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Introduction

Background

This Chapter of the Environmental Impact Assessment Report (EIAR), prepared by SLR Consulting Ireland, addresses the potential noise effects of the proposed development at Kilmore, Brinny, Co. Cork.

The proposed development will consist of:

- An extension to the existing sand & gravel pit with extraction area of c. 9.8 hectares worked on a phased basis.
- Continued use of development granted planning permission under P. Ref. 24/6269 comprising the existing processing plant and related water management system; the existing concrete plant; ancillary buildings (site office (63 sq.m), 3 no. welfare portacabins (32 sq.m, 23.5 sq.m & 22.0 sqm), 4 no. storage buildings / containers (15 sq.m, 10 sq.m, 6 sq.m & 5 sq.m), 2 no. garages (76 sqm & 76 sq.m), ESB Substation (26 sq.m)); covered vehicle storage (220 sq.m); site access and all related ancillary facilities (wheelwash, fuel storage tank, weighbridge); and recycling of c. 15,000 tonnes of concrete per year for use in concrete production.
- Phased and final restoration to agricultural use.

All within an application area of c. 18.3 hectares. Permission is sought for fifteen years plus two years for final restoration (total duration 17 years).

Further information on the proposed development, site activities, environmental management systems and controls at the application sites are provided in the Chapter 2 of this EIA Report.

The existing permitted access will continue in use. Planning permission ref. 24/06269 provides for recycling of 15,000 tonnes of concrete per year for use in concrete production; importation of 25,000 tonnes of sand & gravel for processing; and importation of up to 20,000 tonnes of inert soil & stone per year (under Article 27) for phased restoration. This equates to a total of up to 60,000 tonnes per year. The proposed maximum annual output from the pit extension will be 60,000 tonnes of sand & gravel per year. The maximum number of HGV movements will be one to two HGV trips per hour based on a maximum annual total output / import of 120,000 tonnes per year, 50 week year, 5.5 day week ,11 hour full day and 28 tonne (aggregates / inert soil) or 8 cu. metre (concrete) HGV loads. The development will also generate some light vehicular traffic, principally by employees and visitors travelling to and from the pit.

The noise impact assessment presented herein describes and assesses the existing noise baseline characteristics of the local area. The anticipated effects of the sand and gravel pit extension development activities are then applied to these baseline conditions and the resulting noise impacts assessed. Mitigation measures are identified where necessary to eliminate or minimise adverse impacts, insofar as practical.

(Note: A vibration assessment has not been undertaken as previous experience from similar sand & gravel pit operations has demonstrated that such developments do not produce ground-borne vibrations, at any properties / receptors in close proximity).

In order to assist the understanding of acoustic terminology and the relative change in noise, a glossary of terms and phrases, which specifically relate to this Chapter of the EIAR, is provided in Appendix 10-A.

Scope of Work

The following sections of this EIAR Chapter describe the potential noise impacts associated with the proposed development. The following issues are addressed separately:

- regulatory control framework for noise;
- methodology used to assess potential impacts from activities at properties (dwellings and farms);
- baseline conditions pertaining to existing background / ambient noise levels around the site;
- noise impact evaluation criteria;
- prediction of the noise and vibrations levels and identification of potential impacts;
- assessment of severity of impacts, with reference to the evaluation criteria;
- description of mitigation measures that will be incorporated into the design and operation of the scheme to eliminate or minimise the potential for noise impact;
- a summary of any residual impacts; and
- monitoring proposals.

Contributors / Author(s)

The noise assessment presented in this Chapter was prepared by SLR Consulting Ireland. The lead consultant for the study was Tim Paul MSc CEng MRICS MIEI MIQ.

Limitations / Difficulties Encountered

This assessment is compiled on the basis of published guidance documents, and site-specific field surveys. No difficulties were encountered in compiling the required information.

Regulatory Control Framework

The following sections address the statutory planning / policy requirements and regulatory control of noise and vibration generated by development activity. Currently, there is no national or regional legislation which specifically addresses noise and vibration generated by mineral extraction and production of aggregates and construction materials. However, there are a number of guidance documents that are relevant in the context of both noise and vibration action planning.

Planning Policy and Development Control

The National Planning Framework (NPF) 2040 (published in February 2018) is a national planning framework for Ireland. The framework provides the policies for all regional and local plans. In the framework, the extractive industries are recognised as important for the supply of aggregates and construction materials to a variety of sectors.

National Planning Framework Objective 65 addresses noise related impact of development and identifies a requirement for Planning Authorities to :

> *"Promote the pro-active management of noise where it is likely to have significant adverse impacts on health and quality of life and support the aims of the Environmental Noise Regulations through national planning guidance and Noise Action Plans."*

There are no specific policies in relation to noise emissions in NPF for mineral extraction or production of construction aggregates and materials. The stated general development objective is to facilitate the development while at the same time protect the environment.

Quarries and Ancillary Activities

The EPA (2006) publication *Environmental Management Guidelines for Environmental Management in the Extractive Industry (Non-Scheduled Minerals)*[1].recommends the following in respect of noise:

> *In relation to sand and gravel pit developments and ancillary activities, it is recommended that noise from the activities on site shall not exceed the following noise ELVs at the nearest noise-sensitive receptor:*
>
> *Daytime : 08:00–20:00 h LAeq (1h) = 55 dBA*
>
> *Night-time : 20:00–08:00 h LAeq (1h) = 45 dBA*
>
> *Note: 95% of all noise levels shall comply with the specified limit value(s). No noise level shall exceed the limit value by more than 2 dBA.)*

The DoEHLG (2004) Guidelines for Planning Authorities (*Quarries and Ancillary Activities: Guidelines for Planning Authorities*[2]) recommends similar limit values.

Planning Practice Guidance 2014

The web-based Planning Practice Guidance (PPG) sets out the Government's planning policies for England and has a specific category for mineral developments.

With respect to noise, it requires those making mineral development proposals to carry out a noise impact assessment which should identify all sources of noise and, for each source, take into account the emission level, its characteristics, proposed operating location, on-time and its potential impact at the nearby noise-sensitive receptors.

