

RECEIVED: 19/01/2024

Lobinstown Quarry

Environmental Impact Assessment Report

Section 10

Noise & Vibration

2024

TABLE OF CONTENTS

10	NOISE & VIBRATION	3
10.1	INTRODUCTION	3
10.2	REGULATORY BACKGROUND	4
10.2.1	Policy & Legislation.....	4
10.2.2	Meath County Development Plan 2021-2027	4
10.2.3	Emission Limit Values.....	5
10.2.4	Extractive Industry Guidelines	8
10.3	METHODOLOGY	9
10.3.1	Study.....	9
10.3.2	Sources Of Information.....	9
10.4	BASELINE DESCRIPTION OF RECEIVING ENVIRONMENT.....	11
10.4.1	Sensitive Receptors.....	11
10.4.2	Environmental Monitoring	11
10.5	ASSESSMENT OF IMPACTS	16
10.5.1	'Do Nothing' Impacts.....	16
10.5.2	Direct Impacts	17
10.5.3	Indirect Impacts	24
10.5.4	Cumulative Impacts	24
10.5.5	Transboundary Impacts	25
10.5.6	Residual Impacts	25
10.5.7	'Worst Case' Impact	25
10.6	MITIGATION & MONITORING	27
10.6.1	Mitigation	27
10.7	REFERENCES	32

LIST OF TABLES AND FIGURES

Table 10.1 Recommended General Noise Limit Criteria (For EPA Scheduled Activities (NG4, 2016).....	5
Table 10.2 Recommended Tonal/Impulsive Noise Ratings	6
Table 10.3 Recent Compliance Monitoring Results	14
Table 10.4 Recent Blast Monitoring Results	15
Table 10.5 Noise - Impact Matrix.....	16
Table 10.6 Noise Prediction Results for Representative Noise Sensitive Receptors	22
Figure 10.1 Aerial Image Showing Noise & Blast Monitoring Locations	13
Figure 10.2 Operational Activities.....	18
Figure 10.3 Flow Chart for Source of Noise Emissions.....	19

10 NOISE & VIBRATION

10.1 INTRODUCTION

This section of the EIAR deals with the issue of noise and blast vibration associated with the proposed development at an existing quarry at Heronstown, Lobinstown, Navan, Co. Meath, known as Lobinstown Quarry.

The section will determine the existing environment with respect to noise and blast vibration by assessing the level of noise and vibration in the vicinity of the site, the potential impacts on the environment, and propose appropriate mitigation measures, if required, by the applicant to avoid, reduce or remedy any significant adverse impacts on the environment.

The development will consist of the continuance of operation of the existing permitted quarry and associated infrastructure (ABP Ref. 17.QD.0017; P.A. Ref. LB200106 & ABP Ref. 309109-21), deepening of the quarry extraction area by 1 no. 15 metre bench from 50 m OD to 35 m OD, a lateral extension to the quarry over an area of c. 4.8 ha to a depth of 35 m OD, provision for aggregates and overburden storage, and restoration of the site to natural habitat after uses following completion of extraction, within an overall application area of c. 18.5 hectares. An extraction capacity of up to 300,000 tonnes per annum is sought to provide the applicant with the ability to respond to demand for aggregates in the region. Permission is sought for a period of 20 years.

Blasting will continue to be used as the method of extraction, to fragment the rock prior to crushing and screening using mobile plant on the quarry floor, and aggregate washing within the site using mobile wash plant. The existing site infrastructure includes site entrance with c. 350 m long paved internal roadway, internal access roads, weighbridge, wheelwash, portacabin office, car park, mobile crushing, screening and wash plant, settlement lagoon system, and other ancillaries, which will be maintained on-site for the duration of the works. An effluent treatment system also exists on-site (Refer to EIAR Figure 3.1).

Discharge of water from the settlement lagoon at the northern boundary of the existing quarry into the adjacent Killary Stream and ultimately the Dee River is undertaken in compliance with a current, valid trade effluent discharge licence consent (Ref. 20/01. Settlement lagoons are in place as per the requirement of the Ref. 20/01 Section 4 Discharge Licence in the northern part of the application area.

10.2 REGULATORY BACKGROUND

10.2.1 POLICY & LEGISLATION

The strategic control of environmental noise is controlled by the Environmental Noise Regulations, which represents the transposition of EU Directive 2002/49/EC into Irish Law. This Directive was developed to provide a common framework to avoid, prevent, or reduce the harmful effects of environmental noise. The regulations focus on the process for addressing environmental noise from major infrastructure such as airports, major roads, and large agglomerations.

Sections 106 to 108 of the *Environmental Protection Agency Act 1992* deal with noise on a smaller (i.e., more local) scale:

- Section 106 deals with control of environmental noise by the Minister and the Agency;
- Section 107 sets out the powers prescribed by the Act to a local authority or the Agency to prevent or limit noise. It typically relates to noise from sites regulated by the Agency or a local authority. This allows local authorities or the Agency to serve notices on premises/sites where prevention or limitation of noise is required. The Environmental Protection Agency Act 1992 (Noise) Regulations 1994 provide for a prosecution where there is a failure to comply with the requirements of the issued notice; and
- Section 108 describes the provisions for complaints regarding noise nuisance to be taken to the District Court by any person or agency. It allows for any person, local authority or the Agency to make a complaint to the District Court where noise levels are considered to be generating a reasonable cause for annoyance. Where the court finds in favour of a noise nuisance complaint, the person or body responsible for the noise must reduce it to a specific level, to limit it or cease it altogether.

10.2.2 MEATH COUNTY DEVELOPMENT PLAN 2021-2027

Noise control is governed by the Environmental Protection Agency Act 1992 and the Environmental Protection Agency Act (Noise) Regulations 1994 (S.I. No. 179 of 1994). The definition of environmental noise includes “noise which causes a nuisance or would endanger human health or damage property or harm the environment”. Noise that is continuous, repeated or loud can have significant impacts on the quality of life of individuals, communities and the environment, in particular, wildlife. The protection of noise sensitive land usage, such as residential uses, is important in order to foster a good quality of life. The Council will seek to minimise noise through the planning process by ensuring that the design of future developments incorporate measures to prevent or mitigate the transmission of noise and vibration, where appropriate.

Meath County Council prepared a Noise Action Plan in 2018 in accordance with the requirements of the Environmental Noise Regulations (S.I. No. 140 of 2006). These regulations give effect to the EU Directive 2002/49/EC relating to the assessment and management of environmental noise. The Noise Action Plan (is largely transport

based) proposes strategic long-term management of environmental noise from transport systems i.e., traffic noise.

It is the policy objective of the Council to:

INF OBJ 73 To support and facilitate the preparation of strategic noise maps and action plans, in conjunction with EMRA, that support proactive measures to avoid, mitigate and minimise noise, in all instances where it is likely to have adverse impacts.

DM OBJ 64 All applications for extractive industry development shall comprehensively address the following criteria as part of a pre-application discussion and/or planning application proposal:

- Impact on existing local communities with regard to but not limited to noise, vibration and subsidence

A detailed assessment of potential noise and blast vibration impacts of the proposed development is provided within this report.

The proposed development will not give rise to significant adverse noise related effects on nearby noise sensitive locations provided the limits and conditions are complied with and mitigation measures are in place.

10.2.3 EMISSION LIMIT VALUES

10.2.3.1 Noise Emission Limit Values

The following environmental noise limits are based on Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4, January 2016) as produced by the Environmental Protection Agency (EPA 2016). It should be noted *“that the guidance within this document relates to the assessment and measurement of noise in relation to Agency scheduled activities only”*.

Table 10.1 Recommended General Noise Limit Criteria (For EPA Scheduled Activities (NG4, 2016))

Daytime Noise Criterion, dB L _{Af,T} (07:00 to 19:00hrs)	Evening Noise Criterion, dB L _{Af,T} (19:00 to 23:00hrs)	Night-time Noise Criterion, dB L _{Af,T} (23:00 to 07:00hrs)
55dB	50dB	45dB

Where tonal and/or Impulsive noise is identified a rating level based on the penalty as outlined in Table 10.2 is to be applied to the measured L_{Aeq}.

