

## 9 NOISE & VIBRATION

### 9.1 Introduction

This Chapter of the EIAR provides a description and assessment of the likely impact of the Proposed Development from noise.

This Chapter discusses the existing ambient noise levels at nearby sensitive receptors, the potential impacts of the Proposed Development on the existing ambient noise environment and the mitigation measures that may be employed to reduce or eliminate any potential impact.

#### 9.1.1 Quality Assurance and Competence

This Chapter was prepared by Laura Griffin, Environmental Consultant, Enviroguide Consulting. Laura has a Master of Science (Hons) in Climate Change from Maynooth University and a Bachelor of Arts (Hons) in English and Geography from Maynooth University. Laura has worked as an Environmental Consultant with Enviroguide since 2021 and has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Air Quality and Climate, Noise and Vibration, and Archaeology and Cultural Heritage Chapters of EIARs.

### 9.2 Study Methodology

This assessment will examine the likely impacts of sound pressure levels generated by the Proposed Development. Noise calculations have been used to predict and assess the likely impact of facility operations on noise sensitive receptors.

For the purpose of the assessment 'sensitive receptors' terminology used describes any persons, locations or otherwise that may be susceptible to changes as a consequence of the Proposed Development. The primary noise impacts associated with this Proposed Development are likely to be due to:

- Extraction by hydraulic excavators and transfer to wash/screening plant;
- Semi-mobile washing, sawing, crushing, and screening plant;
- Traffic movements on internal haul roads; and
- Trucks entering and exiting the quarry.

With respect to the listed noise impacts, the key objective of the Proposed Development is to manage activities to ensure any significant increase in noise emissions are minimised.

Documents consulted during the preparation of this EIAR chapter are listed in the References section. The acoustics section has been compiled taking cognisance of:

- *Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011);*
- *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise;*
- *ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures;*

- *ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels;*
- *ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1: Calculation of the absorption of sound by the atmosphere;*
- *ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation;*
- *Environmental Protection Agency (2016) Guidance Note for Noise (NG4): Licence Applications, Surveys and Assessments in Relation to Scheduled Activities;*
- *Guidelines for the Treatment of Noise & Vibration in National Road Schemes, National Roads Authority, Revision 1, 25th October 2004.*

The following noise indices, analysis and observations were reviewed.

- LAeq - The A-weighted, equivalent continuous sound level of the measurement period. Represents an 'energy average' of the sound pressure levels measured.
- LA90 – The A-weighted, noise level exceeded for 90% of the measurement period. Calculated by statistical analysis of the measurement data.
- LA10 - The A-weighted, noise level exceeded for 10% of the measurement period. Calculated by statistical analysis of the measurement data.

### 9.2.1 Desk Study

The noise assessment will review all existing information relating to the site and its environs, which involves a desk-based study of the following:

- An evaluation of the site and the surrounding area to assess certain changes that are likely to impact the surrounding environs was carried out. Noise sensitive locations were identified and are discussed in this chapter.
- Identification of sensitive receptors for assessment (see Section 9.5.1).
- BS 5228 2009 +A1 2014 Code of practice for noise and vibration control on construction and open sites with respect to the controlling noise and vibration impacts. In this instance, appropriate criteria relating to permissible construction noise levels are taken from Part one of the standard Noise.

## 9.3 The Existing and Receiving Environment (Baseline Environment)

The lands surrounding the site are largely agricultural in nature with several one-off houses located within a 1km radius. The site lies immediately to the south of an existing limestone bedrock quarry at Bannagagole (Old Leighlin Quarry) which is operated by Kilkenny Limestone Quarries Ltd. Rock extraction, processing, and surplus rock storage is carried out at the existing quarry.

### 9.3.1 Quiet Area Screening

Screening was carried out to identify the potential of the Proposed Development located in or near an area that could be considered a 'Quiet Area' in open country in accordance with the Environmental Protection Agency's publication "Environmental Quality Objectives – Noise in Quiet Areas, 2003.