The guidelines provide advice on noise from temporary activities at mineral extraction sites, the recommended derivation of free-field criteria for normal daytime operations, and the absolute criterion of 70dB LAeq,1hr for temporary operations.

Guidelines for Noise Impact Assessment (IEMA)

The *Guidelines for Noise Impact Assessment* produced by the Institute of Environmental Management and Assessment (IEMA) are generally recognised as established good practice standards for scope, content, and methodology of noise impact assessment.

These guidelines address the key principles of noise impact assessment and are applicable to all development proposals where noise effects are likely to occur. These guidelines state that for any assessment, the noise level threshold and significance should be determined by the assessor, based upon the specific evidence and likely subjective response to noise. An example impact scale offered by the IEMA guidelines is shown in Table 10-1.

[1] https://www.epa.ie/pubs/advice/general/EPA_management_extractive_industry.pdf

[2] https://www.epa.ie/pubs/advice/general/EPA_management_extractive_industry.pdf

Table 10-1: Example Impact Scale from the Change in Sound Levels (IEMA)

Long-Term Impact Classification	Short-Term Impact Classification	Sound Level Change dB L_{pAeqT} (+ive or -ive) T = either 16hr day or 8hr night
Negligible	Negligible	≥ 0 dB and < 1 dB
	Minor	≥ 1 dB and < 3 dB
Minor	Moderate	≥ 3.0 dB and < 5 dB
Moderate	Major	≥ 5.0 dB and < 10 dB
Major		≥ 10.0

The criteria above reflect the key benchmarks that relate to human perception of sound. A change of 3dB is generally considered to be the smallest change in environmental noise that is perceptible to the human ear under most normal conditions. A 10dB change in noise represents a doubling or halving of noise level. The difference between minimum perceptible change and doubling or halving of the noise level is split to provide greater definition to the assessment of changes in noise level

To determine the overall noise impact, the magnitude and sensitivity Noise Effects Descriptors are presented in Table 10-2.

Table 10-2: Noise Effects Descriptors (IEMA)

Very Substantial	Greater than 10 dB L_{Aeq} change in sound level perceived at a highly sensitive noise receptor
Substantial	Greater than 5 dB L_{Aeq} change in sound level at a noise-sensitive receptor, or a 5 to 9.9 dB L_{Aeq} change in sound level at a highly sensitive noise receptor
Moderate	A 3 to 4.9 dB L_{Aeq} change in a sound level at a sensitive or highly sensitive noise receptor, or a greater than 5 dB L_{Aeq} change in sound level at a receptor of some sensitivity
Slight	A 3 to 4.9 dB L_{Aeq} change in a sound level at a receptor of some sensitivity
None / Not Significant	Less than 2.9 dB L_{Aeq} change in sound level and/or all receptors of negligible sensitivity to noise or marginal to the zone of the influence of the proposed development

As recognised in the IEMA guidance, there are however many factors which affect people's perception and their responses to noise. Guidance on assessment of the magnitude of noise impact and the significance of the effects are presented in Table 10-3.

Table 10-3: Relationship between Noise Impact, Effect and Significance (IEMA)

Magnitude (Nature of Impact)	Description of Effect (on a Specific Sensitive Receptor)		Significance
Substantial	Beneficial	Receptor Perception = Marked Change Causes a material change in behaviour and/ or attitude, e.g. individuals begin to engage in activities previously avoided due to preceding environmental noise conditions. Quality of life enhanced due to change in character of the area.	**More Likely to be Significant** (Greater justification needed- based on impact magnitude and receptor sensitivities- to justify a non-significant effect) ↕ (Greater justification needed- based on impact magnitude and receptor sensitivities- to justify a significant effect) **Less Likely to be Significant**
Moderate		Receptor Perception = Noticeable Improvement Improved noise climate resulting in small change in behaviour and/or attitude, e.g. turning down volume of television; speaking more quietly; opening windows. Affects the character of the area such that there is a perceived change in the quality of life.	
Slight		Receptor Perception = Just Noticeable Improvement Noise impact can be heard but does not result in any change in behaviour or attitude. Can slightly affect character of the area but not such that there is a perceived change in quality of life.	
Negligible	N/A = no discernible effect on receptor		**Not Significant**
Slight	Adverse	Receptor Perception = Non-intrusive Noise impact can be heard, but does not cause change in behaviour or attitude, e.g. turning up volume of television, speaking more loudly; closing windows. Can slightly affect the character of the area but not such that there is a perceived change in the quality of life.	**Less Likely to be Significant** Greater justification needed- based on impact magnitude and receptor sensitivities- to justify a significant effect) ↕ Greater justification needed- based on impact magnitude and receptor sensitivities- to justify a non-significant effect) **More Likely to be Significant**
Moderate		Receptor Perception = Intrusive Noise impact can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows. Potential for non-waking sleep disturbance. Affects the character of area such that there is a perceived change in the quality of life.	
Substantial		Receptor perception = Disruptive Causes material change in behaviour and /or attitude, e.g. avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in getting to sleep, premature awakening, and difficulty in getting back to sleep. Quality of life diminished due to change in character of area.	

Magnitude (Nature of Impact)	Description of Effect (on a Specific Sensitive Receptor)		Significance
Severe		Receptor Perception = Physically Harmful Significant Changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or psychological effects, e.g. regular sleep deprivation / awakening ; loss of appetite, significant , medically definable harm, e.g. auditory and non-auditory.	Significant

British Standard 5228: 2009+A1:2014

British Standard 5228-1:2009+A:2014 *Noise and Vibration Control on Construction and Open Sites, Part 1: Noise* (BS5228) sets out a methodology for predicting noise levels arising from a wide variety of construction and related activities. It can be used to predict noise levels arising from construction and operational stage activities at extraction sites, including associated earthmoving / restoration operations. BS5228 also sets out tables of sound power levels generated by a wide variety of mobile equipment.