Table 10.2 Recommended Tonal/Impulsive Noise Ratings

Period	Sound Characteristic	Correction to L_{Aeq} to Arrive at Rating Level $L_{Ar,T}$ (dB)
Daytime & Evening	Tonal/Impulsive	5
Night-time	Tonal/Impulsive noise from the facility should not be audible at any NSL	

If more than one adjustment is potentially applicable for the type or character of a given single sound source (i.e., a source that is both tonal and impulsive), only a single adjustment shall be applied.

The proposed quarry working hours are consistent with Condition No. 10 of P.A. Ref. LB200106 and Condition No. 4 of P.A. Ref. 22/328:

Monday to Friday:	07:00 to 18:00 hours.
Saturdays:	07:00 to 14:00 hours.
Sundays/Public Holidays	No activities permitted unless otherwise agreed with the Planning Authority for Exceptional circumstances.

No rock-breaking activity shall be undertaken within any part of the site before 08:00 hours on any day.

This is also in line with the planning and development Guidelines for Quarrying and Ancillary Activities issued by the DoEHLG in 2004. An early start-up is required particularly when servicing large construction projects.

Condition No. 9(c) of Planning Permission P.A. Ref. LB200106 states that:

“Noise levels emanating from the site when measured at the boundaries of the nearest noise sensitive receptors identified in the EIAR and submitted with this application shall not exceed $L_{Ar,T}$ value of 55 dB during the period 07.00 – 19.00 hours, shall not exceed $L_{Ar,T}$ 50dB during the period 19.00 – 23.00 hours and shall not exceed $L_{Aeq,T}$ 45dB during the period 23.00 – 07.00 hours. An annual noise survey shall be submitted to the Planning Authority demonstrating compliance with the aforementioned limits. In addition, there shall be no clearly audible tonal component or impulsive component in the noise emission from the site at any noise sensitive location”.

It is considered that the proposed development can operate within the proposed working hours and comply with the EPA Recommended General Noise Limit Criteria (For EPA Scheduled Activities (NG4 2016) with respect to Daytime Noise Criterion, 55 dB $L_{Ar,T}$ (07:00 to 19:00 hrs).

Adoption of the above ELV's will ensure that there is no significant impact on noise sensitive receptors in the vicinity of the site.

10.2.3.2 Blast Vibration Criteria

Blasting in quarries gives rise to ground transmitted vibrations as well as air overpressure, which also maybe perceptible at nearby residences.

It is proposed that blasting will continue to be carried out in accordance with Conditions No. 11 and 12 of Planning Permission P.A. Ref. LB200106:

11. (a) *Blasting operations shall take place only between 1000 hours and 1700 hours, Monday to Friday, and shall not take place on Saturdays, Sundays or Public holidays. Monitoring of the noise and vibration arising from blasting and the frequency of such blasting shall carried out at the applicant's expense by an independent contractor who shall be agreed in writing with the Planning Authority.*
- (b) *Prior to the firing of any blast, the applicant shall give notice of his intention to the occupiers of all dwellings within 500 metres of the site in accordance with the further information date received 21/09/20. An audible alarm for a minimum period of one minute shall be sounded. This alarm shall be of sufficient power to be heard at all such dwellings.*
12. (a) *Vibration levels from blasting shall not exceed a peak particle velocity of 12 millimetres/second, when measured in any three mutually orthogonal directions at any sensitive location. The peak particle velocity relates to low frequency vibration of less than 40 hertz where blasting occurs no more than once in seven continuous days. Where blasting operations are more frequent, the peak particle velocity limit is reduced to eight millimetres per second. Blasting shall not give rise to air overpressure values at sensitive locations which are in excess of 125 dB (Lin)max peak with a 95% confidence limit. No individual air overpressure value shall exceed the limit value by more than 5 dB (Lin).*
- (b) *A monitoring programme, which shall include reviews to be undertaken at annual intervals, shall be developed to assess the impact of quarry blasts. Details of this programme shall be submitted to, and agreed in writing with, the Planning Authority prior to commencement of any quarrying works on the site. This programme shall be undertaken by a suitably qualified person acceptable to the Planning Authority. The results of the reviews shall be submitted to the Planning Authority within two weeks of completion. The applicant shall carry out any amendments to the programme required by the Planning Authority following this annual review.*

10.2.4 EXTRACTIVE INDUSTRY GUIDELINES

The EPA's Draft Advice Notes for Preparing an Environmental Impact Statement (EPA 2015) provides guidance on noise in respect of the preparation of EIARs. Some of the guidance available that have a bearing on noise is given below.

DoEHLG (2004). *National Guidelines on Quarries and Ancillary Activities for Planning Authorities*. Department of Environment, Heritage and Local Government (DoEHLG), Dublin, Ireland.

EPA (2006a). *Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)*. Environmental Protection Agency (EPA), Johnstown Castle, Wexford, Ireland.

EPA (2006b) *Integrated Pollution Control Licensing – Guidance Notes for Noise in Relation to Scheduled Activities, 2nd ed.* Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland.

EPA (2015). *Advice Notes on Current Practice for preparing Environmental Impact Statements*, Draft. Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland.

ICF (2005). *Environmental Code*, 2nd Edition. Irish Concrete Federation (ICF), Dublin, Ireland.

10.3 METHODOLOGY

10.3.1 STUDY

The purpose of the baseline study was to assess existing levels of noise associated with the site, i.e., determine the baseline noise environment. The baseline study included a desktop review of relevant policy, legislation, planning guidelines and technical guidance with respect to noise emissions. The review of the guidance enabled identification of appropriate noise criteria for the proposed development, and prediction of the levels of noise & vibration emissions at the noise sensitive locations in the vicinity of the site.

Noise measurements surveys were undertaken at a number of noise sensitive locations and the results analysed to determine noise conditions. From these results, an assessment can be made of the impact of the development on the existing noise levels of the area.

10.3.2 SOURCES OF INFORMATION

Refer to Section 10.7 below for details on sources of information.

The following has been taken into consideration with respect to noise monitoring surveys and noise modelling:

- Measurement of noise levels was undertaken using a Type 1 Sound Level Meter;
- Cognisance was taken of the EPA's 'Guidance Note for Noise: Licence Applications, Surveys and Assessments in relation to Scheduled Activities (NG4);
- The surveys were carried out in accordance with '*ISO 1996 Acoustics - Description and Measurement of Environmental Noise: Parts 1/2/3*'.
 - This standard defines the basic quantities to be used for the description of noise in community environments and describes basic assessment procedures. It also specifies methods to assess environmental noise and gives guidance on predicting the potential annoyance response of a community to long-term exposure from various types of environmental noises;
 - For example, it stipulates that noise measurements taken when it's raining are invalid. It also advises on microphone positioning and other relevant procedures such as recording weather conditions.
- 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 the operations of proposed minerals extraction sites. BS5228 also sets out tables of sound power levels generated by a wide variety of mobile equipment. Recognised as 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; and

- The guidance adopted in this standard designates noise sensitive locations into a specific category, based on the existing ambient noise levels, i.e., in the absence of construction noise. This then sets threshold noise values for construction related noise that if exceeded, indicates a significant noise impact is associated with the construction activities.



10.4 BASELINE DESCRIPTION OF RECEIVING ENVIRONMENT

10.4.1 SENSITIVE RECEPTORS

The principal concern in respect of emissions from the proposed development is the effect on residential amenity.

The surrounding lands are largely agricultural and held in pasture, although there is significant afforestation nearby to the east and north. The existing quarry is bounded by thick, mature hedgerows on all boundaries (Refer to EIAR Figure 1.3), while the proposed extension is only partly bounded by field boundary hedgerows, while elsewhere it traverses open fields. These new boundaries will be secured with stock fencing and earthen berms will be constructed and planted.

