10.0 NOISE AND VIBRATION

10.1 Introduction

This section of the EIAR has been prepared by TMS Environment Ltd and assesses the impacts on the environment with respect to noise and vibration associated with the proposed quarry deepening at the existing Breedon Cement Ireland Ltd facility in Kinnegad, Co. Meath. This Chapter was prepared by Imelda Shanahan and Graham Adams of TMS Environment Ltd. Imelda has over 30 years professional experience in preparing assessments of this type for various different types of development. Imelda has a BSc (Hons) in Chemistry from University College Dublin and a PhD in Physical Chemistry, she is a Chartered Chemist and a Fellow of the Institute of Chemistry of Ireland and a Fellow of the Royal Society of Chemistry. Graham Adams has a Bachelors Degree in Engineering from TU Dublin (2007) and has extensive experience in noise and vibration monitoring and impact assessment.

The potential noise and vibration impacts of the proposed development are identified and the associated mitigation measures are discussed. Impacts of site operations are considered by taking account of the existing baseline, the projected impacts and compliance with relevant standards.

10.2 Characteristics of the proposed development

The proposed development at the Breedon Cement quarry at Kinnegad, Killaskillen, Co. Meath comprises the deepening of the north-western portion of the current permitted limestone quarry by four extractive benches to 10m OD, over an area of c. 4.13 hectares. The depth will match the permitted depth of the adjacent quarry area as permitted under planning Ref 98/2026 (An Bord Pleanala Ref PL.17.111198). The applicant's wider landholding comprises an existing limestone quarry. cement plant, and asphalt plant.

The proposed development will be served by an existing haul road located entirely within the site boundaries and from the existing vehicular access on the L8021 to the northeast of the site. The proposed development will not result in any increase in the output of the existing limestone quarry or to the production capacity of the existing cement plant to the south, and there will be no change to the operation of the cement manufacturing process as a result of the proposal.

The extent of the proposed development relative to the land ownership boundaries is shown in Figure 10.2.1.

10.3 Methodology

10.3.1 Study Area

Noise and vibration impacts of the proposed project on receptors which could potentially be affected by the proposed development are considered in this Chapter of the EIAR. The study area includes all areas that could potentially be affected by the noise and vibration from the proposed project. The study area for the Operational Phase impact assessment includes receptors and ecological designated sites that could be affected by the proposed project. The study area was determined using professional judgement and from a consideration of the potential impacts on receptors located near the proposed project. The potential impact on human receptors does not extend beyond a distance of approximately 100m from the centre

of the proposed development site.

