



216983-04/11/2021-EIAR Main Report Part 10 (Noise & Vibration, Material Assets, Cultural Heritage)

10. Noise & Vibration

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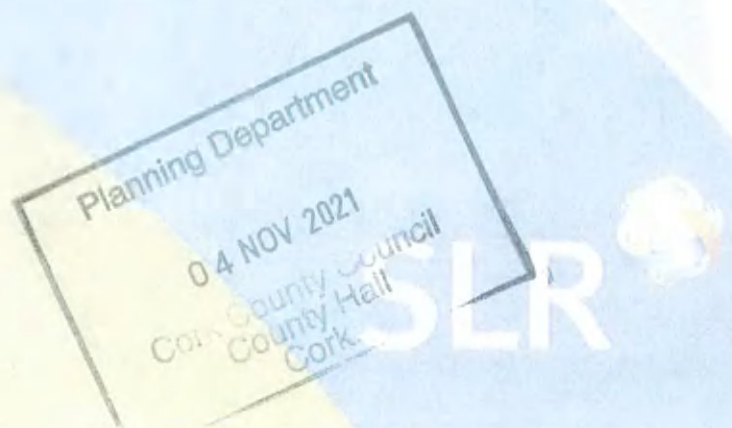
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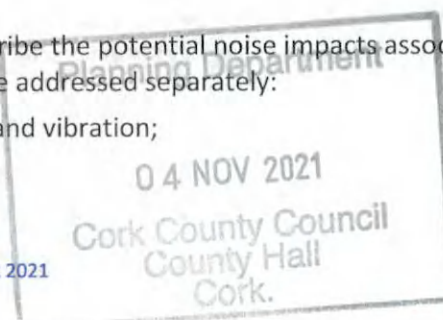
INTRODUCTION

Background

- 10.1 This Chapter of the Environmental Impact Assessment Report (EIAR), prepared by SLR Consulting Ireland, addresses the potential effects associated with the proposed further development of an existing quarry on noise and vibration. The existing quarry is located in the townland of Rossmore, Carrigtohill, Co. Cork.
- 10.2 The proposed development being applied for under this current planning application is shown on EIAR Figure 2-1 and is similar to that previously granted under An Bord Pleanála reference number 04.QD.0010 and will consist of:
- Deepening of the existing quarry extraction area by 2 no. 15 metre benches from -20m OD to -50m OD, along with minor amendments to the permitted quarry layout (Plan File ref. no's: S/02/5476 & ABP Ref. PL04.203762 and ABP Ref. PL04.QD.0010) all within the existing permitted quarry footprint and the continued use of the existing water management system (settlement pond / infiltration pond system permitted under PL04.QD.0010) for the life of the proposed development, within an application area of c. 12.6 hectares – refer to EIAR Figures 1.1 and 1.2;
 - An extraction capacity of up to 375,000 tonnes per annum is sought to provide the applicant with the ability to respond to demand for aggregates for large infrastructure projects in the Region;
 - Permission is sought for twenty years plus two years for final restoration (total duration 22 years).
- 10.3 A detailed description of the proposed development is provided in EIAR Chapter 2.
- 10.4 The proposed development will have a maximum annual output of c. 375,000 of tonnes per year. It is anticipated that, based on the projected maximum output levels, that the proposed development(s), in combination with the existing asphalt plant and permitted ready-mix concrete plant and ground limestone processing plant (not yet constructed) at the application site will not generate more than 186 trips daily.
- 10.5 The noise impact assessment presented herein describes and assesses the existing noise baseline characteristics of the local area. The anticipated effects of the proposed quarry development activities are then applied to these baseline conditions and the resulting noise impacts assessed. Mitigation measures are identified where necessary to eliminate or minimise adverse impacts, insofar as practical.
- 10.6 An operational vibration assessment has also been undertaken and is largely informed by experience gained in undertaking blasts at the quarry previously and by ground-borne vibrations, measured / recorded at properties in close proximity to the quarry.
- 10.7 In order to assist the understanding of acoustic terminology and the relative change in noise, a glossary of terms and phrases, which specifically relate to this Chapter of the EIAR, is provided in Appendix 10-A.