The criteria used to assess this determination comprised of the following:

- At least 3 km from urban areas with a population >1,000 people;
- At least 10 km from any urban areas with a population >5,000 people;
- At least 15 km from any urban areas with a population >10,000 people;
- At least 3 km from any local industry;
- At least 10 km from any major industry centre;
- At least 5 km from any National Primary Route, and;
- At least 7.5 km from any Motorway or Dual Carriageway.

If the site does not meet the listed criteria, it is considered to be a non-quiet area as per the definition of the Environmental Protection Agency. 'Quiet Areas', according to NG4 (2016). Before relevant noise criterion can be applied, 'Quiet Area Screening' must be performed to identify or rule out the site as a Quiet Area. Quiet Area screening results can be viewed in Table 9-1.

Table 9-1: Quiet Area Screening of the Development Location

Quiet Area Screening of the Development Location			
Screening Question	Answer (Yes/No)		Screening Results
Is the site >3km away from urban areas with a population >1,000 people?	Yes ✓	No <input type="checkbox"/>	The Proposed Development is not located within 3km of an area with a population >1,000 people.
Is the site >10km away from urban areas with a population >5,000 people?	Yes ✓	No <input type="checkbox"/>	The Proposed Development is not located within 10km of an area with a population >5,000 people.
Is the site >15km away from urban areas with a population >10,000 people?	Yes <input type="checkbox"/>	No ✓	The Proposed Development is located ca. 12km from Carlow which has a population of 24,272.
Is the site >3km away from any local industry?	Yes <input type="checkbox"/>	No ✓	The Proposed Development is located 10m from Old Leighlin Quarry – Brachot.
Is the site >10km away from any major industry centre?	Yes ✓	No <input type="checkbox"/>	The Proposed Development is not located within 10km of any major industry centre.
Is the site >5km away from any national primary route?	Yes ✓	No <input type="checkbox"/>	The Proposed Development is not located within 5km of any national primary route.
Is the site >7.5km away from any motorway or dual carriageway?	Yes <input type="checkbox"/>	No ✓	The M9 is located circa 760m to the east of the Proposed Development.
<b>QUIET AREA?</b>	<b>No</b>		<b>The site does not meet these criteria it is not considered to be a quiet area.</b>

According to the EPA Guidance, NG4, where an area is determined not to be a 'quiet area', baseline monitoring should be conducted to determine if there is a low background noise. As the Proposed Development is located in an area which does not meet the criteria as per EPA screening guidelines, a low background noise would not be predicted. As such, baseline noise monitoring for the site is recommended.

### 9.3.2 Recommended Noise Limits

In relation to quarry developments and ancillary activities, it is generally recommended that noise from quarrying activities will not exceed the following noise Emission Limit Values (ELVs) at the nearest noise-sensitive receptor, as outlined in Table 9-2:

Table 9-2: Recommended Noise Limits based on Appropriate Guidance (Source: EPA)

Parameter	Emission Standard	Basis of Standard
Noise – Day (08.00 to 20.00 hours)	<55 dB(A) $L_{Aeq}$ 1 Hour	EPA Guideline Document for Extractive Industries (2006)
Noise – Night (20.00 to 08.00 hours)	<45 dB(A) $L_{Aeq}$ 1 Hour	

Note: 95% of all noise levels shall comply with the specified limit value(s). No noise level shall exceed the limit value by more than 2 dBA.

### 9.3.3 Noise

Noise is defined as any sound that has the potential to cause disturbance, discomfort or psychological stress to a person exposed to it, or any sound that could cause actual physiological harm to a person exposed to it, or physical damage to any structure exposed to it. In summary noise can be defined as any unwanted sound. Sound levels are expressed in decibels (dB) on a logarithmic scale, where 0dB is nominally the "threshold of hearing" and 120dB is nominally the "threshold of pain" (refer to Figure 9-1 below).