The site is located on lands immediately north of, and with direct access onto, local road L1603. The internal access road extends from the main entranceway on southern boundary and runs along the southern and western boundaries passed the portacabin office and to the processing area in the north of the existing quarry.

Residential development in the area consists of dispersed farmsteads and diffuse or sporadic ribbon development along roadsides and around towns and villages. The closest large residential settlement to the site is Slane, which is located c. 9 km to the southeast. There are no occupied residences within the application site or landholding. The nearest residence is 120 m to the southwest of the permitted extraction area. There are 7 residences within 250 m, 15 within 500 m, 31 within 750 m and 45 within 1 km of the proposed extraction area. There are no community facilities near Heronstown, except for Heronstown National School, i.e., Scoil Naisiunta Mhuire, which is located on the L1604 c. 627 metres north of the extraction area (Refer to Figure 4.1).

There has been a long historical association with quarrying at this location and consideration has been given to screening of the development, direction of working and phasing of working with respect to receptors.

There are no industrial or commercial developments within 1 km of the site, the nearest being the Meade Farm Food Packing, Storage and Distribution facility c. 1.25 km northeast of the site.

10.4.2 ENVIRONMENTAL MONITORING

10.4.2.1 Routine Noise Monitoring

Routine noise monitoring is carried out by TMS Environment Ltd. at Lobinstown Quarry on a quarterly basis at three noise monitoring locations (N1 to N3). The locations of the noise monitoring stations are shown on the Existing Site Plan Figure 1.3 and EIAR Figure 10.1. Most of these locations are at the site boundaries as opposed to nearest Noise Sensitive residences which are further removed.

A copy of the most recent noise monitoring results for 2023 are shown below and the relevant reports are included in Appendix 10.1. Octave band analysis was also carried out at the monitoring locations and observations were made by TMS Environment



personnel to identify the presence of any tonal or impulsive noise. There were no tonal components recorded in the spectra and no tonal or impulsive noise was noted.

Results of monitoring are submitted to Meath County Council on a routine basis. A summary of recent noise monitoring results is provided in Table 10.3 below.

The following parameters were recorded during the noise monitoring survey:

- $L_{Aeq,T}$** is the equivalent continuous A-weighted sound pressure level, in decibels, determined over a time interval T (the sampling interval).
- $L_{A10,T}$** the A weighted level of noise exceeded for 10% of the specified measurement period (T). It gives an indication of the upper limit of fluctuating noise such as that from road traffic.
- $L_{A90,T}$** the A weighted noise level exceeded for 90% of the specified measurement period (T). It is typically used as a descriptor for background noise, giving an indication of the underlying noise level or the level that is almost always there between intermittent noise events.

1/3 Octave Band Analysis:

Frequency analysis of sound such that the frequency spectrum is subdivided into bands of one-third of an octave each. An octave is taken to be a frequency interval, the upper limit of which is twice the lower limit (The unit of frequency is the Hertz (Hz)).

L_{eq} is recommended by the International Organisation for Standardisation (ISO) for measuring and rating noises for traffic areas and for the description of environmental noise.

All noise levels are quoted in dB(A) relative to a sound pressure of 20 KPa. The results of the noise monitoring survey are detailed in Table 10.3 below.

A summary of the recent noise monitoring results is provided in Table 10.3 below. The $L_{Aeq,T}$ values as shown range from 36dB to 53dB $L_{Aeq,T}$. All measurement results comply with the current planning permission limits (P.A. Ref. LB200106 & P.A. Ref. 22/328).

The results of the monitoring survey confirm that the existing quarry at Lobinstown is operating in accordance with Condition Nos. 11 and 12 of Planning Permission P.A. Ref. LB200106 and within the accepted noise limits for this type of development, i.e., $L_{Aeq} < 55$ dB daytime at the nearest noise sensitive locations (Refer to Section 10.2.3.1 above).

It is considered that the proposed development can continue to operate for the proposed working hours and comply with the EPA Recommended General Noise Limit Criteria (For EPA Scheduled Activities (NG4 2016) Daytime Noise Criterion, 55 dB $L_{Ar,T}$ (07:00 to 19:00 hrs).

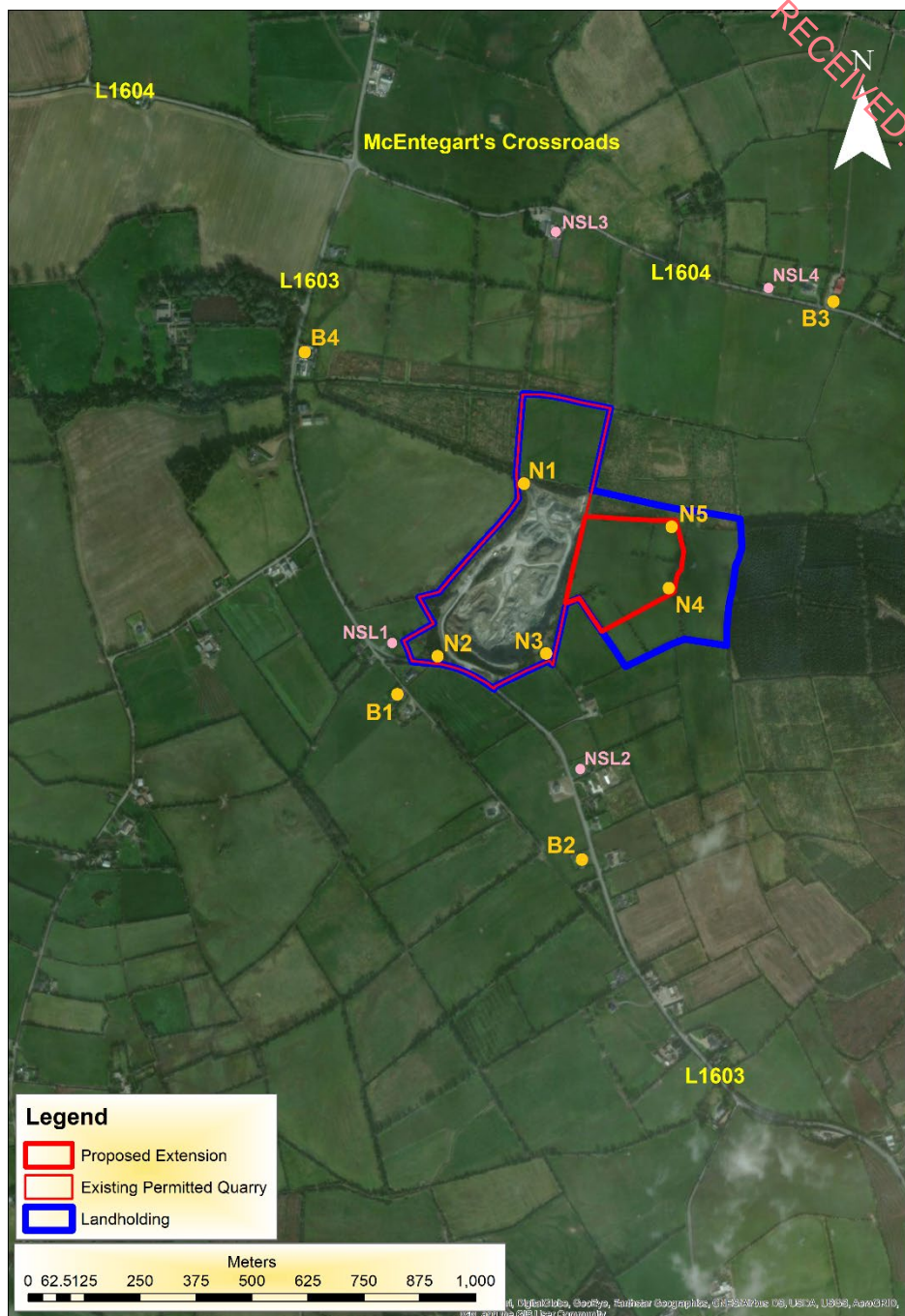


Figure 10.1 Aerial Image Showing Noise & Blast Monitoring Locations

Image showing existing monitoring locations of noise (N1-N3), proposed (N4 & N5) and blast vibration (B1-B4), as well as noise sensitive locations (NSL1-NSL4) used for Noise Prediction Analysis. Rendered in ArcGIS 10.3.1 using aerial image from ESRI World Imagery.