Scope of Work

- 10.8 The following sections of this EIAR Chapter describe the potential noise impacts associated with the proposed development. The following issues are addressed separately:
- regulatory control framework for noise and vibration;



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

Consultations / Consultees

- 10.9 A virtual pre-planning consultation meeting was held between officials of Cork County Council Planning Department and representatives of Lagan Materials Limited and SLR Consulting on 11th March 2021.

Contributors / Author(s)

- 10.10 The noise and vibration impact assessment presented in this Chapter was prepared by SLR Consulting Ireland. The lead consultant for the study was Aldona Binchy MSc. Eng PIEMA Environmental Engineering.

Limitations / Difficulties Encountered

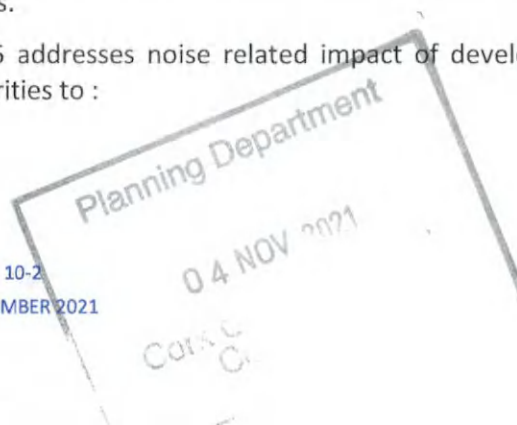
- 10.11 This assessment is compiled on the basis of published guidance documents, and site-specific field surveys. No difficulties were encountered in compiling the required information.

REGULATORY CONTROL FRAMEWORK : NOISE

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

Planning Policy and Development Control

- 10.13 The National Planning Framework (NPF) 2040 (published in February 2018) is a national planning framework for Ireland. The framework provides the policies for all regional and local plans. In the framework, the extractive industries are recognised as important for the supply of aggregates and construction materials to a variety of sectors.
- 10.14 National Planning Framework Objective 65 addresses noise related impact of development and identifies a requirement for Planning Authorities to :



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

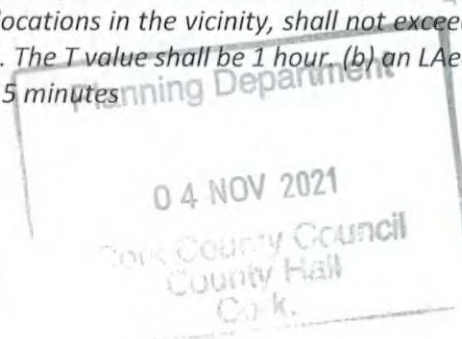
- 10.15 There are no specific policies in relation to noise emissions in NPF for mineral extraction or production of construction aggregates and materials. The stated general development objective is to facilitate the development while at the same time protect the environment.

Local Planning Policy – Cork County Development Plan

- 10.16 The current Cork County Development Plan 2014 was adopted on the 8th December 2014 and came into effect on the 15th January 2015.
- 10.17 Policy GI 13-1 relate to noise emissions. The stated purpose of policy GI 13-1 is to:
- a) *“Seek the minimisation and control of noise pollution associated with activities or development, having regard to relevant standards, published guidance and the receiving environment.*
 - b) *Support the implementation of Noise Action Plans prepared for the Cork County area.”*
- 10.18 Cork County Council has commenced the preparation of a new County Development Plan for the period 2022-2028.
- 10.19 County Development Plan Objective BE 15-13 Noise and Light Emissions:
- a) *Seek the minimisation and control of noise pollution associated with activities or development, having regard to relevant standards, published guidance and the receiving environment.*
 - b) *Support the implementation of Noise Action Plans prepared for the Cork County area.*
 - c) *Seek the minimisation and control of light pollution associated with activities of development, having regard to relevant standards, published guidance and the receiving environment.*
 - d) *Review and update Cork County Council Policy Guidelines for Public Lighting to take account of impacts of public lighting on wildlife.’*
- 10.20 Cork County Council has produced two finalised Noise Action Plans, in accordance with the European Noise Directive 2002/49/EC, which impacts the Cork County functional area. These Noise Action Plans are 5 year strategic plans covering the period to 2023:
- Cork County Noise Action Plan for Major Roads 2018-2023; and
 - The Cork Agglomeration Area Noise Action Plan 2018 – 2023.
- 10.21 The purpose of these Noise Action Plans is to act as a means of managing environmental noise, and to meet the aims of the European Noise Directive of preventing, and reducing where necessary, environmental noise through the adoption of the Plans.