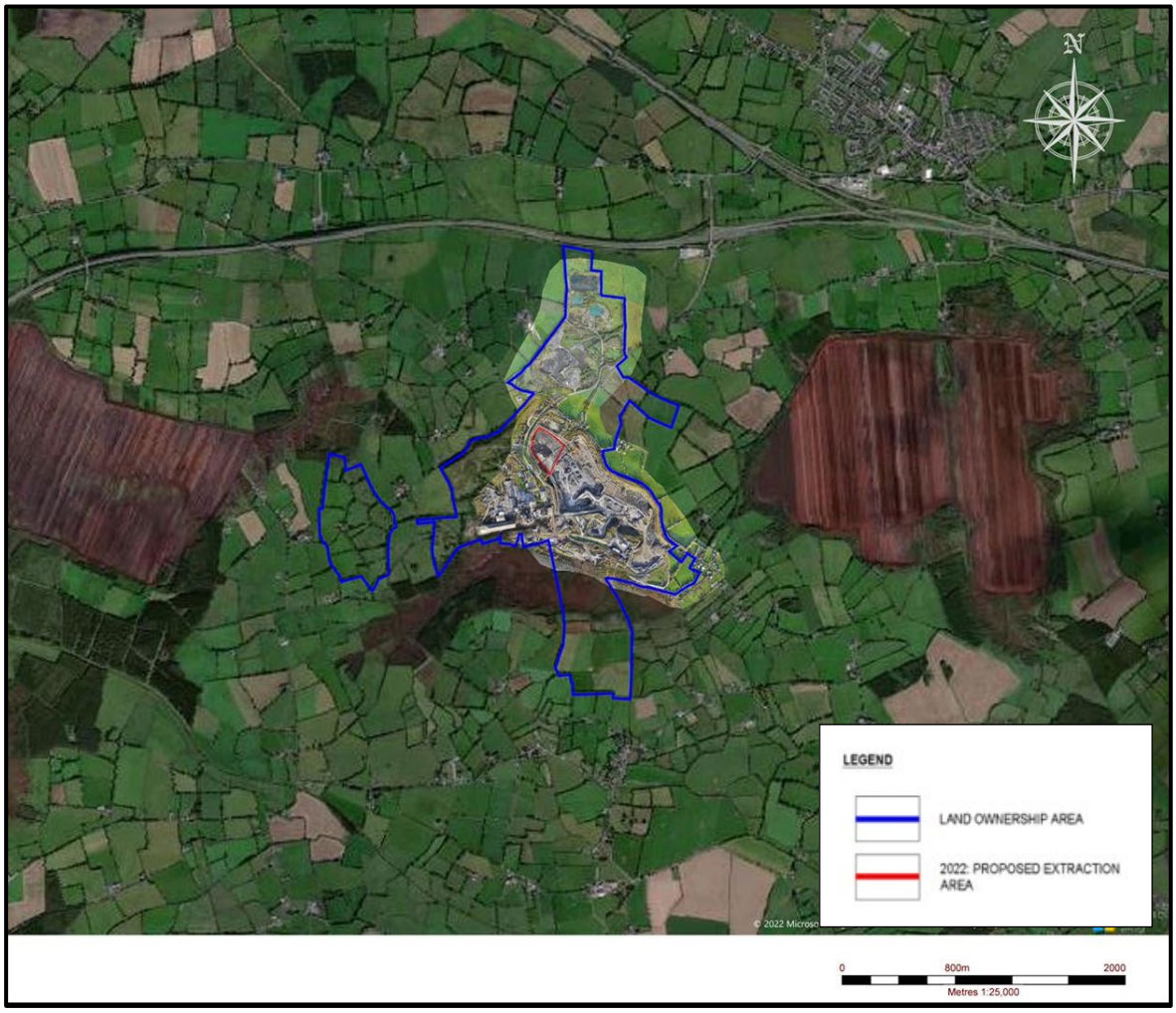

Figure 10.2.1: Site location and context

10.3.2 Impact Assessment Methodology

10.3.2.1 Construction Phase assessment methodology

The impact assessment methodology involves identification and characterisation of the air quality impacts that may be associated with the proposed project, characterisation of the baseline environment to benchmark the existing situation, quantitative prediction of noise and vibration impacts and assessment of the impacts against recognised standards. From this assessment comes a definition of mitigation measures that may be required to ensure that the potential construction phase impacts of the proposed project are managed and controlled to protect human health, the environment and amenity.

10.3.2.2 Operation Phase assessment methodology

The effects of the proposed project during the operation phase are described by considering the possible impacts that could occur as a result of the proposed project, the probability of their occurrence and the nature and significance of such impacts. The Environmental Protection Agency's (EPA's) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (2022) take account of Directive 2014/52/EU on the assessment

of the effects of certain public and private projects on the environment and have been considered in this assessment. Impacts are described in the Guidelines under various headings which are summarised as follows:

- Probability – likely, possible, unlikely;
- Quality – positive, neutral, negative;
- Significance – e.g. Imperceptible, Moderate, Profound; and
- Magnitude – duration, frequency, extent, context.

A description of the significance of effects is presented in Table 10.3.1, which shows the approach taken to quantifying the significance and magnitude of potential noise and vibration impacts in this assessment.

In addition to considering the above guidance, the methodologies presented below were used to inform the noise and vibration impact assessment and to identify and assess all cumulative impacts with the potential to impact upon the receiving environment and to propose mitigation and avoidance measures where required.