Noise levels generated by site operations and experienced at local receptors will depend upon a number of variables, the most significant of which are:

- the amount of noise generated by plant and equipment being used at the development site, generally expressed as a sound power level;
- the periods of operation of the plant at the development site, known as the “on time”;
- the distance between the noise source and the receptor, known as the “stand-off”;
- the attenuation due to ground absorption or barrier screening effects; and
- any reflections of noise due to the presence of hard vertical faces (i.e. walls).

Design Manual for Roads and Bridges

The Design Manual for Roads and Bridges DMRB (LA 111) considers the following criterion to understand the need for further assessment:

- is the project likely cause change in the baseline noise levels of 1dB LA10,18hr in the do -minimum year compared to do- something opening year;
- is the project likely cause change in the baseline noise levels of 3 dB LA10,18hr in the do – something future year compared to do- minimum opening year;
- does the project involve construction of new road links within 600m of noise sensitive receptors;
- would there be a reasonable stakeholder’s expectation that an assessment is undertaken.

AQTAG09 - Guidance on Effects of Industrial Noise on Wildlife

AQTAG09 (Air Quality Technical Advisory Group 09) guidance provides guidance to assist planning and/or licensing officials handling pollution prevention and control applications for industrial installations on relevant noise emissions and relates these to the requirements of the Habitats Regulations.

The Habitats Directive (92/43/EEC) specifies that, where specific noise from industry, measured at the habitat / nest site is below the levels in Table 10-4, it is considered unlikely that it will have an adverse impact on designated species. Where noise levels are exceeded, a more detailed noise assessment will be required.

Table 10-4: Specific Noise Levels at Habitat / Nest Site

Parameter	Noise Level, dB
$L_{Amax,F}$	80
$L_{Aeq,1hr}$	55

Noise and Human Health

Environmental noise exposure response relationships and thresholds for health endpoints for industry are not available at European or Irish level in legislation or guidelines.

WHO Environmental Noise Guidelines

World Health Organisation (WHO) Europe have produced the WHO Environmental Noise Guidelines 2018 for the European Region as a regional update to the WHO Community Noise Guidelines. The Guidelines include a review of evidence on the health effects of environmental noise to incorporate significant research carried out in recent years. The guidelines provide recommendation for protecting human health from exposure to environmental noise from various sources. The guidelines assess several environmental noise sources such as aircraft, rail, road, wind turbines and leisure noise.

EU Directive 2002/49/EC on the assessment and management of environmental noise introduced annual average indicators of noise exposure (L_{den} and L_{night}) as long-term exposure indicators, which differ from those used in the earlier WHO Guidelines for Community Noise (1999).

Receiving Environment

Study Area

The proposed development is located approximately 5km northeast of Bandon and 4km west of Innishannon in Co. Cork.

The existing permitted access to the site will continue in operation. All truck traffic turns right on exiting the site and travels on the country road to join the R589 regional road at Brinny Cross Roads

There is a history of sand & gravel extraction within the existing pit and manufacture of value-added road surfacing and concrete products. There is an existing concrete plant located within the site. The MSD Brinny pharmaceutical facility is located c. 0.5 km to the east of the site.

The lands surrounding the application site predominantly comprise farm fields. The application site is not subject to any statutory or non-statutory nature conservation designations. Dwellings in the vicinity of application site are generally located along the local road network and comprise

farmsteads or isolated on-off residences, with some occasional small clusters. The nearest dwellings to the application site boundary are shown in Figure 10-1.

Baseline Study Methodology

Environmental noise surveys were carried out at Brinny. The methodology of the surveys and the results are set out below. The weather conditions during the survey periods were acceptable for noise monitoring, being generally dry with little or no wind.

The noise measurements were taken using a Type 1 sound level meter. The sound level meter was calibrated before the measurements, and its calibration checked after by the operator. No calibration drifts were found to have occurred during surveys. All noise equipment had been calibrated to a traceable standard by UKAS (United Kingdom Accreditation Service) accredited laboratories within 12 months preceding the surveys.

At the measurement positions, the following noise level indices were recorded:

- $L_{Aeq,T}$ is the A-weighted equivalent continuous noise level over the measurement period and effectively represents an “average” value.
- $L_{A90,T}$ is the A-weighted noise level exceeded for 90% of the measurement period. This parameter is often used to describe the background noise.
- $L_{A10,T}$ is the A-weighted noise level exceeded for 10% of the measurement period. This parameter is often used to describe traffic noise.

During the surveys, the sound level meter was located in free-field conditions (i.e. at least 3.5m from the nearest vertical reflecting surface, with the microphone approximately 1.5m above ground level).

All noise levels are recorded in ‘A-weighted’ decibels, dB(A). A-weighting is the process by which noise levels are corrected to account for the non-linear frequency response of the human ear. All noise levels are quoted in dB(A) relative to a sound pressure of 20 Pa.

Sources of Information

A desk study was carried out to gather all relevant information relating to noise conditions around the application site. Further information was gathered through a site visit and technical assessments consistent with current standard methodologies and published best practice guidelines. This yielded the data required to allow an assessment of likely significant effects of the proposed development on sensitive receptors within its zone of influence.

Field Survey / Noise Monitoring

The noise monitoring locations used in the noise survey are shown in Figure 10-1. KRL took over operation of the facility in 2020 and implemented a noise monitoring programme. (Note: The existing pit was not operational during 2025).

Location N1 is representative of noise levels at the northern boundary of the site closest to receptors to the north / northeast.

Location N2 is representative of noise levels at the southern boundary of the site.

Location N3 is representative of noise levels on the northwest boundary of the site closest to receptors to the northwest.

Noise monitoring results are provided in Table 10-5.