Site Specific Emission Limits for Noise

- 10.22 Condition No. 10 of the An Bord Pleanála Planning Ref. QD 04.QD0010 imposes the following condition:
- 10.23 *During the operational phase of the proposed development, the noise levels from within the boundaries of the site measured at noise sensitive locations in the vicinity, shall not exceed: (a) an LA_{rT} value of 55dB(A) during 07.00 and 18.00 hours. The T value shall be 1 hour. (b) an LA_{eqT} value of 45 dB(A) at any other time. The T value shall be 15 minutes*



Guidelines for Noise Impact Assessment (IEMA)

- 10.24 The *Guidelines for Noise Impact Assessment* produced by the Institute of Environmental Management and Assessment (IEMA) are generally recognised as established good practice standards for scope, content, and methodology of noise impact assessment.
- 10.25 These guidelines address the key principles of noise impact assessment and are applicable to all development proposals where noise effects are likely to occur. These guidelines state that for any assessment, the noise level threshold and significance should be determined by the assessor, based upon the specific evidence and likely subjective response to noise. An example impact scale offered by the IEMA guidelines is shown in Table 10-1.

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

LONG-TERM IMPACT CLASSIFICATION	SHORT-TERM IMPACT CLASSIFICATION	SOUND LEVEL CHANGE dB L_{pAeqT} (+ive or -ive) T = either 16hr day or 8hr night
Negligible	Negligible	≥ 0 dB and < 1 dB
	Minor	≥ 1 dB and < 3 dB
Minor	Moderate	≥ 3.0 dB and < 5 dB
Moderate	Major	≥ 5.0 dB and < 10 dB
Major		≥ 10.0



- 10.26 The criteria above reflect the key benchmarks that relate to human perception of sound. A change of 3dB is generally considered to be the smallest change in environmental noise that is perceptible to the human ear under most normal conditions. A 10dB change in noise represents a doubling or halving of the noise level. The difference between the minimum perceptible change and the doubling or halving of the noise level is split to provide greater definition to the assessment of changes in noise level.
- 10.27 To determine the overall noise impact, the magnitude and sensitivity Noise Effects Descriptors are presented in Table 10-2.

Table 10 - 2
Noise Effects Descriptors (IEMA)

VERY SUBSTANTIAL	Greater than 10 dB L_{Aeq} change in sound level perceived at a highly sensitive noise receptor
SUBSTANTIAL	Greater than 5 dB L_{Aeq} change in sound level at a noise-sensitive receptor, or a 5 to 9.9 dB L_{Aeq} change in sound level at a highly sensitive noise receptor
MODERATE	A 3 to 4.9 dB L_{Aeq} change in a sound level at a sensitive or highly sensitive noise receptor, or a greater than 5 dB L_{Aeq} change in sound level at a receptor of some sensitivity
SLIGHT	A 3 to 4.9 dB L_{Aeq} change in a sound level at a receptor of some sensitivity
NONE / NOT SIGNIFICANT	Less than 2.9 dB L_{Aeq} change in sound level and/or all receptors of negligible sensitivity to noise or marginal to the zone of the influence of the proposed development

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

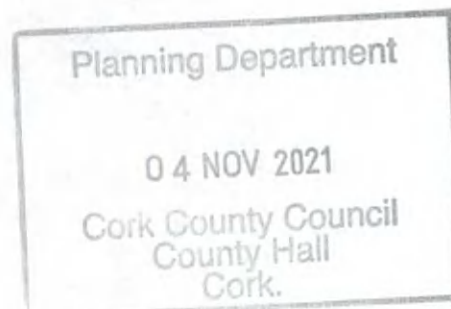


Table 10 - 3
Relationship between Noise Impact, Effect and Significance (IEMA)