Table 10.3 Recent Compliance Monitoring Results

Station	Monitoring Period		L _{Aeq,T} dB	L _{A90,T} dB	L _{A10,T} dB	Impulsive/ Tonal
	From	To				
N1 Q1 2023	09:05	10:05	47	42	50	No
N2 Q1 2023	10:09	11:09	47	43	48	No
N3 Q1 2023	11:17	12:17	48	43	50	No
N1 Q2 2023	10:22	11:10	44	35	47	No
N2 Q2 2023	11:18	11:52	47	35	50	No
N3 Q2 2023	11:55	12:25	49	36	54	No
N1 Q3 2023	10:14	10:44	43	29	37	No
N2 Q3 2023	09:25	09:55	53	33	53	No
N3 Q3 2023	08:44	09:14	47	39	50	No
N1 Q4 2023	11:02	11:32	36	30	38	No
N2 Q4 2023	09:44	10:14	49	39	51	No
N3 Q4 2023	08:59	09:29	53	44	54	No

RECEIVED: 19/01/2024

10.4.2.2 Blast Monitoring

Blast monitoring is carried out at Lobinstown Quarry for all blasts and is undertaken by Irish Industrial Explosives. The results of recent blast monitoring are summarised in Table 10.4 below. Refer to Figure 10.1 for blast monitoring locations.

Table 10.4 Recent Blast Monitoring Results

Location	Date	Blast Time	Plan Distance	MIC	H		T	V	AOP
				Kg	mm/s		mm/s	mm/s	dBL
B1	08/05/2023	13:17	249	120	8.00		7.49	8.89	118.7
B2			349		2.22		0.95	1.27	118.7
B3			997		0.67		0.69	0.82	101.1
B4			649		1.23		1.06	0.77	108.6
B1	21/06/2023	12:18	280	130	7.75		4.19	4.52	117.4
B2			467		1.28		1.53	0.03	119.9
B3			888		0.64		0.70	0.57	107.0
B4			686		1.08		0.76	0.64	111.5
B1	28/08/2023	13:03	295	130	4.45		4.70	4.45	123
B2			380		0.89		1.59	1.33	123.7
B3			847		0.65		0.60	1.13	118.7
B4			649		1.40		1.02	1.84	120.3

Notes:

1. (H) Horizontal 2. (V) Vertical 3. (T) Transverse 4. (MIC) Maximum Instantaneous Charge

Recent blast monitoring results confirm that Lobinstown Quarry is operating within accepted limits for this type of development i.e., in accordance with Condition Nos. 11 and 12 of Planning Permission P.A. Ref. LB200106 (Refer to Section 10.2.3.2 above).

10.5 ASSESSMENT OF IMPACTS

The principal concern in respect potential noise emissions from the proposed development is the effect on residential amenity.

The following Impact Assessment matrix (Refer to Table 10.5) provides an indication of the significance of potential effects arising during the life cycle of the development not accounting for any mitigation measures.

Table 10.5 Noise - Impact Matrix			
'Do Nothing' Impacts	X		
Factors	Construction	Operation	Decommissioning
Direct Impacts	X	●	X
Indirect Impacts	X	X	X
Cumulative Impacts	X	X	X
Residual Impacts	X	X	X
'Worst Case' Impacts	X	●	X
None/imperceptible: X; Slight: ●; Moderate: ●; Significant/Very significant: ●.			
Refer to Appendix 3 for definition of Significance			

10.5.1 'DO NOTHING' IMPACTS

If the development did not proceed, the aggregate resource would continue to be worked within the confines of what is permitted under the current planning permission (P.A. Ref. LB200106) whilst the remainder of the proven greywacke resource would remain unused in situ, and the local supply of quality aggregates would be more restricted. Under the 'Do Nothing' scenario, all quarrying and ancillary activities would be completed under P.A. Ref. LB200106 and operations would cease thereafter. The site would then be restored as per the requirements of the existing planning permission (P.A. Ref. LB200106).

It is evident from analysis of the above results (Refer to Section 10.4.2 above) that the noise environment in the immediate vicinity of the existing quarry site is determined primarily by noise from the L1603 road.

Residences along this road are typically experiencing noise levels of 47 to 53 dBL_{Aeq} during daytime hours due to passing traffic on the L1603 road. Locally, rural sounds such as birds, dogs and farmyard animals, as well as farm machinery are intermittently audible. It is expected that the volume of road traffic in the area will increase over time, and thus may lead to an increase in noise levels.



10.5.2 DIRECT IMPACTS

As an existing quarry with all of its infrastructure in-situ, only a brief construction phase is envisaged. The proposed development will require the stripping, transport and placement of soils and overburden as part of the quarry extraction, but only in the area of the extension, as this has already been done in the area of the existing extraction area. This will be undertaken in a progressive and phased manner. An excavator and dump trucks will be mobilised to site as and when required to carry out these operations. Peripheral screening berms are already in place along the boundaries of the existing permitted quarry, and will be constructed for the northern, eastern and southern boundaries of the extension area. These activities will be short term and will only occur a few times over the course of the quarry development.

The current vegetated site boundaries will be retained in-situ and the existing vegetation and intervening natural topography, coupled with the distance to neighbouring residences will ensure that the development does not impinge on the locality.

Blasting will continue to be used as the method of extraction, to fragment the rock prior to crushing and screening using mobile plant on the quarry floor, and aggregate washing within the site using mobile wash plant.

This is an established well-developed quarry and as such the working face has already been developed/exposed within the central portion of the site. The mobile crushing and screening plant will be located centrally within the existing excavation, relocating periodically as the working face is developed to the east.

Elevated noise levels may be experienced along site boundaries during construction of screening embankments. However, these works will be of a short-term nature and intermittent as the quarry is progressively advanced to its limits.

The attached Site Layout Figure 3.1 shows the proposed site layout. Cross sections illustrating the quarry development are shown in Figure 3.3.

There will be no changes to the method of extraction and processing as a result of this planning application. Drilling and blasting will continue to be utilised with processing of extracted rock using mobile crushing and screening plant located within the quarry void. This will reduce handling of material and will also have the benefit of screening these activities from outside views and also mitigate impacts associated with noise and dust. The broken rock will be excavated by a combination of either a wheeled loading shovel and / or excavator. Once loaded, the excavated rock will be taken directly to the crushing plant.

The proximity to residences and the requirement to protect their amenity value has been given due consideration through scale, siting and layout of plant and machinery, preservation of perimeter hedgerows, provision of screening berms, phasing, direction of working and and restoration of the residual quarry faces (particularly the southern face).

The objective of the working scheme is to reduce as far as possible the overall visual impact of the workings (Refer to Figures 3.1 to 3.3). Furthermore, mitigation measures

to alleviate any adverse impacts from the development on the environment have been incorporated into the design to ensure that the development can be operated above / within accepted thresholds / standards for this type of development.

The quarry will continue to be worked top-down and phased with development in a easterly direction. The main site activity including mobile processing plant is sited on the quarry floor and as such benefit from screening afforded by the existing quarry faces, topography, perimeter berms and hedgerows.

Sources of noise from the development originate mainly from the operation of extraction equipment, processing plant, from mobile plant and from the movement of vehicles.

A generalised flow chart showing the main site activities likely to give rise to noise emissions is given below in Figure 10.2.