(i) Carry out a series of baseline noise measurements to provide information on existing background and specific site noise levels at the nearest sensitive receptors.

Noise survey data is available for annual surveys completed in the vicinity of the subject site according to the requirements of *ISO 1996: Acoustics - Description and Measurement of Environmental Noise* and in addition, with reference to the EPA publication; *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4), 2016.* Noise monitoring was carried out at a total of nine representative noise monitoring locations in order to determine the existing noise environment at the proposed site locations.

(ii) Identify appropriate criteria against which to assess the significance of the noise and vibration impacts associated with the proposed development. Criteria for noise and vibration assessment are discussed in Section 10.3.3 below.

(iii) Provide predictions of resultant noise and vibration levels at the nearest sensitive receptors and assess these against the selected assessment criteria.

(iv) Propose mitigation and avoidance measures if and where required.

(v) Identify and assess all cumulative impacts with potential to impact upon the receiving environment.

Table 10.3.1: Describing the Significance and Magnitude of Environmental Effects (EPA 2022)

Aspect	Description
Significance of Effects	
Imperceptible	An effect capable of measurement but without significant consequences
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging trends.
Significant	An effect which, by its character, magnitude, duration or intensity, alters most of a sensitive aspect of the environment.

Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics
Magnitude of Effects	
Extent	This is described by the size of the area, the number of sites and the proportion of the population affected by the effect.
Duration	**Momentary** effects last seconds to minutes.
	Brief effects last less than a day.
	Temporary effects last less than one year.
	Short-term effects last from one to seven years.
	Medium-term effects last from seven to 15 years.
	Long-term effects last from 15 to 60 years.
	Permanent effects last over 60 years.
	Reversible effects are effects that can be undone for example through remediation or restoration
Frequency	How often the effect will occur
Context	The contextual relationship between the effect and the existing baseline; it is important to establish if the effect is unique or commonly or increasingly experienced.

10.3.2.3 Methodology *for Assessing Cumulative Impacts*

The cumulative impacts of known permitted developments with the proposed developed were considered using the same methodologies as outlined above. The consideration of the potential incremental impact of the other known developments in combination with those of the subject development leads to a conclusion in respect of cumulative impacts.

10.3.3 Impact Assessment Criteria

There is no specific Irish legislation which sets out environmental noise limits that must be achieved and therefore the assessment criteria that are presented in this report are based on the guidelines set out by regulatory bodies such as the Environmental Protection Agency (EPA), the World Health Organisation (WHO), the Department of Housing, Planning, Community and Local Government (DHPCLG) whose guidance and standards are based on international best practice.

10.3.3.1 Construction Noise Criteria

Construction noise is temporary in nature and is usually experienced over a short to medium-term period and this characteristic requires it to be considered differently to other longer term noises. Construction activities on larger-scale construction projects will inevitably result in noise being generated.

British Standard *5228-1:2009+A1:2014 –Code of Practice for Noise and Vibration Control on Construction and Open Sites Part 1: Noise* (BS 5228-1) is a commonly used Standard to assess the potential noise impacts associated with the construction phase of a project. This Standard states that noise complaints related to new industrial/commercial noise sources are more likely to arise as the difference between the industrial noise source and the existing background noise increases. Practical noise reduction measures are detailed in BS 5228-1 and these measures can be implemented in order to reduce the overall noise emissions from a construction site.