Table 10-5: Summary of Noise Monitoring Results (2020 – 2024)

Date	Location	$L_{AEQ,1hr}$(dB)	$L_{A10,1hr}$(dB)	$L_{A90,1hr}$(dB)
02/07/2020	N1	54	55	41
02/07/2020	N2	43	47	36
8/10/2020	N1	40	40	29
8/10/2020	N2	52	54	36
01/07/2021	N1	47	47	37
01/07/2021	N2	60	62	56
26/08/2021	N1	41	43	36
26/08/2021	N2	61	62	55
20/10/2021	N1	41	42	36
22/10/2021	N2	51	52	49
29/03/2022	N1	42	46	29
29/03/2022	N2	42	42	33
18/01/2023	N1	54.5	52.1	41.1
18/01/2023	N2	63.5	57.7	43.2
18/01/2023	N3	53.5	45.3	33.0
06/03/2024	N1	61.7	55.3	28.8
06/03/2024	N2	60.7	54.1	26.4
06/11/2024	N1	44.4	46.3	38.6
06/11/2024	N2	54.8	46.2	34.4
Early morning	**Location**	$L_{AEQ,30min}$(dB)	$L_{A10,30min}$(dB)	$L_{A90,30min}$(dB)
18/01/2023 (Early morning/ night-time)	N1	43	45	30
18/01/2023 (Early morning / night-time)	N2	51.8	50.1	42.1

Location N1 is closest to residential receptors (c. 65 metres from the nearest receptor). Allowing for noise attenuation / reduction with distance to the receptor from the monitoring location (conservatively assessed at a reduction of c. -16dB(A) calculated in accordance with BS5228 method of noise prediction) noise monitoring results at N1 confirm that the existing development complies with the DoEHLG (2004), and EPA (2006) recommended day-time noise emission limit of 55 dB(A) and night-time noise emission limit value of 45dB(A) measured at the nearest noise sensitive receptor (early morning / night-time monitoring carried out at N1 on 18/01/2023).

Table 10-6 below identifies the closest receptors affected by noise emissions from activities at the application site, and logarithmic averages of the noise monitoring results.

Table 10-6: Summary of Measured Noise Levels, Free Field dB (Average Values)

Location	Receptors	Period	L_{Aeq}
N1	R1 to R11	Daytime	47
N3	R12, R13	Daytime	53

Sensitive Receptors

Human Receptors

Sensitive locations are those where people may be exposed to noise from the planned activities. The closest receptors to the application site have been identified and assessed on the basis of their distance from the soil stripping activities and operational activities. The relevant receptors are listed in Table 10-7 and their locations are shown in Figure 10-1.

There are closest 13 sensitive receptors identified within the study area of the application site, refer to Table 10-7 below and Figure 10-1

Table 10-7: Noise Sensitive Receptors

Receptor reference	Receptor	Sensitivity
R1	Residential	Medium
R2	Residential	Medium
R3	Residential	Medium
R4	Residential	Medium
R5	Residential	Medium
R6	Residential	Medium
R7	Residential	Medium
R8	Residential	Medium
R9	Residential	Medium
R10	Residential	Medium
R11	Residential	Medium
R12	Residential	Medium
R13	Residential	Medium

Designated Ecological Sites

The application site is not subject to any statutory nature conservation designation, refer to EIAR Chapter 5 – Biodiversity. Due to the distance separation (c 1.8 km) the pHNA Bandon Valley above Inishannon (001740) or any other designated ecological sites located at greater separation distances will not be impacted by noise from the proposed development, refer to EIAR Figures 5-2 & 5-3.

Noise Impact Assessment

Proposed Development

Operational noise rating ($L_{Ar, 1hr}$) predictions at each receptor location are based on the methodology set out in BS5228: Part 1 (2009)+ A1:2014 "*Code of Practice for Noise and Vibration Control on Construction and Open Sites*''

For the purposes of this impact assessment, no reduction has been applied for noise screening around the application site during the site preparatory works including soil stripping, perimeter berm construction.

A noise reduction of -10dB(A) has been adopted for full noise screening by constructed proposed perimeter berms around the sand ang gravel extension site to the north and west in assessing noise impacts for extraction, processing during the operational phase.

For the purposes of the assessment, it is assumed that all potential operational noise sources are active and arise continuously and simultaneously during assessment hours and that the attenuation distance to the selected receptors is calculated from the extraction site boundary (as indicated in Figure 10-1) and from the noise source.

On the basis of the methodology outlined above, it is considered that the noise impact assessment presented herein is sufficiently robust and conservative and represents a worst-case scenario. Detailed noise assessment calculations are provided in Appendix 10-B.

The EPA (2006) Environmental Management Guidelines for Quarries and Ancillary Activities and the DoEHLG (2004) Guidelines for Planning Authorities both recommend a noise emission limit, applied to the nearest noise-sensitive receptors, of 55dB LAeq, 1hr during daytime working hours (defined as 07:00 to 18:00 hours).

A limit of 70dB LAeq, 1hr is permitted for periods of up to eight weeks in any working year at nearby noise sensitive receptors to facilitate ant necessary construction or temporary site works (e.g. screening berm construction).

As set out in Annex D of the updated Environmental Noise Standard, ISO 1996-2:2007(E), a prominent, discrete tonal component may be detected in one-third octave spectra if the level of a one-third octave band exceeds the level of the adjacent bands by some constant level difference (the appropriate level difference varies according to frequency and is greater at lower frequencies).

The noise characteristics of the plant and equipment which will be deployed in extraction and production activities at Brinny and considered by this noise assessment are shown in Table 10-8 below.

Table 10-8: Noise Sources

Plant	Octave band sound pressure levels @ 10m, Hz								L_{AEQ} @ 10m
	63	125	250	500	1k	2k	4k	8k	
Excavator	72	71	74	73	69	66	63	58	75
Processing plant	93	86	79	78	75	71	69	62	80
Loading shovel	84	88	81	74	74	71	66	65	80
Concrete Plant	79	80	73	72	69	68	59	53	79
HGV	80	76	73	70	69	66	63	58	74

The plant and equipment used at the proposed site will not generate impulsive or tonal noise, no penalty was therefore applied to the predicted operational LAr, 1hr noise level for presence of tonal or impulsive elements or for prediction of resultant noise level at each receptor.

Soil Stripping, Berms Construction and Restoration

The following noise sources have been considered in the noise assessment for the initial site operations, during the preparatory works which will include activities such as soil stripping, perimeter berm construction, restoration activities

- Excavator;
- HGV.