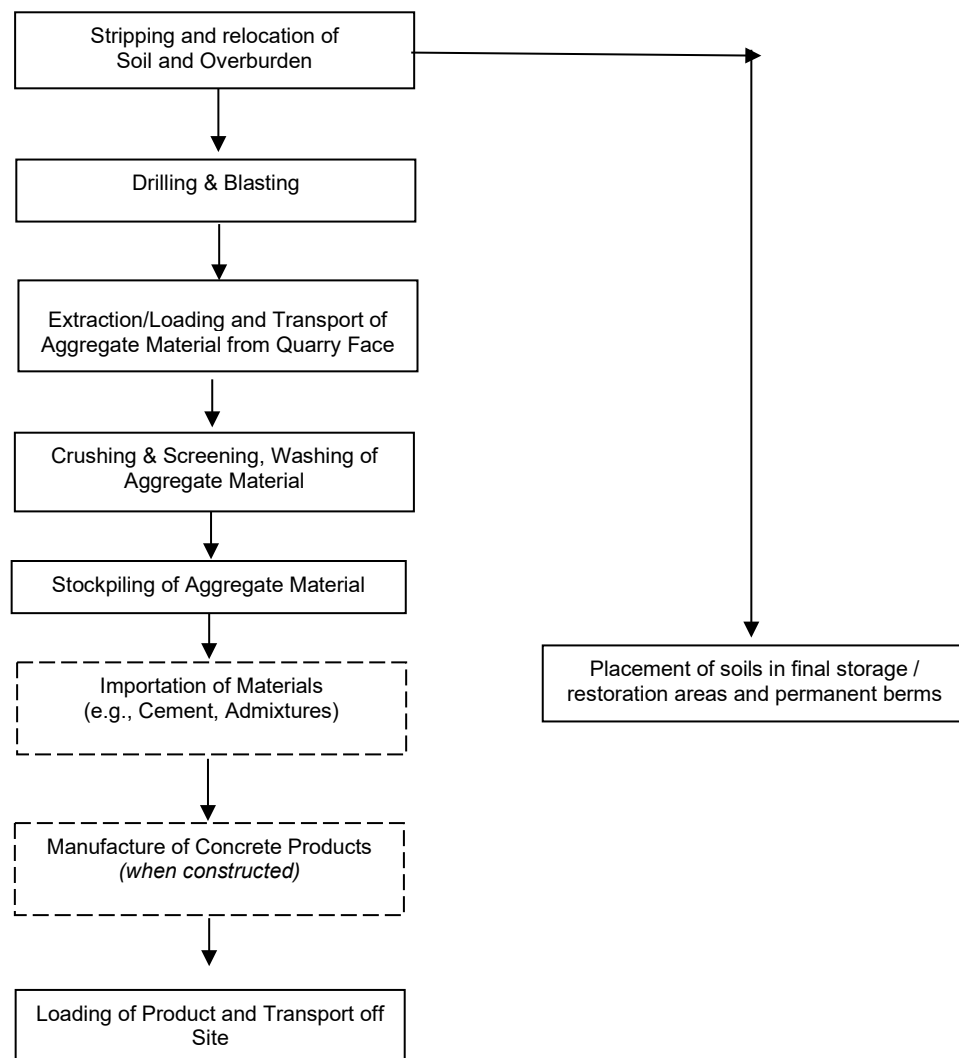


Figure 10.2 Operational Activities

The following flow diagram shows the main sources of noise emissions arising on site and the methods of treatment/abatement to be employed (Refer to Figure 10.3). Note the “Stripping and relocation of Soil and Overburden” step has already been completed.

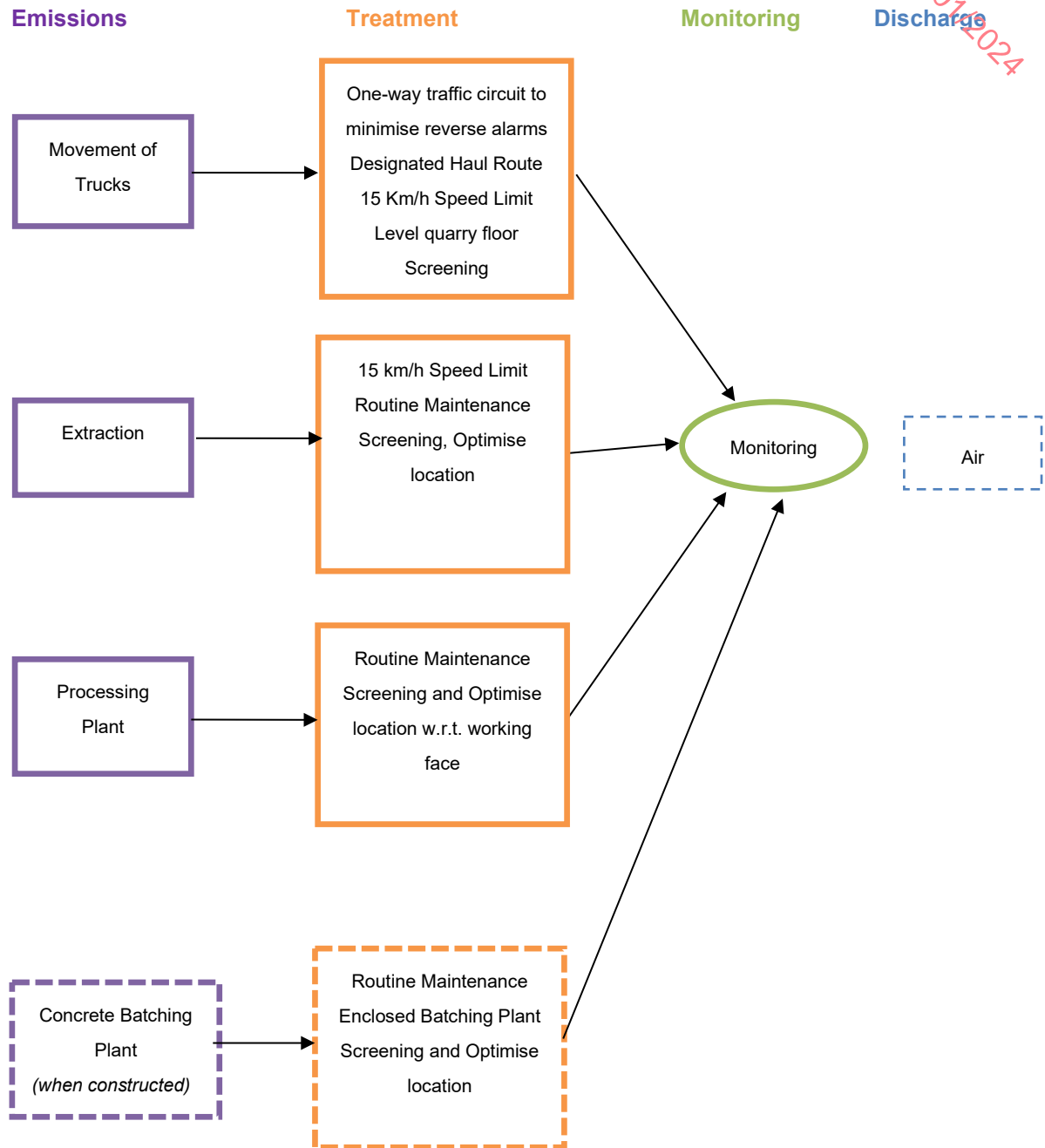


Figure 10.3 Flow Chart for Source of Noise Emissions

The locations of environmental monitoring stations and nearest susceptible residences locations (NSL's are shown on Figure 10.1.).

A summary of the recent noise monitoring results are provided in Table 10.3. The $L_{Aeq,T}$ values as shown range from 36 dB to 53 dB $L_{Aeq,T}$. All measurement results comply with the current planning permission limits (P.A. Ref. LB200106 & P.A. Ref. 22/328).