There is no Irish Guidance specifically published for short to medium-term construction work. Construction noise impacts are assessed in terms of the requirements of BS 5228-1. Annex E of this Standard details acceptable construction noise limits for differing scenarios. Annex E.2 looks at the significant of noise impacts based on fixed noise limits and states:

> "*noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed:*
>
> - *70 decibels (dBA) in rural, suburban and urban areas away from main road traffic and industrial noise;*
> - *75 decibels (dBA) in urban areas near main roads in heavy industrial areas.*
>
> *These limits are for daytime working outside living rooms and offices. In noise-sensitive situations, for example, near hospitals and educational establishments – and when working outside the normal hours say between 19.00 and 22.00 hours – the allowable noise levels from building sites will be less: such as the reduced values given in the contract specification or as advised by the Environmental Health Officer (a reduction of 10 dB(A) may often be appropriate). Noisy work likely to cause annoyance locally should not be permitted between 22.00 hours and 07.00 hours.*"

International best practice dictates that noise limits in the range 65dB $L_{Aeq,1hr}$ to 75dB $L_{Aeq,1hr}$ are generally acceptable in the community during daytime construction activities.

Transport Infrastructure Ireland (TII) (formerly the National Roads Authority (NRA)) is the only government body in Ireland to publish construction noise limits which are presented in their document *'Guidance for the Treatment of Noise and Vibration in National Road Schemes (2004)'*.

The guidelines are not mandatory but are recommended to achieve appropriate consistency with respect to the treatment of noise and vibration. The Guidance points out that there is no published Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. However, it states that Local Authorities, where appropriate, should control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion. The NRA Guidance presents indicative noise levels that are typically deemed acceptable during construction phase of road developments. These are presented below in Table 10.3.2.

Table 10.3.2: NRA Maximum Permissible Construction Phase Noise Levels at the façade of dwellings

Days & Times	**$L_{Aeq, (1hr)}$ dB**	**$L_{pA(max)\ slow}$ dB**
Monday to Friday - 07:00 to 19:00hrs	70	80
Monday to Friday - 19:00 to 22:00hrs	60[2]	65[2]
Saturday - 08:00 to 16:30hrs	65	75
Sundays and Bank Holidays - 08:00 to 16:30hrs	60[2]	65[2]

Note 1: Noise levels measured at facade of dwellings.

Note 2: Construction activity at these times, other than that required in respect of emergency works, will normally require the explicit permission of the relevant local authority.

It is considered that the noise limits set out in Table 10.3.2 above represent a good compromise between the practical limitations in a construction project and the requirement to ensure acceptable noise levels at the nearest noise sensitive receptor

locations.

10.3.3.2 Operational Noise Criteria

The WHO *Guidelines for Community Noise* states that, "*in dwellings, the critical effects of noise are on sleep, annoyance and speech interference*". In order to avoid sleep disturbance, it is recommended that indoor guideline values for bedrooms are 30dB L_{Aeq} for continuous noise and 45dB L_{AMax} for single sound events. However, it is noted that lower levels may be annoying, depending on the nature of the noise source. During the night-time, sound pressure levels at the outside facades of the living spaces should not exceed 45dB L_{Aeq} and 60dB L_{Amax}, so that people may sleep with bedroom windows open. These values have been determined by the WHO by assuming that the noise reduction from outside to inside with a window partly open is 15dB. Similarly, during the daytime the outdoor sound level from steady, continuous noise should not exceed 50dB L_{Aeq} on balconies, terraces and in outdoor living areas to protect the majority of people from being moderately annoyed.

The *Design Manual for Roads and Bridges Volume 11, Section 3* (Highways Agency 2011) also offers guidance on 'long-term' noise impacts associated with changes in traffic noise level. For the Operational Phase, traffic impacts are assessed against the 'long-term' impact classification, presented in Table 10.3.3.

Table 10.3.3: Classification of Magnitude of Traffic Noise Impacts in the Long-Term (Operational Phase)

Change in Sound Level (dB L_{A10})	Magnitude of Impact
0	No change
0.1 to 2.9	Negligible
3.0 to 4.9	Minor
5.0 to 9.9	Moderate
10+	Major

The criteria above reflect the key benchmarks that relate to human perception of noise. A change of 3dB is generally considered to be the smallest change in environmental noise that is perceptible to the human ear. A 10dB change in noise represents a doubling or halving of the noise level.

Operational noise is regulated in the company's IE Licence where the following limits are specified in Schedule C.4 as summarised in Table 10.3.4.