For the purposes of the noise assessment, it is assumed that an excavator will be used continuously to carry out the soil stripping / earthworks, with one HGV in attendance on-site at all times. Resultant noise levels at nearest receptors are shown in Table 10-9 below.

Table 10-9: Soil Stripping, Berms Construction and Restoration Noise Levels: Brinny

Receptor	Period	Noise limit $L_{AEQ, 1HR}$ dB(A)	Operational $L_{AEQ, 1HR}$ dB(A)*	Difference
R1	Daytime	70.0	60	-10
R2	Daytime	70.0	59	-11
R3	Daytime	70.0	58	-12
R4	Daytime	70.0	56	-12
R5	Daytime	70.0	54	-16
R6	Daytime	70.0	51	-19
R7	Daytime	70.0	48	-22
R8	Daytime	70.0	51	-19
R9	Daytime	70.0	48	-22
R10	Daytime	70.0	48	-22
R11	Daytime	70.0	47	-23

Receptor	Period	Noise limit $L_{AEQ, 1HR}$ dB(A)	Operational $L_{AEQ, 1HR}$ dB(A)*	Difference
R12	Daytime	70.0	54	-16
R13	Daytime	70.0	54	-16

It can be seen from the results in Table 10-9 above that the noise criterion limits for the short-term preparatory (70dB(A)) are complied with at all sensitive locations assessed.

Sand and Gravel Extraction / Processing / Concrete Operations:

The following noise sources have been considered in undertaking the noise assessment for the operations:

- Processing Plant;
- Front End Loader
- Concrete Plant;
- Excavator;
- HGV;

The resultant LAr, 1hr noise prediction for each receptor location is presented in Table 10-10 below, refer to Appendix 10-B for detailed calculations. Table 10-10 also shows the comparison between the predicted operational LAr, 1hr noise level and a more onerous noise limit of 55dB(A) adopted at each receptor.

Table 10-10: Excavation / Processing / Concrete Operations – Predicted Noise Levels

Receptor	Period	Noise limit $L_{Aeq, 1hr}$ dB(A)	Operational $L_{Aeq, 1hr}$ dB(A)*	Difference dB(A)
R1	Daytime	55.0	50	-5
R2	Daytime	55.0	50	-5
R3	Daytime	55.0	49	-6
R4	Daytime	55.0	48	-7
R5	Daytime	55.0	47	-8
R6	Daytime	55.0	46	-9
R7	Daytime	55.0	44	-11
R8	Daytime	55.0	44	-11
R9	Daytime	55.0	43	-12
R10	Daytime	55.0	43	-7
R11	Daytime	55.0	44	-6
R12	Daytime	55.0	46	-9
R13	Daytime	55.0	45	-5

It can be seen from the results in Table 10-10 above that the noise levels generated solely by proposed development, even in a worst-case scenario, are below the recommended daytime noise limit at all nearby residential noise sensitive locations.

Cumulative Noise Assessment

To identify the potential impact of extraction / processing and concrete activities at the proposed sand and gravel, the predicted specific LAeq, 1hr dB(A) noise levels have been logarithmically added to existing ambient noise levels. The cumulative levels have been compared to the existing ambient noise levels at each of the noise sensitive locations for each time-period. The cumulative assessment is presented in Table 10-11 below.

Table 10-11: Cumulative Operational Noise Levels: Extraction / Processing & Concrete Recycling (Without Noise Mitigation Measures)

Receptor	Period	Existing noise level $L_{Aeq,T}$ dB(A)	Operational $L_{ar,\ 1hr}$ dB(A)*	Cumulative $L_{Aeq,\ T}$ dB(A)*	Difference	Short term impact (No Mitigation)	Long term impact (No Mitigation)
R1	Daytime	47	50	52	5	Moderate	Moderate
R2	Daytime	47	50	52	5	Moderate	Moderate
R3	Daytime	47	49	51	4	Moderate	Minor
R4	Daytime	47	48	51	4	Moderate	Minor
R5	Daytime	47	47	50	3	Moderate	Minor
R6	Daytime	47	46	50	3	Moderate	Minor
R7	Daytime	47	44	49	2	Minor	Negligible
R8	Daytime	47	44	49	2	Minor	Negligible
R9	Daytime	47	43	48	1	Minor	Negligible
R10	Daytime	47	43	48	1	Minor	Negligible
R11	Daytime	47	44	49	2	Minor	Negligible
R12	Daytime	53	46	54	1	Minor	Negligible
R13	Daytime	53	45	54	1	Minor	Negligible

With reference to the Guidelines for Noise Impact Assessment published by the Institute of Environmental Management and Assessment (IEMA), the cumulative short-term noise impact from the proposed development at all receptors is determined to Moderate at R1, R2, R3, R4, R5 and R6 and Minor at all other receptors in a worst-case scenario.

With reference to the Guidelines for Noise Impact Assessment published by the Institute of Environmental Management and Assessment (IEMA), the cumulative long-term noise impact from the proposed development is determined to be Moderate at R1 and R2 and Minor / Negligible at all other receptors in a worst-case scenario.

In view of the above findings, noise mitigation measures will be implemented as set below to reduce the predicted noise levels at the nearest receptors, refer to Noise Mitigation Measures section below.

Ecological Receptors

Due to the distance separation the pNHA Bandon Valley above Inishannon (001740) will not be impacted by the proposed development.

Traffic

The existing permitted access will continue in use. Planning permission ref. 24/06269 provides for recycling of 15,000 tonnes of concrete per year for use in concrete production; importation of 25,000 tonnes of sand & gravel for processing; and importation of up to 20,000 tonnes of inert soil & stone per year (under Article 27) for phased restoration. This equates to a total of up to 60,000 tonnes per year. The proposed maximum annual output from the pit extension will be 60,000 tonnes of sand & gravel per year. The maximum number of HGV movements will be one to two HGV trips per hour based on a maximum annual total output / import of 120,000 tonnes per year, 50 week year, 5.5 day week ,11 hour full day and 28 tonne (aggregates / inert soil) or 8 cu. metre (concrete) HGV loads. The development will also generate some light vehicular traffic, principally by employees and visitors travelling to and from the pit.