Background noise is defined as 'the steady existing noise level present without contribution from any intermittent sources. The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval,  $T$  ( $L_{AF90,T}$ )'. According to the EPA Noise Guidance NG4, an area of low background noise is one where the existing background noise levels measured during an environmental noise survey are as follows:

- Average Daytime Background Noise Level  $\leq 40$ dB  $L_{AF90}$ , and;
- Average Evening Background Noise Level  $\leq 35$ dB  $L_{AF90}$ , and;
- Average Night-time Background Noise Level  $\leq 30$ dB  $L_{AF90}$ .

Noise levels exceeding the recommended noise limits outlined in Table 9-2 are considered to be significant, noise levels not exceeding these noise limits are considered to not be significant.

The Proposed Development is considered to be a non-quiet area as per EPA screening guidelines.

Figure 9-1 depicts typical sounds and their noise levels on a decibel scale.

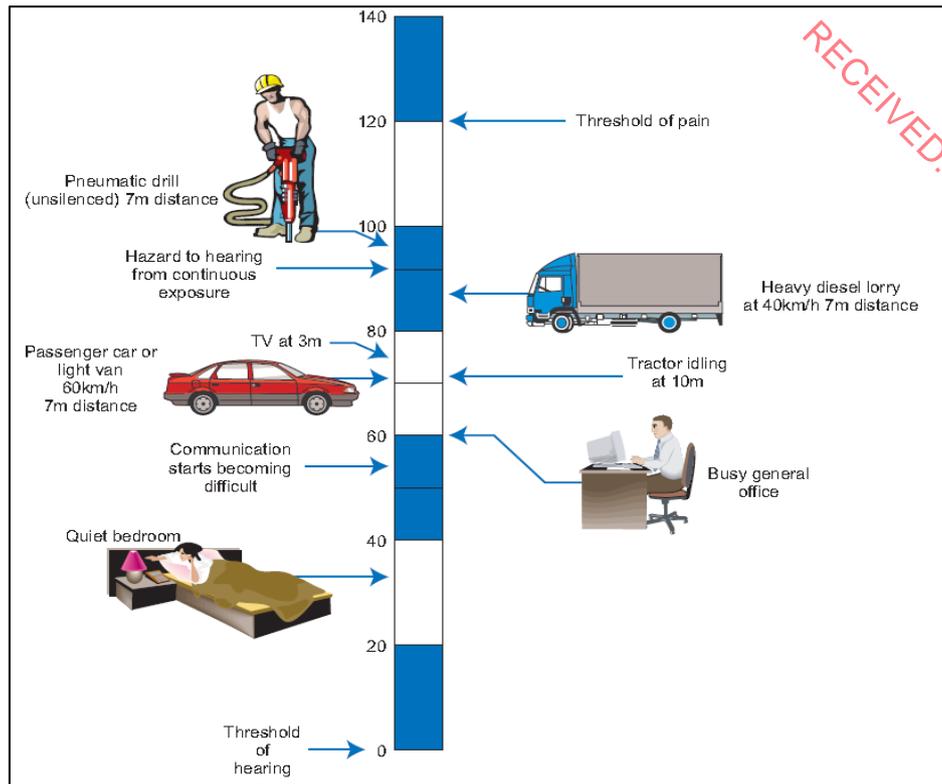


Figure 9-1: Scale and Indicative Noise Levels on the dB(A) Scale (Based on guidance taken from: Design Manual for Roads and Bridges, Volume 11 Consolidated Edition 1993)

## 9.4 Characteristics of the Proposed Development

Milford Quarries Limited intend to apply for planning permission for the demolition of existing disused buildings and the development of a dimension stone quarry with a projected lifetime of c. 14 years (12 – 13 years operational with an additional 1-year to allow for the implementation of a restoration plan) at this site of c. 9.34 hectares at Bannagagole, Old Leighlin, Co. Carlow. The proposed quarry void will be extracted to a depth of 2 no. benches of c. 10m from top of bedrock, with a final floor level of c. 56.5m AOD with a proposed rate of rock extraction of c.30,000 cubic metres (84,000 tonnes) per annum. A proposed working area of c. 1.2 hectares to the south of the extraction zone will provide for the crushing / processing of the unusable stone and storage of dimensional stone and will include machinery storage shed, staff welfare, wastewater holding tank, weighbridge, and parking area.