Table 10.3.4 IE Licence Noise and vibration Emission Limit Values

Daytime $L_{Ar,T}$ dB (30 min)	Daytime $L_{Ar,T}$ dB (30 min)	Daytime $L_{Ar,T\,dB}$ (30 min)
55	50	45
Vibration Limits		
Vibration	8mm/sec	
Air overpressure	125dB(lin) max peak	

10.3.3.3 Vibration Assessment Criteria

Some activities during the construction phase of a project have the potential to generate ground vibrations at sensitive receptor locations. Activities such as rock-breaking, movement of loaded HGVs and other construction traffic can all cause significant vibration to occur. The

levels of vibration associated with these activities would not normally be expected to cause structural damage to buildings but may have the potential to impact negatively on humans depending on environmental factors such as distance from source and mitigation measures employed.

Vibration standards are concerned with those dealing with human comfort, and those dealing with structural or cosmetic damage to buildings. In both instances, it is appropriate to consider the magnitude of vibration in terms of Peak Particle Velocity (PPV).

Humans are particularly sensitive to vibration and can detect vibration levels as low as 0.3 mm/sec PPV and levels above this may cause annoyance. However, significantly higher levels than this are tolerated for single short-term events and do not cause annoyance or disturbance to humans. British Standard BS 5228-2:2009+A1:2014 *Code of Practice for Noise and Vibration Control on Construction and Open Sites* provides guidance on vibration and its control and management on various site types. The standard also presents details on the human response to vibration and Table 10.3.4 below outlines these effects.

Table 10.3.4: Human Response to Vibration

Vibration Level PPV (mm/sec)	Effect
0.14	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3	Vibration might be just perceptible in residential environments.
1.0	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.
10	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.

The response of a building to groundborne vibration is affected by numerous factors including the type of foundation, underlying ground conditions, the building construction and the state of repair of the building.

British Standard 7385 *Evaluation and Measurement for Vibration in Buildings* provides guidance on vibration measurement, data analysis and reporting as well as building classification and guide values for building damage. The damage threshold criteria presented in BS 7385-2 are based upon systematic studies using a carefully controlled vibration source in the vicinity of buildings. The Standard states that there should be no cosmetic damage to buildings if transient vibration levels do not exceed 15 mm/sec in the low frequency range and this rises to 20 mm/sec at frequencies of 15 Hz and 50 mm/sec at 40 Hz and above. These guidelines should be reduced by up to 50% for listed structures or similar. It is also noted that the probability of damage to buildings tends towards zero at 12.5 mm/sec at component PPV.

The NRA Guidance Document recommends vibration levels to ensure that there is no potential for vibration damage during road construction activities. These values have been derived through consideration of various European standards and compliance with their guidance should ensure that there is little to no risk of even cosmetic damage to buildings. The guide values are presented below in Table 10.3.5.

Table 10.3.5: NRA Maximum Permissible Construction Phase Vibration Levels

Vibration Level – Peak Particle Velocity at the closest part of any sensitive property to the source of vibration at a frequency of		
Less than 10Hz	**10 to 50Hz**	**50 to 100Hz (and above)**
8 mm/s	12.5 mm/s	20 mm/s

Operational vibration is regulated in the company's IE Licence where the limits are specified in Schedule C.4 as summarised in Table 10.3.4.

10.4 The Receiving Environment

10.4.1 Existing Noise Climate

An integral part of an environmental noise assessment of a proposed development is an understanding of the noise environment that exists in the area potentially affected by the development. It is, therefore, accepted practice to undertake or review background noise measurements at surrounding locations that may be sensitive to noise. These are usually the dwellings that are in the immediate vicinity of the site.