In view of the low level of HGV traffic movements generated by the proposed development across the local road network; it is considered that the extent of any change and the likely impact of the proposed development activity can be deemed ‘negligible’ in terms of traffic and that no further assessment is necessary.

Unplanned Events

Accidents, malfunctions and unplanned events refers to events or upset conditions that are not part of any activity or normal operation of the proposed development as has been planned by Keohane. Even with the best planning and the implementation of preventative measures, the potential exists for accidents, malfunctions or unplanned events to occur during proposed development.

Many accidents, malfunctions and unplanned events are, however, preventable and can be readily addressed or prevented by good planning, design, emergency response planning, and mitigation.

In terms of noise impacts the following unplanned events could have an effect on the local area:

- equipment malfunction;
- vehicle collision.

In relation to noise impact of any unplanned events, are considered to be negligible, as they have no potential to increase noise levels at sensitive receptors.

Considering the proposed development there is no need to use any warning sirens or warning sounds in relation to unplanned events in relation to noise impact events.

Cumulative Impacts

In essence, cumulative impacts are those which result from incremental changes caused by other past, present or reasonably foreseeable actions together with those generated by the proposed development. Therefore, the potential impacts of the proposed development cannot be considered in isolation but must be considered in addition to impacts already arising from existing or planned development.

This noise impact assessment indicates that the planned development activities will not contribute to a significant increase in noise levels within the surrounding environment nor will it give rise to any damaging ground-borne vibration.

A planning search undertaken to determine if there were any other planned developments in the vicinity of the application site did not identify any other potentially significant source of noise , either approved or planned within 2km of the application site. As a result, no potential for significant cumulative impacts has been identified. The cumulative impact of the proposed development on local noise and vibration levels is therefore assessed as insignificant.

'Do-nothing Scenario'

At present, the noise environment within the study area is dominated by road traffic noise generated by cars and existing HGV traffic along the local road network (including the existing operations at Brinny sand and gravel pit under planning permission ref. 24/06269). Some natural sounds such as farmyard animals or barking dogs are also audible.

Over time, it is anticipated that the volume of road traffic in general, will increase as economic activity in the wider area increases and that this in turn is likely to lead to a gradual increase in ambient and background noise levels.

Interaction with Other Impacts

The potential impact of the proposed development on sensitive receptors including local residents and sensitive ecological receptors is further considered in Chapter 4 'Population and Human Health' and Chapter 5 'Biodiversity'.

Noise Mitigation Measures

Based on the noise assessment for the proposed development – operations (extraction / processing / concrete recycling) it is considered that measures to reduce the noise impacts of plant associated with the proposed development are required to mitigate noise impacts arising at the application site. In line with accepted best practice, a number of measures will be implemented at the proposed development to minimise the short-term and long-term noise levels generated by site operations.

The following best practice noise mitigation and management measures will be implemented. These measures will comprise:

Screening :-

- Screening berms will be constructed along the perimeter of the sand and gravel pit prior to commencement of extraction activities and will act as acoustic barriers to the closest residences;
- The existing perimeter hedge planting will be retained and enhanced along the boundary of the existing site;
- Screening berms will be inspected on a regular basis and maintained as necessary.

Plant & Machinery :-

- All mobile plant used at the development will have noise emission levels that comply with the limiting levels defined in EC Directive 86/662/EEC and any subsequent amendments;
- All plant items will be properly and regularly maintained and operated according to the manufacturers' recommendations, in such a manner as to avoid causing excessive noise (i.e. all moving parts are kept well lubricated, all cutting edges are kept sharpened, the integrity of silencers and acoustic hoods are maintained);
- All plant will be fitted with effective exhaust silencers which are maintained in good working order to meet manufacturers' noise rating levels. Any defective silencers will be replaced immediately.

Traffic :-

- Any deliveries to the site will be programmed to arrive during daytime hours only;
- Care will be taken when unloading vehicles to reduce or minimise potential noise disturbance to local residents;
- Access / internal haul roads will be kept clean and maintained in a good state of repair, i.e. any potholes are filled, and large bumps removed, to avoid unwanted rattle and "body-slap" from heavy goods vehicles;
- Vehicles waiting within the sand and gravel pit will be prohibited from leaving their engines running and there will be no unnecessary revving of engines.

Experience and monitoring have demonstrated that by implementing these best practice noise management & mitigation measures for plant, machinery and traffic, ambient noise levels from site activities and operations can be reduced by up to 5dB(A).

Residual Noise Impact Assessment

With implementation of the mitigation and management measures detailed above the residual noise impacts at all receptors will reduce to Negligible in the short-term and long-term.

Table 10-15 summarise the impacts, mitigation required (or not), and residual impact for site operations noise (extraction / processing / concrete) at each of the noise sensitive receptors.

Table 10-12: Operation (Extraction / Processing / Concrete) – Residual Noise Impact Summary

Receptors	Increase in operational noise $L_{Aeq,1hr}$ db(a)	Impact without mitigation measures		Mitigation measures (refer above for details)	Reduction in noise from mitigation $L_{Aeq,1hr}$ db(a)	Increase in operational noise $L_{Aeq,1hr}$ db(a)	Residual Short-term impact	Residual Long-term impact
		Short term	Long term					
R1	5	Moderate	Moderate	Required	-5	0	Negligible	Negligible
R2	5	Moderate	Moderate	Required	-5	0	Negligible	Negligible
R3	4	Moderate	Minor	Required	-5	0	Negligible	Negligible
R4	4	Moderate	Minor	Required	-5	0	Negligible	Negligible
R5	3	Moderate	Minor	Required	-5	0	Negligible	Negligible
R6	3	Moderate	Minor	Required	-5	0	Negligible	Negligible
R7	2	Minor	Negligible	Not Required	-5	0	Negligible	Negligible
R8	2	Minor	Negligible	Not Required	-5	0	Negligible	Negligible
R9	1	Minor	Negligible	Not Required	-5	0	Negligible	Negligible
R10	1	Minor	Negligible	Not Required	-5	0	Negligible	Negligible
R11	2	Minor	Negligible	Not Required	-5	0	Negligible	Negligible
R12	1	Minor	Negligible	Not Required	-5	0	Negligible	Negligible
R13	1	Minor	Negligible	Not Required	-5	0	Negligible	Negligible

Noise Monitoring

Noise monitoring will be undertaken at the application site for the duration of extraction activities at the proposed development (in accordance with EPA and DoEHLG guidelines).