MAGNITUDE (NATURE OF IMPACT)		DESCRIPTION OF EFFECT (ON A SPECIFIC SENSITIVE RECEPTOR)	SIGNIFICANCE
Substantial	Beneficial	<p>Receptor Perception = Marked Change Causes a material change in behaviour and/ or attitude, e.g. individuals begin to engage in activities previously avoided due to preceding environmental noise conditions. Quality of life enhanced due to change in character of the area.</p>	<p>More Likely to be Significant (Greater justification needed- based on impact magnitude and receptor sensitivities- to justify a non-significant effect)</p>
Moderate		<p>Receptor Perception = Noticeable Improvement Improved noise climate resulting in small change in behaviour and/or attitude, e.g. turning down volume of television; speaking more quietly; opening windows. Affects the character of the area such that there is a perceived change in the quality of life.</p>	<p>↕</p>
Slight		<p>Receptor Perception = Just Noticeable Improvement Noise impact can be heard, but does not result in any change in behaviour or attitude. Can slightly affect character of the area but not such that there is a perceived change in quality of life.</p>	<p>(Greater justification needed- based on impact magnitude and receptor sensitivities- to justify a significant effect) Less Likely to be Significant</p>
Negligible		N/A = no discernible effect on receptor	Not Significant
Slight	Adverse	<p>Receptor Perception = Non-intrusive Noise impact can be heard, but does not cause change in behaviour or attitude, e.g. turning up volume of television, speaking more loudly; closing windows. Can slightly affect the character of the area but not such that there is a perceived change in the quality of life.</p>	<p>Less Likely to be Significant Greater justification needed- based on impact magnitude and receptor sensitivities- to justify a significant effect)</p>
Moderate		<p>Receptor Perception = Intrusive Noise impact can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows. Potential for non-waking sleep disturbance. Affects the character of area such that there is a perceived change in the quality of life.</p>	<p>↕</p>
Substantial		<p>Receptor perception = Disruptive Causes material change in behaviour and/ or attitude, e.g. avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in getting to sleep, premature awakening, and difficulty in getting back to sleep. Quality of life diminished due to change in character of area.</p>	<p>Greater justification needed- based on impact magnitude and receptor sensitivities- to justify a non-significant effect) More Likely to be Significant</p>
Severe		<p>Receptor Perception = Physically Harmful Significant Changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or psychological effects, e.g. regular sleep deprivation / awakening ; loss of appetite, significant , medically definable harm, e.g. auditory and non-auditory.</p>	Significant

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British Standard 5228: 2009+A1:2014

- 10.29 British Standard 5228-1:2009+A:2014 *Noise and Vibration Control on Construction and Open Sites, Part 1: Noise* (BS5228) sets out a methodology for predicting noise levels arising from a wide variety of construction and related activities. It can be used to predict noise levels arising from construction and operational stage activities at extraction sites, including associated earthmoving / restoration operations. BS5228 also sets out tables of sound power levels generated by a wide variety of mobile equipment.
- 10.30 Noise levels generated by site operations and experienced at local receptors will depend upon a number of variables, the most significant of which are:
- the amount of noise generated by plant and equipment being used at the development site, generally expressed as a sound power level;
 - the periods of operation of the plant at the development site, known as the “on-time”;
 - the distance between the noise source and the receptor, known as the “stand-off”;
 - the attenuation due to ground absorption or barrier screening effects; and
 - any reflections of noise due to the presence of hard vertical faces (i.e. walls).

Design Manual for Roads and Bridges

- 10.31 The Design Manual for Roads and Bridges DMRB (LA 111) considers the following criterion to understand the need for further assessment:
- is the project likely cause change in the baseline noise levels of 1dB $L_{A10,18hr}$ in the do - minimum year compared to do- something opening year;
 - is the project likely cause change in the baseline noise levels of 3 dB $L_{A10,18hr}$ in the do – something future year compared to do- minimum opening year;
 - does the project involve construction of new road links within 600m of noise sensitive receptors;
 - would there be a reasonable stakeholder’s expectation that an assessment is undertaken.

AQTAG09 - Guidance on Effects of Industrial Noise on Wildlife

- 10.32 AQTAG09 (Air Quality Technical Advisory Group 09) guidance provides guidance to assist planning and/or licensing officials handling pollution prevention and control applications for industrial installations on relevant noise emissions and relates these to the requirements of the Habitats Regulations.
- 10.33 The guidance specifies that, where specific noise from industry, measured at the habitat / nest site is below the levels in Table 10-4, it is considered unlikely that it will have an adverse impact on designated species. Where noise levels are exceeded, a more detailed noise assessment will be required.