The Proposed Development will also include for earthen screening berms to a height of c. 3 m, a wheelwash facility; Installation of surface water attenuation and settlement ponds for the treatment of suspended solids in the floor of the quarry; soil storage area with an average storage depth of c. 3.85 m and all other site development works above and below ground including the restoration of the final quarry void (extractive area).

Access to the Proposed Development will be facilitated by a HGV site entrance from the Local Road to the east of the proposed site via a proposed access haul road.

## 9.5 Potential Impact of the Proposed Development

This section assesses the impact of the Proposed Development on the human environment. The noise generating activities associated with the site are as follows:

- Extraction by hydraulic excavators and transfer to wash/screening plant;
- Semi-mobile washing, sawing, crushing, and screening plant;
- Traffic movements on internal haul roads;
- Trucks entering and exiting the quarry.

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### 9.5.1 Noise Sensitive Locations

The EPA define noise sensitive locations (NSLs) as ‘any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels’.

In identifying sensitive receptors, consideration has been given residential properties or noise sensitive premises such as schools or hospitals, or recreational spaces within a close proximity of the Proposed Development. Identified noise sensitive locations in relation to the Proposed Development can be viewed in Table 9-2 and are illustrated in Figure 9-2.

Table 9-2: Sensitive Receptors

Name	Type	Coordinates		Orientation Relative to Site Boundary
		X	Y	
Baunleath (NSL1)	Residential	52.728292	-7.026599	350m North-west
Bannagagole (NSL2)	Residential	52.727703	-7.026321	280m North-west
Bannagagole (NSL3)	Residential	52.727073	-7.026900	260m North-west
Bannagagole (NSL4)	Residential	52.726590	-7.027478	260m West
Bannagagole (NSL5)	Residential	52.725875	-7.028016	270m West
Windmere, Bannagagole (NSL6)	Residential	52.725711	-7.026651	170m West
Bannagagole (NSL7)	Residential	52.725376	-7.028308	270m West
Bannagagole (NSL8)	Residential	52.725147	-7.027127	190m West
Bannagagole (NSL9)	Residential	52.724964	-7.027272	190m West
Bannagagole (NSL10)	Residential	52.724154	-7.027746	190m West
Bannagagole (NSL11)	Residential	52.723339	-7.030664	360m West
Bannagagole (NSL12)	Residential	52.722622	-7.030668	350m West
Bannagagole (NSL13)	Residential	52.720124	-7.020240	375m South-east
Bannagagole (NSL14)	Residential	52.722672	-7.018518	120m South-east
Bannagagole (NSL15)	Residential	52.724882	-7.018281	70m East
Bunleath (NSL16)	Residential	52.725006	-7.013222	400m East



Figure 9-2: Location of Noise Sensitive Locations in relation to Proposed Development

### 9.5.2 Noise from Onsite Plant and Equipment

Noise and vibration can arise from vehicular traffic as well as from the operation of fixed or mobile machinery onsite. Onsite activity involves site clearance and construction. A variety of plant items will be used for the purposes of site clearance and construction.