Monitoring Locations

Noise monitoring will be carried out twice per year (every six months) at three monitoring locations N1, N2 and N3, refer to Figure 10-1.

Methodology

Continuous Noise Monitoring is carried out using a Larson Davis Model 831 Sound Level Meter or similar, which will be calibrated using a Larson Davis Acoustic Calibrator CAL 200. Noise monitoring is carried out in accordance with ISO 1996/1- 1982 Part 1: “Acoustics-Description and measurement of environmental noise“ and EPA Environmental Noise Survey Guidance Document.

During the noise survey, noise is measured for 1 hour at each noise monitoring location and 3 environmental noise parameters are measured. These are defined below:

- LAeq is the A-weighted equivalent continuous steady sound level during the sample period and effectively represents an “average” value.
- LA10 is the A-weighted sound level that is exceeded for 10% of the sample period; this parameter is typically used to quantify traffic noise.
- LA90 is the A-weighted sound level that is exceeded for 90% of the sample period; this parameter is typically used to quantify background noise.

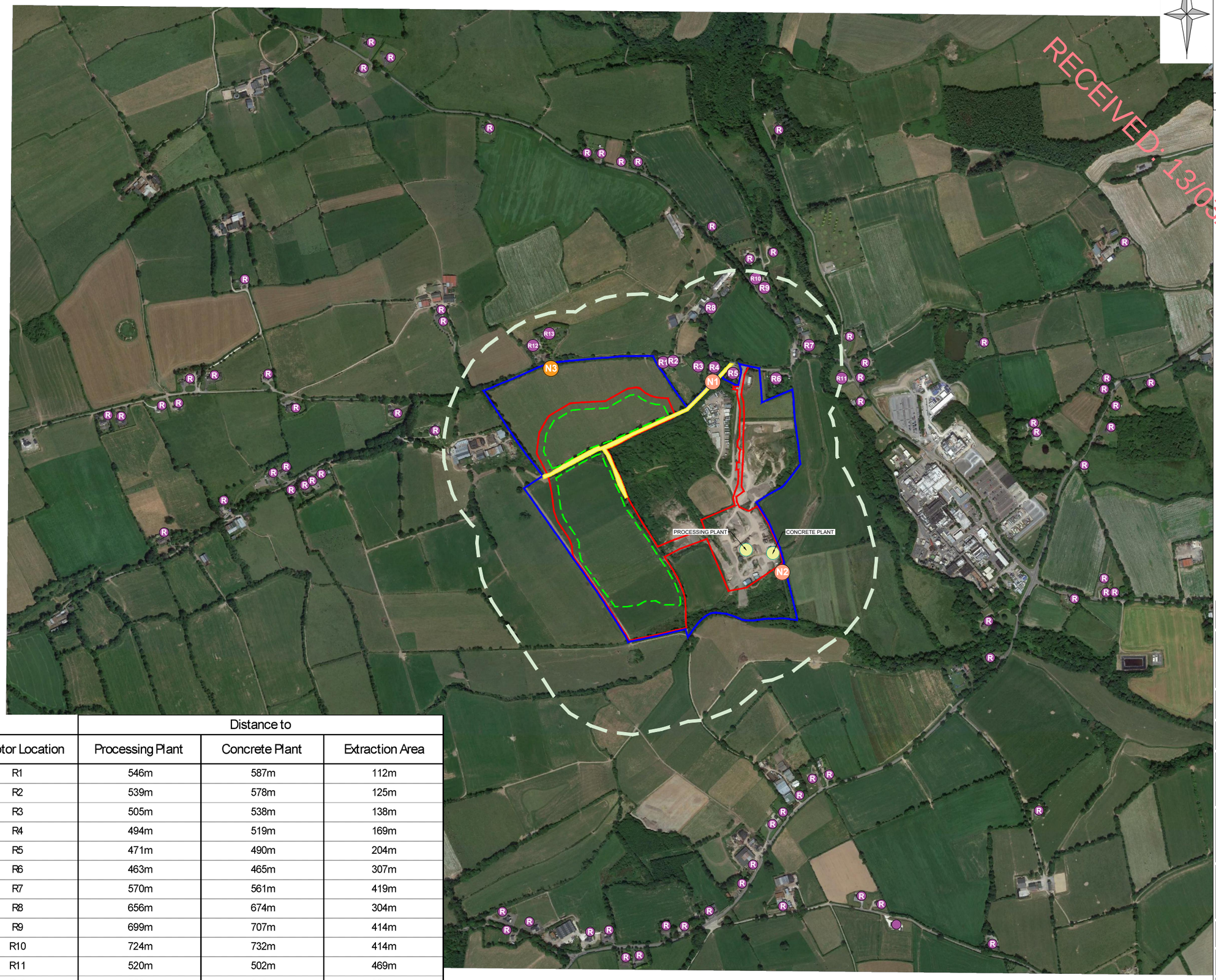
A-weighting is the process by which noise levels are corrected to account for the non-linear frequency response of the human ear. All noise levels are quoted in dB(A) relative to a sound pressure of 20Pa.

Reporting

A report containing all noise monitoring results and their interpretation will be submitted to Cork County Council Planning / Environmental Section on a six-monthly basis where the results can be inspected by third parties. A copy of report will be maintained on site as part of the EMS documentation.