The proposed extension area is significantly further removed from noise sensitive locations. Noise levels will reduce further as quarrying is developed eastwards with quarry activity being further removed from Noise Sensitive Locations.

It is considered that the proposed development can continue to operate for the proposed working hours and comply with the EPA Recommended General Noise Limit Criteria (For EPA Scheduled Activities (NG4 2016) Daytime Noise Criterion, 55 dB $L_{Ar,T}$ (07:00 to 19:00 hrs).

The results of the monitoring survey confirm that the existing quarry at Lobinstown is operating in accordance with Condition Nos. 11 and 12 of Planning Permission P.A. Ref. LB200106 and within the accepted noise limits for this type of development, i.e., $L_{Aeq} < 55$ dB daytime at the nearest noise sensitive locations (Refer to Section 10.2.3.1 above)

The impact assessment and its context are such that the development is unlikely to result in an adverse effect.

It is considered that any direct impact with respect to noise emissions will be long-term, slight, negative due to continued operation of the quarry.

It is considered that any direct impact with respect to noise emissions will likely be slight, temporary, negative effects during the construction, decommissioning and restoration stages.

Noise resulting from the quarry operations can continue to be kept to below the specified limits by the implementation of good design, effective operation and management and by the implementation of measures which are deemed to be best practice. As such, there is no reason from a noise impact perspective for this development not to proceed.

10.5.2.1 Noise Prediction Modelling

In order to assess the impact of the future eastern quarry extension on the nearest noise sensitive receptors to the south of the quarry a noise prediction exercise was undertaken, whereby the levels of noise at the nearest noise sensitive receptor were calculated. The methodology is based on 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 the operations of proposed minerals extraction sites. BS5228 also sets out tables of sound power levels generated by a wide variety of mobile equipment. Recognised as 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; and
- The guidance adopted in this standard designates noise sensitive locations into a specific category, based on the existing ambient noise levels, i.e., in the absence of construction noise. This then sets threshold noise values for construction related noise, which if exceeded, indicates a significant noise impact is associated with the construction activities.

Under this “worst case” scenario, the excavator is located at its closest planned position to the nearest susceptible residence. For the purpose of this assessment, we have included the following nearest susceptible residences. The noise sensitive locations are shown on EIAR Figure 10.1 above and are considered representative for the area.

The results of this analysis (Refer to Table 10.6 below and Appendix 10.2) indicate that the combined noise levels at the noise sensitive receptors detailed above are between 43 and 53 dB L_{Aeq} .

Table 10.6 Noise Prediction Results for Representative Noise Sensitive Receptors

Noise Sensitive Location	Description	Results dB L _{Aeq}
NSL1	The nearest residence is 120 m to the southwest of the permitted extraction area. For this residence the existing scenario represents the worst case scenario. As such the existing monitoring results at noise monitoring location N2 can be used to determine the impact on the nearest noise sensitive location	47-53*
NSL2	The nearest residence to the proposed eastern quarry extraction area is c. 300 m to the south. The proposed extension area is significantly further removed from noise sensitive locations. It is expected that noise levels will reduce further as quarrying is developed eastwards with quarry activity being further removed Noise Sensitive Locations.	49
NSL3	Heronstown National School is c.627 metres North of Extraction Area and c. 460m distance to the proposed Concrete Plant (P.A.Ref. 22/328).	43
NSL4	The nearest residence to the north along the Local County Road L1604 is c. 570 metres North of the proposed eastern extraction area.	43

*Note: Noise levels at the nearest residences to the south of the quarry will decrease further as the extraction operations extend further eastwards. As such the recent noise monitoring results for N2 & N3 are considered to be representative of the "worst case scenario"

The estimated noise levels at the nearest noise sensitive receptors are based on all machinery working continuously. This will not necessarily be the case on all occasions as work at the site will be subject to demand and the "campaign" nature of aggregate production. As such, it can be considered a worst case scenario for on-going operations at the site.

For the purpose of the prediction assessment, we have allowed a conservative level of 10 dB for screening. However, in our experience it has been shown that quarry face/screening can result in a reduction of up to 15-20 dB. This is also demonstrated by noise monitoring results which show that the existing operations are below the acceptable noise thresholds for this type of development with respect to nearest noise sensitive receptors (Refer to Table 10.3 and Figure 10.1 above).

When this is taken into account along with the results of the noise prediction analysis, it is considered that the applicant will be able to ensure that the noise levels due to operation of the facility will be within the accepted thresholds for this type of development (Refer to EIA Section 10.2.3.1 above) being in accordance with Condition Nos. 11 and 12 of Planning Permission P.A. Ref. LB200106

It is considered that the proposed development can continue to operate during the proposed working hours and comply with the EPA Recommended General Noise Limit Criteria (For EPA Scheduled Activities (NG4 2016) with respect to Daytime Noise Criterion, 55 dB L_{A,T} (07:00 to 19:00 hrs).

The impact assessment and its context are such that the development is unlikely to result in an adverse effect. It is considered that any direct impact with respect to noise emissions from the continued operation of the quarry will be likely, direct, negative, slight, medium-term effects.

Noise resulting from the quarry operations can continue to be kept to below the specified limits by the implementation of good design and effective operation and



management, and by the implementation of measures that are deemed to be best practice.

10.5.2.2 Blast Vibration

The duration of a blast in terms of noise is over in a split second similar to a clap of thunder. The nearest limit of the quarry extraction area is c. 120 m removed from the nearest residential property. The proposed eastern quarry extension area will be further removed (at least 315 m distance) from the nearest residential property to the south.

A blast must be carried out on site on the specified day as concerns over security does not allow for explosives to be stored on site. In exceptional circumstances, due to unforeseen circumstances (e.g. late delivery or security) a blast may be delayed or brought forward. Where possible the Company would endeavour to inform the public of the revised blasting timetable.

Blasting will be carried out using industry standard bench blasting techniques. A consequence of blasting is ground vibration measured as peak particle velocity (i.e., PPV) and air overpressure measured as the noise level of “air blast” (i.e., dB (Lin)). Blast monitoring will be carried out at agreed residences within the area. Ground vibration and air overpressure will continue to be measured for each blast.

The Environmental Protection Agency publication “Integrated Pollution Control Licensing – Guidance Notes for Noise in Relation to Scheduled Activities” states that *“in the case of quarrying and mining operations, the vibration levels from blasting should not exceed a peak particle velocity of 12 mm/sec, measured in any three mutually orthogonal directions at a receiving location when blasting occurs at a frequency of once per week, or less. For more frequent blasting the peak particle velocity should not exceed 8 mm/sec. These levels are for low frequency vibration, i.e., less than 40 Hertz. Blasting should not give rise to air overpressure values at sensitive locations which are in excess of 125 dB (Lin) _{max peak}”*.

This is consistent with Conditions No. 11 and 12 of Planning Permission P.A. Ref. LB200106 (Refer to EIAR 10.2.3.2 above).

Recent blast monitoring results confirm that Lobinstown Quarry is operating within accepted limits for this type of development i.e., in accordance with Condition Nos. 11 and 12 of Planning Permission P.A. Ref. LB200106 (Refer to Section 10.2.3.2 above).

Ground vibration and air overpressure measurements will continue to be undertaken at agreed residences within the area.

Breedon have in place a “Blast Notification Procedure & Blast Monitoring Programme”. A copy of the procedure is provided in Appendix 10.4. This procedure will be amended as necessary to take account of specific conditions attached to any grant of planning permission for the quarry development.

It is considered that any likely direct impact with respect to blast emissions will be momentary, not significant, negative due to continued operation of the quarry.

10.5.3 INDIRECT IMPACTS

There are no indirect impacts with respect to noise and vibration.

10.5.4 CUMULATIVE IMPACTS

Cumulative effects are defined as the addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects (See Appendix 3).