The site of the proposed development is located in the townland of Killaskillen, approximately 3km southwest of the town of Kinnegad, Co. Meath. Information on the environmental setting of the site was obtained from Ordnance Survey of Ireland Maps, from site visits and from substantial information that has been submitted to accompany Planning and Industrial Emissions Directive (IED) Licence applications to Meath County Council and the EPA respectively for the permitted current site operations. The area in the vicinity of the site is relatively free from any other significant industrial activities and the surrounding lands are predominantly used for mixed agricultural purposes; a permitted asphalt plant operated by Lagan Materials Ltd, a sister but separate company from Breedon Cement Ireland Ltd, operates on an adjacent site. The M6 Motorway between Dublin and Galway passes to the north of the site at a distance of approximately 0.8km from the nearest site boundary.

There are a number of one-off houses located in the vicinity of the site, the nearest of which are located close to the northwest and eastern site boundaries. Other local residences are even further removed from the quarry. A map showing the locations of the houses and representative Noise Sensitive Receptors (NSRs) surrounding the site is presented in Appendix 10.1.

The noise climate has been assessed over the past number of years by noise assessments carried out as a condition of the existing IE licence (P0487-07). In general, the noise monitoring programme has focused on the noise level experienced at site boundaries and also at the nearest residences to the site. The noise compliance monitoring programme that has been in place at the site since June 2000 has continually demonstrated compliance with the regulatory noise limits at local noise sensitive receptors.

There are a number of significant screening banks surrounding sections of the site boundaries which are in close proximity to the closest receptors to the site. These screening banks offer significant noise attenuation from noise generating activities and visually screen the Cement Plant and quarry areas from noise sensitive receptors, in particular NSR-2 to NSR-8.

Noise monitoring is carried out annually at times when the site activities are operating normally. Data for the period 2018 – 2021 was reviewed and a summary of the data is

presented in Table 10.4.1 (day time), Table 10.4.2 (evening time) and Table 10.4.3 (night time). The detailed monitoring reports note that no exceedances of the permitted limits were recorded as a result of existing site activities during these surveys. Two events were recorded during evening time monitoring and one at night time during the period reviewed which were not linked to site activities but to unrelated off-site sources. The data therefore demonstrates that the existing activity is fully compliant with the existing Licence limits and that the existing activity is not having an unacceptable adverse impact on the environment in the area.

Table 10.4.1: Summary noise monitoring data 2018 – 2021 (day time)

Location	2018 – 2021	LAeq, 30min dB(A)	LA90, 30min dB(A)	LA10, 30min dB(A)
NSR – 1	Average	46.1	42.0	48.4
NSR – 2	Average	48.5	43.4	51.9
NSR – 3	Average	47.4	40.5	48.4
NSR – 4	Average	50.6	46.0	52.0
NSR – 5	Average	46.0	40.3	48.7
NSR – 6	Average	47.9	40.2	49.6
NSR – 7	Average	51.9	44.6	53.6
NSR – 8	Average	48.5	38.7	50.8
NSR – 9	Average	44.3	36.5	46.1
Limit		**55 dB (A)**		

Table 10.4.2: Summary noise monitoring data 2018 – 2021 (evening time)

Location	2018 – 2021	LAeq, 30min dB(A)	LA90, 30min dB(A)	LA10, 30min dB(A)
NSR – 1	Average	42.9	35.4	44.5
NSR – 2	Average	45.7	38.8	48.5
NSR – 3	Average	40.9	36.0	42.9
NSR – 4	Average	50.2	46.3	51.2
NSR – 5	Average	43.8	36.2	45.7
NSR – 6	Average	43.6	36.3	45.8
NSR – 7	Average	51.9	44.6	53.6
NSR – 8	Average	48.5	38.7	50.8
NSR – 9	Average	44.3	36.5	46.1
Limit		**50 dB (A)**		

Table 10.4.3: Summary noise monitoring data 2018 – 2021 (night time)

Location	2018 – 2021	LAeq, 30min dB(A)	LA90, 30min dB(A)	LA10, 30min dB(A)
NSR – 1	Average	39.0	33.8	41.3
NSR – 2	Average	39.5	33.1	41.2
NSR – 3	Average	41.6	32.9	43.0
NSR – 4	Average	43.9	38.3	47.3
NSR – 5	Average	41.5	35.2	43.6
NSR – 6	Average	40.9	30.2	40.7

