conversation impossible
140	30 m from military aircraft	Noise causes pain in ears

* *Values are expressed in dB_A*

It is therefore concluded that the existing noise levels are higher than those expected in a typical rural setting with the predominant noise source in the area being from traffic on the road.

5.3 Construction Impacts and Mitigation

Noise will be generated during the construction phase due to the use of excavators, pile-driving equipment, trucks, drills, etc. Construction noise will occur for a limited period of between 18 and 24 months. Heavy construction activities will be carried out during daytime hours only and will be embargoed at night.

Construction plant and equipment will comply with Statutory Instrument SI No. 320 of 1988, European Communities (Construction Plant and Equipment) (Permissible Noise Level) Regulations 1988. The requirements and standards set out in BS 5228, Noise and Vibration Control on Construction Sites will also be complied with. During plant commissioning periods, any tests or procedures which are known to be potentially noisy such as the testing of boiler safety valves, will be carried out during daytime hours only. Construction noise is therefore not expected to have any additional impact on the receiving environment at night-time.

Like noise, the vibration levels generated during the construction period will vary. Vibration propagation and observed levels are site specific, dependant on local geology and receiving location construction. Accounting for all potential variables in the transfer function from a source to a receiving location make the prediction of vibration levels extremely difficult. Appropriate notice of potentially high vibration impact operations, such as piling, will be given to affected parties as appropriate.

Construction noise is therefore not expected to have any additional impact on the receiving environment at night-time. Every effort will be made to minimise the impact during the daytime and any impact will occur over a short period of time.

5.4 Operational Impacts and Mitigation

5.4.1 Noise Emissions and Emission Limits

The noise limits to which the proposed plant will operate will be set out in the Licence granted by the EPA. The EPA Guidance Note for Noise in Relation to Scheduled Activities recommends that the contribution to noise levels at sensitive locations should be kept below an L_{Aeq} value of 55 dBA by daytime and 45 dBA by night-time and from preliminary discussions with the EPA it is considered likely that these are the limits that will be set for the facility.

This will be effected by the use of low noise equipment, by the implementation of suitable mitigation measures and by suitable design of the equipment and operating procedures using the Best Available Technology in such a way as to minimise noise emissions.

The Fifth Environmental Action Programme (European Community) established a number of broad targets on which to base action up to year 2000 in night-time L_{Aeq}, including; 'exposure in quiet areas should not increase beyond 55 dBA'.

The World Health Organisation (WHO) has suggested a standard guideline value for average outdoor noise levels of 55 dB(A), applied during normal daytime in order to prevent significant interference with the normal activities of local communities.

5.4.2 Predicted Impacts and Mitigation Measures

(a) Noise and Vibration Sources

The waste management facility and particularly the waste to energy plant will contain a number of noise sources, the main sources being:

- Boiler feedwater pumps
- Induced Draught Fans
- Primary and secondary air fans
- Stack
- Air cooled condenser
- Traffic
- Waste sorting plant
- Shredder
- Emptying of skips at the Community Recycling Park

As far as is practical, the design of the plant will minimise noise emissions by locating noise sources within buildings. The building will be insulated to minimise the impact of noise emissions from equipment housed within. The primary external noise sources are the air cooled condenser, the stack, traffic and noise from emptying skips.

The impact of noise emissions from the air cooled condenser and the stack will be minimised through incorporating noise control into the design and the installation of attenuation equipment to minimise noise emissions.

The noise from emptying skips, which will only be occasional, and from internal traffic will only be produced during the day, when noise from traffic on the road will be the predominant noise source.

Safety systems, including pressure relief valves and alarms, could potentially be activated at any time of the day or night. However, this will arise very occasionally, if at all, and these items will be designed so that noise emissions are as low as is practicable using the Best Available Technology.

The vibration levels during operation of the plant will be stable. All equipment will be mechanically isolated and is unlikely to create an impact.

(b) Sensitive Receptors

In the EPA Guidance Note noise sensitive locations are defined as 'any dwelling house, hotel or hostel, health building, educational establishment, places of worship or entertainment, or any other facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels'.

There are a number of residential dwellings in the vicinity of the proposed site which constitute sensitive receptors. There are two houses across the road from the proposed site, one house adjacent to the site on the northern boundary and five houses on the opposite side of the road immediately to the north east of the site.

There is also a cluster of four houses some 500m to the west of the site on the far side of the railway line and ribbon development which starts about 300m to the south west of the site. The land to the east of the site is in agricultural use for 1km.

The eight houses closest to the site are all adjacent to the R152 and the existing noise levels at these houses are relatively high due to the noise from the traffic. Based on the survey and the data listed above it is likely that the existing noise level at these houses is about 55 dBA L_{Aeq} at night and 60 dBA L_{Aeq} by day.

The plant will be designed to ensure that the contribution of the plant to noise levels will not exceed 45 dBA L_{Aeq} at night and 55 dBA L_{Aeq} during the day. After detailed design of the plant, when specific noise emission data is available, a detailed assessment demonstrating that noise emissions from the plant do not contribute more than 45 dBA L_{Aeq} at night, and 55 dBA L_{Aeq} during the day, at the nearby receptors will be submitted to the EPA.

Due to the logarithmic nature of the dBA scale of noise measurement, the total noise from different sources is not equal to the sum of the sound level due to each source, but is rather defined by the following equation:

$$TotalNoise = 10.Log_{10}\left(10^{\frac{SoundLevel1}{10}} + 10^{\frac{SoundLevel2}{10}}\right)$$

Accordingly, 45 dBA plus 55 dBA gives a total noise level of 55 dBA, and 45 dBA plus 45 dBA gives a total noise level of 48 dBA. Given that the background noise level at the closest sensitive receptors is about 55 dBA at night and 60 dBA by day, the noise from the proposed plant will not give rise to any impact in terms of increasing the overall noise level.

Impacts from tonal noise or impulsive noise will be eliminated through design considerations.

5.5 Conclusions

The noise levels in the existing environment are determined by proximity to the R152 regional road. Typical L_{Aeq} values about 20m from the road are 60 dBA by daytime and 55 dBA by night-time. These are relatively high background noise levels.

During construction every effort will be made to minimise noise emissions from the site and construction activities will generally be confined to daytime hours. Any impact will be temporary in nature.

Information on specific noise sources is not available at this time. However, Indaver Ireland will ensure that at the specification stage of the project noise emissions from the plant will comply with the requirements of the IPC Licence set by the EPA. An assessment will be submitted to the EPA demonstrating that noise emissions from the plant do not contribute over 45 dBA L_{Aeq} at night, and 55 dBA L_{Aeq} during the day, to noise levels at any sensitive receptor.

This will be effected by the use of low noise equipment, by the implementation of suitable mitigation measures and by suitable design of the equipment and operating procedures using the Best Available Technology in such a way as to minimise noise emissions.