There are several quarries in the wider area, including O'Reilly Concrete Lobinstown Quarry c. 2.5 km to the west (currently in final stages of restoration), Roadstone's Slane Quarry, c. 7 km to the south, an unidentified quarry at Knockmooney on the N2 c. 8.5 km to the southeast, and a disused quarry, now operating as an SRF, at Mullaghduff c. 6 km to the southeast. The only significant industrial activity within 5 km of the site is the industrial/warehouse estate in Grangegeeth, c. 4.5 km to the southeast.

The nearest substantial commercial activity is Meade Farm Group's Packing, Storage and Distribution facility c. 1.25 km northeast of the site at Braystown. The substantial facility employs c. 340 employees. Whites Auto Electrical have a small commercial unit in Matthews Transport Yard, Heronstown, c. 800 m north of the site on the L1603 (c. 185 m north of McEntegart's Cross Roads). PS Supplies, which is a company supplying doors and floors based in Navan, maintains a small commercial unit in Lobinstown Village, while Myles Staircases Ltd. also maintains a workshop and showroom c. 785 m south of the site on the L1603.

There are also other developments nearby, including solar farms, both existing and proposed, that could give rise to potential cumulative impacts. However, these developments are subject to planning and/or the requirements for EIA and are subject to compliance with both planning and licensing conditions. There is no other significant industrial/commercial activity within a 5 km radius of Lobinstown Quarry.

Given the nature of the proposed development, compliance with the mitigation measures specified in the EIAR and the best practice measures that will be implemented during the Construction, Operational and Decommissioning Stages of the proposed development, it is considered highly unlikely that any significant cumulative impacts will arise as a result of the proposed development. Thus, it is our assessment that there will be no significant cumulative impacts with respect to the noise environment resulting from the proposed development, in combination with other local existing developments, quarries, projects and plans.

An EMS, which is accredited to ISO 14001 standard, is in place at Lobinstown Quarry. It addresses monitoring of water, noise & vibration and dust, and may be revised to comply with any new condition of planning. The potential cumulative impacts will be assessed through the existing environmental monitoring programmes that have been established in compliance with the planning permission associated with the quarry. Mitigation measures are also in place at Lobinstown Quarry and included in the EMS. Continual monitoring and measurement will ensure the effective application of these

mitigation measures and ensure that activity at Lobinstown Quarry should not result in any significant cumulative impact (Refer to Section 10.6 below).

A separate Cumulative Impacts Assessment has been included as Appendix 15, which provides an assessment of other projects located within the wider area that are potentially significant with respect to cumulative impacts.

10.5.5 TRANSBOUNDARY IMPACTS

The EIA Directive 2014-52-EU invokes the Espoo Convention on Environmental Impact Assessment in a Transboundary Context, 1991, and applies its definition of transboundary impacts. Given the location (c. 30 km from the border with N. Ireland), nature, size and scale of the proposed development, it is expected that the impacts of the development would have imperceptible transboundary effects on air quality.

10.5.6 RESIDUAL IMPACTS

As a result of the proposed mitigation and enhancement measures incorporated in the design, no significant, negative residual impacts are predicted in terms of noise and vibration levels on noise sensitive locations, their property, livestock or amenity during the operational phase. It is anticipated that the impact on the existing noise environment during the operational phase will likely be direct, negative, slight, long-term effects. These will be due to general activities, such as extraction, crushing and screening, potential future concrete manufacture, movement of materials and site traffic.

Following full restoration and closure of the site that there will also be no significant negative impacts in terms of the noise levels. The restored quarry will provide a more quiescent environment than is currently the case, but with a change in land-use from the original agricultural use to mineral extraction to ultimately a future beneficial use as a wildlife amenity.

10.5.7 'WORST CASE' IMPACT

The closest large residential settlement to the site is Slane, which is located c. 9 km to the southeast. There are no occupied residences within the application site or landholding. The nearest residence is 120 m to the southwest of the permitted extraction area. There are 7 residences within 250 m, 15 within 500 m, 31 within 750 m and 45 within 1 km of the proposed extraction area. Heronstown National School is c. 627 metres north of the extraction area (Refer to Figure 4.1). There are no community facilities near Heronstown, except for Scoil Naisiunta Mhuire primary school on the L1604, with the next nearest being those in Lobinstown (e.g., Post Office) c. 1.8 km northwest of the site.

The existing quarry development is the worse-case scenario given that the proposed extension area is significantly further removed from noise sensitive locations. Noise levels will reduce further as quarrying is developed eastwards with quarry activity being further removed from Noise Sensitive Locations. As such any impact with respect to noise emissions will be long-term, slight, negative due to the continued operation of the quarry.

Various mitigation measures will be implemented to minimise all noise emissions as much as possible, and to ensure noise emissions at the operation continue to remain below specified limits. As a result of these measures, there will not be any significant impact on residences or local amenities (Refer to Section 10.6.1 below).



10.6 MITIGATION & MONITORING

10.6.1 MITIGATION

10.6.1.1 Noise

Sources of noise from the development will originate mainly from the operation of the extraction equipment, processing plant, mobile plant and from the movement of trucks. Noise resulting from the operations can be kept below specified limits by the implementation of good design, effective operation and management and by the adoption of 'best practices'.

In accordance with the principles of Best Available Techniques (BAT) the applicant is committed to employing the most effective and advanced methods of operation to reduce noise emissions and their impacts on the environment.

Breedon Ireland have in place a group wide Environmental Management System (EMS). The EMS is one component of a broader integrated management system (IMS) which is accredited to ISO 14001:2015 standard and the Quality Management requirements of ISO 9001:2015. The IMS is a two-tier system with this top-level Environmental Manual based on ISO EN 14001:2015 being applicable to all activities. The top-level Quality manual then feeds down to the Factory Production Control (FPC) Quality Plans and the site-specific Environmental Management Plans.

The FPC Quality Plans incorporate the procedures and controls in place to reflect the quality system aggregate production. The Environmental Management Plans (EMP's) are site specific and have been designed to comply with the requirements of ISO EN 14001:2015. The EMP's record the procedures and controls in place to reflect the Quality System and the specific environmental aspects and impacts and the legislative requirements applicable at each site.

The Company has implemented a quality assurance system and an environmental management system and has certification to the ISO 9001 and ISO 14001 standards. The Company's experience and implementation of the systems has identified the advantages of a structured and systematic approach in achieving managerial objectives.

A copy of the existing EMP for Lobinstown Quarry is included as Appendix 13.

A number of mitigation measures are in place with respect to the continued operation of the quarry in order to minimise noise emissions and blast vibration as much as possible, and to ensure they remain below specified limits. These mitigation measures will ensure that the operation remains within all specified thresholds, and compliant with good industry practice. These are:

EMP (Refer to Appendix 13 - DP 010 Noise & Vibration Management)

- Working hours shall be strictly confined to the hours stated in the sites permissions;
- There shall be no works on Sundays or Bank Holidays;
- The lowest possible noise level reverse warning alarms consistent with site safety shall be utilised;
- Compressors and pumps shall be enclosed and insulated where possible when in use;
- Muffling devices shall be fitted to ensure that effective noise control is achieved;
- Unnecessary revving of engines shall be avoided;
- Equipment shall be switched off when not in use;
- Plant and vehicles shall be properly maintained and, in particular, the effectiveness of silencers and lubrication of bearings and moving parts shall be carefully monitored; cutting edges of relevant equipment shall be kept sharp;
- For directional noise sources e.g. reversing trucks, the noise source shall be pointed away from the nearest noise sensitive receptors wherever possible;
- Internal haul roads shall be effectively maintained and constructed in such a way as to minimise gradients;
- Acoustic enclosures for pumps and generators and similar plant shall be used to minimise noise levels associated with their operation where possible;
- Drop heights for materials shall be minimised;
- Plant and vehicles shall be started sequentially rather than all at once; and
- When working in close proximity to noise sensitive receptors the works programme shall be carefully controlled so that noisy activities are planned in such a way that they do not all occur simultaneously.