NSR – 7	Average	43.9	34.6	46.0
NSR – 8	Average	38.1	32.1	40.4
NSR – 9	Average	41.2	36.7	41.6
Limit		**45 dB (A)**		

10.4.2 Vibration

Monitoring is carried out at a selection of the closest Noise Sensitive Receptors during each blast. During the period reviewed, all of the monitoring results were within the Licence Emission Limit Values. There were a number of complaints received from neighbours after blasts. In each case the facility has records of contact with and communications with the complainant to ensure that concerns were addressed. In all cases monitoring results were fully compliant with Licence Limits.

10.5 Identification of Likely Significant Impacts

10.5.1 Existing Activities

The main potential impacts on the noise environment associated with the existing activities at the site relate to noise emission associated with the permitted quarrying and cement manufacturing activities and vibration associated with blasting for recovery of materials from the permitted quarry. As noted above the extensive monitoring programme in place at the site demonstrates compliance with the terms of the company's IE Licence.

10.5.2 Construction Phase Impacts

The proposed development involves the deepening of the north-western portion of the quarry extraction area by four extractive benches to 10m OD, over an area of c. 4.13 hectares. This proposal is designed to improve both the viability and sustainability of Breedon Cement's operation through the continued use of locally available raw materials.

There is no significant construction associated with the implementation of the proposed development as the site is currently operational, and the area has already been subjected to quarrying activity with removal of overburden. This application is in relation to the deepening of the existing quarry, and the development will not involve a construction phase and therefore impacts associated with construction will be negligible.

There are no European or Designated Sites within 50m of the site boundary. There are no significant Construction Phase impacts predicted for ecological sites from construction works, and this element is not assessed further.

10.5.3 Operation Phase Impacts

The proposed quarry extension is to ensure an economic source of limestone. However, it should be noted that there will be no change to the rates of extraction or to the cement manufacturing process as a result of this proposal. Raw material extraction rates will remain at current levels as will the output of cement product. In particular there will be no change in the frequency or magnitude of blast events.

The impacts associated with the quarry extension will remain the same as the current impacts associated with the operation of the quarry. There will be no change in the noise and vibration

impacts associated the quarry operation. There will be no increase in plant or machinery associated with the quarry extension and consequently the current overall level of noise and vibration impact from the quarry will not change.

10.5.4 Traffic Impacts

There will be no noticeable change to the traffic movements as a result of the proposed development. There will be no additional staff or plant and machinery required to facilitate the proposed development and therefore the number of HGV traffic movements and employee vehicle movements will remain unchanged. As a result, there will be no change in traffic noise impacts.

10.6 Noise and Vibration Impact Assessment

10.6.1 Existing Activities

There will be no change in the existing permitted activities in terms of material extraction or throughput and no change in the cement manufacturing activity or production output as a result of the proposed development. Therefore, there will be no change in the magnitude of the noise and vibration impacts. As shown in section 10.4 the existing facility operates within the terms specified in the IE Licence and no significant adverse impact arises as a result of those permitted activities.

10.6.2 Proposed Quarry Deepening

The proposed development consists of a deepening of the quarry in a small area within the existing footprint of the permitted quarry. There will be no change in the magnitude of the noise and vibration associated with quarrying activity as a result of the proposed development. This is because there is no increase in the rate of extraction or production proposed, no change in blast methods or frequency and no change in the nature or magnitude of noise or vibration impacts. Since the quarry area will be deepened rather than continuing at the existing level, the emissions will be effectively contained within the excavation area potentially reducing rather than increasing the noise impact in the vicinity of the site.