Noise prediction calculations have been completed for noise from the use of onsite plant up to 395m from the source for the proposed operational activities, and up to 755m from the source for the proposed demolition activities (as NSLs are further from the proposed demolition activities). According to the inverse square law, for each doubling of distance from a point source, the sound pressure level decreases by approximately 6 dB. The reference levels were calculated and projected for a range of distances from the source to the appropriate receptor using the following formula:

$$L_{\text{Source}} \approx L_{\text{Ref}} - 20 \cdot \log_{10}(R_2/R_1)$$

Where:

$L_{\text{Source}}$  = Sound Pressure Level at Initial Location

$L_{\text{Ref}}$  = Sound Pressure Level at the new Location

$R_1$  = Distance from the noise source to initial location

R2 = Distance from noise source to the new location

The calculations make a number of assumptions such as:

1. There is a straight line between the source and observer.
2. Meteorological conditions are static.
3. There are no natural barriers that affect attenuation of noise other than distance.
4. All plant items are operating from a single source simultaneously and at full capacity.
5. All plant items are operating at the edge of the work area closest to the sensitive receptor.

The inverse square law is the logical first estimate of the sound you would get at a distant point in a reasonably open area. It is noted that the sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, you are likely to get less than what the inverse square law predicts.

Table 9-3 and Table 9-4 set out the equipment associated with the Proposed Development and associated dB(A) levels according to BS 5228-1, manufacturers specification and the inverse square law. The Proposed Development includes earthen screening berms to a height of c. 3 m and therefore, a 10 dB attenuation can be assumed as per BS 5228-1 as the screening berm completely hides the noise sources from the noise sensitive locations. Accordingly, a noise reduction factor of 10 dB has been applied to Tables 9-3 and 9-4.

*Table 9-3: Equipment associated with proposed demolition activities*

Plant Item	Ref	dB(A) @10m	dB(A) @- 215m <sup>6</sup>	dB(A) @- 275m	dB(A) @- 315m	dB(A) @ 365m	dB(A) @ 400m	dB(A) @ 430m	dB(A) @ 485m	dB(A) @ 540m	dB(A) @ 665m	dB(A) @ 755m
<b>Breaker</b>	BS 5228- 1	80	53.4	51.2	50	48.8	48	47.3	46.3	45.4	43.5	43.4
<b>Crusher</b>	BS 5228- 1	76	49.4	47.2	46	44.8	44	43.3	42.3	41.4	39.5	38.4
<b>Excavator</b>	BS 5228- 1	65	38.4	36.2	35	33.8	33	32.3	31.3	30.4	28.5	27.4
<b>Cumulative</b>	-	<b>81.55</b>	<b>54.95</b>	<b>52.75</b>	<b>51.55</b>	<b>50.35</b>	<b>49.55</b>	<b>48.85</b>	<b>47.85</b>	<b>46.95</b>	<b>45.05</b>	<b>44.68</b>

*Table 9-4: Plant associated with proposed activities and corresponding noise values*

Plant Item	Ref	dB(A) @10m	dB(A) @- 70m	dB(A) @ 120m	dB(A) @ 170m	dB(A) @ 190m	dB(A) @ 260m	dB(A) @ 280m	dB(A) @ 320m	dB(A) @ 350m	dB(A) @ 360m	dB(A) @ 380m	dB(A) @ 395m
<b>Loading Shovel</b>	BS 5228-1	65	48.1	43.6	40.4	39.4	36.7	36.1	34.9	34.1	33.9	33.4	33.1
<b>Excavator</b>	BS 5228-1	65	48.1	43.6	40.4	39.4	36.7	36.1	34.9	34.1	33.9	33.4	33.1

<sup>6</sup> Distances selected based on the proximity of the sensitive receptors to the proposed demolition activities