Other Site Measures

- The provision of temporary screen banks to screen site activities from outside views as necessary;
- The preservation of hedgerows and boundary features aids noise attenuation;
- Consideration has been given to phasing and direction of working through preparation of the working scheme;
- The quarry will be worked top-down and phased with development in a southeasterly direction. As such the plant and machinery will be screened from outside receptors by the intervening quarry face and topography which will also act as a noise attenuation barrier;
- Extracted rock will be processed on the floor of the quarry using mobile crushing and screening equipment to produce saleable aggregates. As such the plant and

machinery will be screened from outside receptors by the intervening quarry face and topography which will also act as a noise attenuation barrier;

- Noise sources will be located to take advantage from screening provided by quarry faces and stockpiles. Mobile processing plant will be located at a screened location within the quarry. Haul routes will be designed and maintained, with strict speed limits, to limit vehicle noise;
- The existing designated internal haul roads will be utilised to manage traffic entering and leaving the site to ensure that site traffic is removed from nearest noise sensitive receptors;
- Internal haul road gradients will be kept as low as possible to reduce engine / brake noise from heavy vehicles;
- All plant and machinery is switched off when not in use;
- A noise management programme will be defined as part of the EMS.

10.6.1.2 Blasting & Vibration

Blasting in quarries gives rise to ground transmitted vibrations as well as air overpressure, which also maybe perceptible at nearby residences. In order to minimise these effects, the blast management practice at this quarry will include several mitigation measures, such as: (1) best professional practice in the design and execution of blasting; (2) only certified Shotfirers are used to conduct blasting; (3) millisecond time delays are used in sequential detonation of the explosives to limit the maximum instantaneous charge; and (4) explosive charges are properly confined by a sufficient quantity of quality stemming material.

Efficient blasts ensure as much of the explosive energy as possible is utilised for rock fragmentation, and by implication ground vibration and air overpressure is inefficient use of this energy. Air overpressure values arising from blasting operations fluctuate depending on the weather conditions, a factor outside the control of operators. The emission limit value should be specified with a 95% confidence limit to address this issue.

The following measures should be considered to reduce the effects of blasting:-

- Optimise blast design;
- Monitor blasts and revise blast design, as required;
- Limit ground borne vibration and minimise air over pressure by:
 - taking care in unusual situations e.g., corners;
 - including geological considerations in blast design;
 - Air overpressure is minimised through proper blast design, avoiding detonation of large unconfined charges, and by consideration of atmospheric conditions before blasting;
 - A blast must be carried out on a specified day as concerns over security does not allow for explosives to be stored on site. In exceptional circumstances or



unforeseen circumstances (e.g. late delivery, security, meteorological conditions, etc.) a blast may be delayed or brought forward. Where possible the operator should endeavour to inform the public of the revised blasting timetable;

- When blasting near overhead cables, a risk assessment must be completed by the blast engineer.
- At all times 10 metres step back from the electrical cables must be maintained. No machinery should be positioned beneath or in the vicinity of the power lines.
- Only appropriate detonators should be used near electrical lines. A non-electrical initiation system should be used where possible to eliminate any risk of accidental initiation due to interference by overhead power lines.
- When the proximity of electrical lines causes concern for the IIE engineer the ESB must be contacted for advice before any blasting operations are undertaken.
- Adequate stemming of holes;
- Ensure the correct blasting ratio is obtained. The blasting ratio is a measure of the amount of work expected per unit volume of explosives i.e., tonnes/kg; and
- Notify nearest residences prior to the blast.

It is proposed that blasting will continue to be carried out in accordance with Conditions No. 11 and 12 of Planning Permission P.A. Ref. LB200106 (Refer to EIAR 10.2.3.2 above).

The local community will continue to be informed by the Company of the blasting schedule i.e.,

- Residences within 500 m of the quarry will be provided with a minimum of 24 hours' written notice of intention to blast;
- On the day of the blast a warning siren is sounded before each blast. When blasting operations are completed an ALL CLEAR siren is sounded.

A copy of the proposed Blast Notification Procedure & Blast Monitoring Programme to be adopted at Lobinstown Quarry is provided (Refer to Appendix 10.4).

Consequently, it is considered that the proposed development can continue to operate within the accepted noise and vibration thresholds.

Blast monitoring will be carried out at agreed residences within the area. The results obtained will be used to ensure compliance with any planning condition requirements.

10.6.1.3 Monitoring

Noise monitoring will ensure that the operations comply with recognised thresholds for this type of development.

The results of noise monitoring surveys confirm that the existing quarry at Lobinstown Quarry is operating within the accepted noise limits for this type of development, i.e. $L_{Aeq} < 55$ dB daytime at the nearest noise sensitive locations (Refer to Section 10.2.3.1 above)

Breedon Ireland have in place a group wide Environmental Management System (EMS). A copy of the existing EMP for Lobinstown Quarry is included as Appendix 13. The EMP for the quarry includes for regular noise monitoring to demonstrate that the development is not having an adverse impact on the surrounding environment. The locations of the noise monitoring stations are shown on Figure 10.1. Additional noise monitoring locations will be submitted to the planning authority for approval prior to the commencement of the proposed development.

Breedon have in place Blast Notification Procedures & a Blast Monitoring Programme (Refer to Appendix 10.4). Blast monitoring (ground-borne vibration and air overpressure) is carried out for each blast. The monitoring locations are shown in Figure 10.1. The following information is recorded for each blast: date; time; location in the quarry; amount of explosive used; maximum instantaneous charge; vibration and air overpressure monitoring results. This programme will allow a comprehensive on-going monitoring of noise and blast vibration emissions from the site, thereby assisting in ensuring compliance with any future requirements or regulations. The results of this monitoring will be made available to the Local Authority on a regular basis, where members of the public may examine it.

Through implementation of the proposed mitigation measures it is considered the development will continue to have no significant effects with regard to noise and blast vibration levels on Sensitive Locations, their property, livestock and amenity.

10.7 REFERENCES

- BSI (2014). *BS 5228-2:2009+A1:2014. Noise and vibration control on construction and open sites. Code of practice for basic information and procedures for noise and vibration control*. British Standards Institute (BSI), London, UK.
- DoEHLG (2004). *Quarries and Ancillary Activities - Guidelines for Planning Authorities*, Dept. of the Environment, Heritage and Local Government (DoEHLG), Dublin, Ireland, 46 p. [Available at <http://www.environ.ie/en/Publications/DevelopmentandHousing/Planning/>]
- EPA (1992). *BATNEEC: Guidance Notes for the Extraction of Minerals*. Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, 22 p.
- EPA (2002). *Guidelines on the Information to be contained in Environmental Impact Statements*. Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, 33 p. [Available at <http://www.epa.ie/pubs/>]
- EPA (2003). *Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)*. Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, 140 p. [Available at <http://www.epa.ie/pubs/>]
- EPA (2006a). *Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)*. Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, 28 p. [Available at <http://www.epa.ie/pubs/>]
- EPA (2006b). *Integrated Pollution Control Licensing – Guidance Notes for Noise in Relation to Scheduled Activities, 2nd ed.* Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland.
- EPA (2015). *Advice Notes on Current Practice for preparing Environmental Impact Statements*, Draft. Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland.
- ICF (2005). *Environmental Code, 2nd ed.* Irish Concrete Federation (ICF), Dublin, Ireland.

Internet Sources

- <http://epa.ie> Environmental Protection Agency (EPA), Wexford.
- https://europa.eu/european-union/eu-law/legal-acts_en European Union, Regulations, Directives and other Acts.
- <http://ec.europa.eu/environment/eia/eia-guidelines/g-screening-full-text.pdf> European Commission, Guidance on EIA Screening.
- <http://www.irishstatutebook.ie/home.html> Irish Statute Book, Office of the Attorney General, Dublin.