10.6.3 Cumulative Impacts

The cumulative impacts of the proposed development in conjunction with current and future developments in the vicinity of the subject site are considered in this section. Guidance published by the European Commission (1999, Guidelines for the Assessment of Indirect and Cumulative Effects as well as Impact Interactions) was considered in carrying out this element of the assessment. A review of other existing and / or approved projects in the vicinity of the site was carried out and these projects were considered to determine whether any of these existing / approved projects will likely have significant cumulative effects in combination with the proposed project.

Permission has been sought (Ref 22/958) to build a Solar PV Energy Development on lands to the north east of the proposed quarry deepening area on lands owned by Breedon Cement. The proposed solar development extends over an area of approximately 21.8 hectares in two land parcels (eastern parcel c.18.5 hectares, western parcel c. 3.3 hectares). The development will consist of the installation of Solar Photovoltaic (PV) panels on ground mounted frames / support structures within existing field boundaries; 2 No. 6kVA transformer stations;

inverters/transfer units; 1 No. customer ring main unit; underground cabling and ducting; internal site access tracks; site perimeter (stock-proof) security fencing; with new vehicular access from L8021 serving the eastern parcel; and from unnamed access road off L8021, serving the western parcel; and all associated landscaping including screen planting; and site development works.

There is potential for cumulative noise impacts to arise during the construction phase of the proposed solar development. The potential cumulative impact relates to noise impacts associated with site activities. Ongoing monitoring demonstrates compliance with all Licence Emission Limit Values for the existing permitted activities. The proposed solar development construction phase would involve transport of materials to the site, some ground preparation activity including preparation of site roads and some construction works for infrastructure associated with the proposed solar development. These activities have some potential for generation of noise. The proposed solar development is located at a distance from the proposed quarry deepening area which minimises the potential for cumulative impacts from noise emissions to arise. The existing monitoring programme demonstrates that operational impacts are well within permissible levels and whatever noise impacts may arise during construction of the solar development will not exert a significant adverse impact in the area even in combination with the existing noise emissions from the cement plant and quarry, which will be unchanged if the proposed quarry deepening proceeds.

10.7 Do Nothing Scenario

If the proposed development does not proceed, then noise and vibration impacts will remain as they are at present.

10.8 Human Health Impacts

The human health impact assessment has relied on evaluating compliance with the permissible standards to determine whether significant impacts will arise on human health or not. Operational phase noise is predicted to be not significant and there will be no change in the noise and vibration impacts relative to the existing permitted situation which Is operating well within the acceptable prescribed limits. Therefore, no adverse effects on human health as a result of the operational phase of the proposed development are anticipated.

10.9 Residual Impacts

There will be no residual impacts arising from construction. Potential operation phase impacts are predicted to be imperceptible and long-term.

10.10 Interactions Arising

The main interactions with noise and vibration are in relation to human beings and biodiversity.

The impact of noise and vibration on human beings living in the area of the proposed development has been addressed above for both the construction and operational phase of the proposed development. The impact assessment shows that the noise and vibration impacts that will be experienced by human beings in the vicinity of the proposed development are all within the prescribed criteria. This interaction is described as neutral for the operational phase and is quantified as imperceptible. Operational phase noise is predicted to be not

significant and there will be no change in the noise and vibration impacts relative to the existing situation which is operating well within the prescribed standards. Therefore, no adverse effects on human health as a result of the operational phase of the proposed development are anticipated.

In relation to the interaction of noise and vibration impacts from the proposed development with flora and fauna, the assessment has shown that the emissions generated from the development are very limited and do not have potential to generate a significant adverse impact on the local ecosystems including birdlife and wildlife. This interaction is described as neutral and quantified as Not Significant.

10.11 Monitoring

In order to mitigate against noise and vibration impacts at receptors, Best Practice Measures will be adopted. A comprehensive environmental management and monitoring programme is in place at the existing licensed facility and this programme will continue to be implemented and will be enhanced when opportunities are identified.

10.12 Accidents or Unplanned Events

There are no accidents or unplanned events as a result of the proposed development that could occur that will have an adverse or significant impact on the noise climate that have not already been considered in this chapter.

10.13 References

Environmental Protection Agency (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.

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