Plant Item	Ref	dB(A) @10m	dB(A) @- 70m	dB(A) @ 120m	dB(A) @ 170m	dB(A) @ 190m	dB(A) @ 260m	dB(A) @ 280m	dB(A) @ 320m	dB(A) @ 350m	dB(A) @ 360m	dB(A) @ 380m	dB(A) @ 395m
<b>Screener</b>	BS 5228-1	55	38.1	33.4	30.4	29.4	26.7	26.1	24.9	24.1	23.9	23.4	23.1
<b>Articulated Lorry with Flatbed Trailer</b>	BS 5228-1	72	55.1	50.4	47.4	46.4	43.7	43.1	41.9	41.1	40.9	40.4	40.1
<b>Handheld Circular Saw</b>	BS 5228-1	74	57.1	52.4	49.4	48.4	45.7	45.1	43.9	43.1	42.9	42.4	42.1
<b>Crusher</b>	BS 5228-1	72	55.1	50.4	47.4	46.4	43.7	43.1	41.9	41.1	40.9	40.4	40.1
<b>Diamond Chainsaw</b>	Manufacturer Specifications	87	60.1	55.4	52.4	51.4	48.7	48.1	46.9	46.1	45.9	45.4	45.1
<b>Diamond Wire Saw</b>	Manufacturer Specifications	70	43.1	38.4	35.4	34.4	31.7	31.1	29.9	29.1	28.9	28.4	28.1
<b>Cumulative</b>	-	<b>78.02</b>	<b>63.69</b>	<b>59</b>	<b>55.99</b>	<b>54.99</b>	<b>52.29</b>	<b>51.69</b>	<b>50.49</b>	<b>49.69</b>	<b>49.49</b>	<b>48.99</b>	<b>48.69</b>

Tables 9-3 and Table 9-4 outline the predicted noise levels at reference distances using BS 5228-1 recommendations. The predicted noise levels from onsite activities up to 755m from the proposed demolition activities have been included, this is based on the proximity of the NSLs to the proposed demolition works. The adopted noise criteria will not be exceeded by the equipment listed in Table 9-3 at any of the NSLs during demolition works.

The predicted noise levels from onsite activities up to 395m from the proposed operational activities have been included. There is potential for the adopted criteria to be slightly exceeded during operational works by the diamond chainsaw and the articulated lorry with the flatbed trailer at the nearest NSLs, however, there are hedgerows on the intervening lands between the operation works and the residential dwellings. It is important to recognise that the sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, you are likely to get less than what the inverse square law predicts. Therefore, when taking account of local terrain, predicted noise levels at the closest residential NSLs are expected to be lower than what is outlined in Table 9-4. Furthermore, the diamond chainsaw and the articulated lorry with the flatbed trailer will be used intermittently. Nevertheless, mitigation measures, as outlined in Section 9.6.1, will be implemented to reduce any potential impacts.

The cumulative noise has also been assessed in order to account for a worst-case scenario. In the event that the demolition equipment would be operated simultaneously, the adopted noise criteria will not be exceeded at any of the NSLs during demolition works. During the Operational Phase, there is the potential for the adopted criteria to be exceeded at the nearest receptors (receptors located at 70m, 120m and 170m from site operations) in a scenario where all of the equipment would be operated simultaneously. However, due to the nature of the operations, the use of machinery will be intermittent and all machinery will not be operated simultaneously.

### 9.5.3 Noise from Operational Traffic

Volume 2, Chapter 12 'Traffic' has been prepared by Traffic Insights Limited.

The Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011) states that “changes in traffic volume on existing roads or new routes may cause either of the threshold values for noise to be exceeded. A change in noise level of 1dB LA10, 18h is equivalent to a 25% increase or a 20% decrease in traffic flow, assuming other factors remain unchanged and a change in noise level of 3dB LA10, 18h is equivalent to a 100% increase or a 50% decrease in traffic flow”.

No traffic routes are predicted to experience increases of more than 25% in total traffic flows during the Operational Phase and therefore no detailed assessment is required as per the DMRB Guidelines. Refer to Chapter 12 of the EIAR for a detailed traffic assessment report.

The impact of noise from operational traffic will be unnoticeable and will not have a negative impact.