Figures

Figure 10-1: Noise Receptors and Noise Monitoring Locations



	Distance to		
Receptor Location	Processing Plant	Concrete Plant	Extraction Area
R1	546m	587m	112m
R2	539m	578m	125m
R3	505m	538m	138m
R4	494m	519m	169m
R5	471m	490m	204m
R6	463m	465m	307m
R7	570m	561m	419m
R8	656m	674m	304m
R9	699m	707m	414m
R10	724m	732m	414m
R11	520m	502m	469m
R12	786m	845m	201m
R13	779m	836m	212m

Notes:

1. Background Mapping Extract from Google Earth.

Legend:

- APPLICANTS LAND INTEREST (c. 43.2 Ha)
- APPLICATION AREA (c. 18.3 Ha)
- EXTRACTION AREA
- EXISTING WAYLEAVE
- R8 — RECEPTOR LOCATION
- N2 — EXISTING NOISE MONITORING LOCATION (N1 & N2)
- N3 — PROPOSED ADDITIONAL NOISE MONITORING LOCATION (N3)
- 250m RADIUS FROM APPLICATION AREA

Rev	Amendments	Date	By	Chk	Auth

SLR

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Drawing Status & Suitability Code: **PLANNING**

Client: KEOHANE READYMIX LTD.

Project: KILMORE TOWNLANDS, BRINNY, CO. CORK

Drawing Title: NOISE ASSESSMENT : RECEPTORS & MONITORING LOCATIONS

Scale	SLR Project No.
1:10,000 @ A3	065499.00001

Designed	Drawn	Checked	Authorised
EW	EW	TP	TP
Date 03/26	Date 03/26	Date 03/26	Date 03/26

Drawing Number: **FIGURE 10-1** Rev. **0**

13/03/2026

\\dir.local\eu\Office\IE\Dublin\SLR DATA\SLR Projects\0033 Keohane Readymix Ltd\065499 KRL Brinny Reapplication 2026\EIAR Feb 2026\10 Noise\065499.00001.0 FIG_10-1 Noise Assessment.dwg

Appendix 10-A Glossary Of Terminology

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale, is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table 10-A-1: Noise Levels Commonly Found in the Environment

Sound Level	Location
0dB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at one metre away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

Acoustic Terminology

dB (decibel) The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2x10-5 Pa).

dB(A) A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

L_{Aeq} is defined as the notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.

L_{10} & L_{90} If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence, L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L_{10} index to describe traffic noise.

L_{Amax} is the maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.

Appendix 10-B Noise Assessment

Table 10-B-1: Noise Assessment Calculations - Soil Stripping, Berms Construction and Restoration

Note: Refer to Figure 10-1 for Receptor / Activity Locations

Activity	Receptor	Activity LAeq (dB) at 10m Distance		Reflection	Screening	Activity Distance (m)	Noise Attenuated with Distance dB(A)			Operational Noise Levels dB(A)
		Excavator	HDV	dB(A)	dB(A)			Excavator	HDV	
Soil Stripping, Berms Construction and Pit Restoration	R 1	75	74	3	0	112	-21	57	56	60
	R2	75	74	3	0	125	-22	56	55	59
	R3	75	74	3	0	138	-23	55	54	58
	R4	75	74	3	0	169	-25	53	52	56
	R5	75	74	3	0	204	-26	52	51	54
	R6	75	74	3	0	307	-30	48	47	51
	R7	75	74	3	0	419	-32	46	45	48
	R8	75	74	3	0	304	-30	48	47	51
	R9	75	74	3	0	414	-32	46	45	48
	R10	75	74	3	0	414	-32	46	45	48
	R11	75	74	3	0	469	-33	45	44	47
	R12	75	74	3	0	201	-26	52	51	54
	R13	75	74	3	0	212	-27	51	50	54

Table 10-B-2: Noise Assessment Calculations - Extraction / Processing & Concrete Activities

Note: Refer to Figure 10-1 for Receptor / Activity Locations

Activity	Receptor	Activity L_{Aeq} (dB) at 10m Distance					Reflection dB(A)	Screening dB(A)	Activity Distance (m)					Noise Attenuated with Distance dB(A)					Activity L_{Aeq} (dB)					Operational Noise Levels dB(A)
		Excavator	HGV	Loading Shovel	Processing	Concrete			Excavator	HGV	Loading Shovel	Processing	Concrete	Excavator	HGV	Loading Shovel	Processing	Concrete	Excavator	HGV	Loading Shovel	Processing	Concrete	
Proposed Extraction, Processing & Concrete Activities	R 1	75	74	80	81	79	3	-10	112	112	546	546	587	-21	-21	-35	-35	-35	47	46	38	39	37	50
	R2	75	74	80	81	79	3	-10	125	125	539	539	578	-22	-22	-35	-35	-35	46	45	38	39	37	50
	R3	75	74	80	81	79	3	-10	138	138	505	505	538	-23	-23	-34	-34	-35	45	44	39	40	37	49
	R4	75	74	80	81	79	3	-10	169	169	494	494	519	-25	-25	-34	-34	-34	43	42	39	40	38	48
	R5	75	74	80	81	79	3	-10	204	204	471	471	490	-26	-26	-33	-33	-34	42	41	40	41	38	47
	R6	75	74	80	81	79	3	-10	307	307	463	463	465	-30	-30	-33	-33	-33	38	37	40	41	39	46
	R7	75	74	80	81	79	3	-10	419	419	570	570	561	-32	-32	-35	-35	-35	36	35	38	39	37	44
	R8	75	74	80	81	79	3	-10	303	304	656	656	674	-30	-30	-36	-36	-37	38	37	37	38	35	44
	R9	75	74	80	81	79	3	-10	414	414	699	699	707	-32	-32	-37	-37	-37	36	35	36	37	35	43
	R10	75	74	80	81	79	3	-10	414	414	724	724	732	-32	-32	-37	-37	-37	36	35	36	37	35	43
	R11	75	74	80	81	79	3	-10	469	469	520	520	502	-33	-33	-34	-34	-34	35	34	39	40	38	44
	R12	75	74	80	81	79	3	-10	201	201	786	786	845	-26	-26	-38	-38	-39	42	41	35	36	33	46
	R13	75	74	80	81	79	3	-10	212	212	779	779	836	-27	-27	-38	-38	-38	41	40	35	36	34	45