#### 9.5.4 Potential Cumulative Impacts

Cumulative Impacts can be defined as “impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project”. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the cumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

The cumulative effects of noise and vibrations from the Proposed Development and other existing developments have been considered, in particular through the generation of nuisance noise. All planning applications which have been granted permission and are already developed have been incorporated into the baseline assessment of this application. There is an operational quarry located directly north of the Proposed Development site.

Table 9-5 details the planning applications in the surrounding area that could potentially be constructed at the same time as the Proposed Development.

Table 9-5: Potential Cumulative Impacts

Application Reg. Ref.	Address	Development Proposal	Decision
22238 Kilkenny Limestone Quarries Ltd	Oldleighlin Quarry, Bannagagole, Co. Carlow	The installation of a Roof Mounted Solar PV Panel Array consisting of up to 2200m <sup>2</sup> of solar panels with a peak capacity of up to 427.5Kwp mounted to the roofs of two industrial buildings via steel frames, including routing cable, trenching and backfilling of cables and all associated works.	Grant Permission Decision date: 29/11/2022

In terms of the effects of noise and vibrations, no significant impacts are predicted; good construction practice, which incorporates the implementation of the identified mitigation measures, will be employed at the Proposed Development site. Due to the implementation of good construction practices deployed for the Proposed Development and for these offsite permitted developments, it is not anticipated that significant cumulative noise and vibration impacts will occur.

### 9.5.5 “Do Nothing” Impact

A ‘Do Nothing’ scenario would result in the site remaining as agricultural land. Noise and vibration levels would remain unchanged onsite and at nearby sensitive receptors.

## 9.6 Avoidance, Remedial & Mitigation Measures

In order to control likely noise impacts caused by the proposed external operations, mitigation measures as set out in *BS 5228-1: A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise* can be adopted:

- Selection of plant with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by site constraints.
- Avoid unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Use of alternative reversing alarm systems on plant machinery.
- Where noise becomes a source of resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limiting the hours during which site activities likely to create high levels of noise are permitted.
- Appointing a site representative responsible for matters relating to noise.
- Monitoring typical levels of noise during critical periods and at sensitive locations.

### 9.6.1 “Worst Case” Scenario

The worst-case scenario would involve the failure of mitigation measures for the Proposed Development. In this scenario there is the potential for short-term, intermittent noise-related impacts.

## 9.7 Residual Impacts

Residual Impacts are defined as ‘*effects that are predicted to remain after all assessments and mitigation measures*’. They are the remaining ‘environmental costs’ of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

No residual impacts are anticipated.

## 9.8 Monitoring

Noise will be monitored in accordance with the planning permission granted for the Proposed Development.

Noise limits as outlined in Section 9.3.2 of this chapter will be complied with.

## 9.9 Interactions

### 9.9.1 Population and Human Health

The impact assessment of noise and vibration has concluded that additional noise associated with the Proposed Development will be intermittent and will not create any major negative impacts beyond the site boundary. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the Proposed Development. No human health impacts are anticipated as a result of noise from the Proposed Development.

### 9.9.2 Traffic

The Proposed Development will have no significant impact on traffic volumes in the local network, and therefore traffic will not result in any significant increases of noise at sensitive receptors.

### 9.9.3 Biodiversity

It is not considered that the Noise and Vibration effects of the Proposed Development will have an adverse impact on biodiversity in the local area due to the implementation of the proposed mitigation measures.

## 9.10 Difficulties Encountered When Compiling

No difficulties were encountered.

## 9.11 References

BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.

Dept. of Housing, Planning and Local Government (DHPLG), 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018.

Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011);

Environmental Protection Agency (2016) Guidance Note for Noise (NG4): Licence Applications, Surveys and Assessments in Relation to Scheduled Activities.

Guidelines for the Treatment of Noise & Vibration in National Road Schemes, National Roads Authority, Revision 1, 25th October 2004.

ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures.

ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels.

ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1:  
Calculation of the absorption of sound by the atmosphere.

ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2:  
General method of calculation.

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