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

PARAMETER	NOISE LEVEL, DB
$L_{Amax,F}$	80
$L_{Aeq,1hr}$	55

Noise and Human Health

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

WHO Environmental Noise Guidelines

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

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

REGULATORY CONTROL FRAMEWORK : VIBRATION

10.37 There is currently no legislation regulating or controlling ground-borne vibration from rock basting and extractive activity more generally. A number of guidance documents which are relevant in the context of vibration action planning for the proposed development are referenced below.

Quarries and Ancillary Activities

10.38 The EPA publication *Environmental Management Guidelines for Environmental Management in the Extractive Industry (Non-Scheduled Minerals)*¹ recommends the following limit values for ground-borne vibrations and air overpressure:

Ground-borne vibration

Peak particle velocity = 12 mm per second, measured in any of the three mutually orthogonal directions at the receiving location (for vibration with a frequency of less than 40 hertz).

Air overpressure

125 dB (Linear maximum peak value), with a 95 % confidence limit. Any blasting will be restricted to normal hours (e.g. 11:00 -17:00 hrs Monday to Friday). Advance notification of blasting will be provided to nearby residents within 600m through use of written notes, signage at site entrance, telephone, or warning sirens or a combination of these methods.

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

British Standard 7385-2:1993

10.40 British Standard 7385-2:1993 *Evaluation and Measurement for Vibration in Buildings – Part 2: Guide to Damage Levels from Ground-borne Vibration* gives guidance on vibration limits to prevent building damage. It is applicable to blasting associated with rock extraction.

10.41 The damage threshold criteria provided in BS7385 are based on systematic studies using a carefully controlled vibration source in the vicinity of buildings. Vibration limits for transient vibrations (such

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

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

as those associated with blasting operations), above which cosmetic damage could occur, are indicated in Table 10-5 below.

Table 10 - 5
Transient Vibration Guide Values for Cosmetic Damage

TYPE OF BUILDING	PPV (mm/sec) 4 TO 15 Hz	PPV (mm/sec) 15 Hz AND ABOVE
Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/sec	50 mm/sec
Unreinforced or light framed structures Residential or light commercial buildings.	15 mm/sec at 4Hz increasing to 20 mm/sec at 15 Hz	20 mm/sec at 15Hz increasing to 50 mm/sec at 40 Hz and above.

10.42 The definition of “cosmetic damage” is the formation of hairline cracks or the growth of existing cracks in plaster, dry wall surfaces, or mortar joints. BS7385-2 notes that the probability of damage tends towards zero at a peak component particle velocity of 12.5mm/sec.

Site Specific Emission Limits for Vibration

Vibration

10.43 An Bord Pleanála Planning Ref. QD 04.QD0010 Condition No. 12 imposes the following condition:

10.44 *Peak Particle Velocity: “Vibration levels from blasting shall not exceed a peak particle velocity of 12mm/second, when measured in any three mutually orthogonal directions at any sensitive location.....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 8 millimetres per second.”*

10.45 *Air Overpressure: “Blasting shall not give rise to air overpressure values at sensitive locations which are in excess of 125dB (Lin)max peak with a 95% confidence limit.”*

RECEIVING ENVIRONMENT

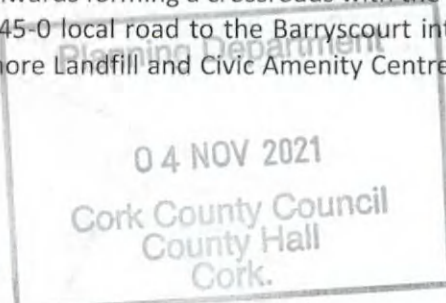
Study Area

10.46 The development site is located in a coastal setting and on a local county road south of Carrigtwohill and southwest of Middleton, Co. Cork. It is located south of N25 National Primary Road (E-30 European Route) which links Cork city to Rosslare Europort.

10.47 The site is located in the townland of Rossmore, Carrigtwohill, Co. Cork. Access to the lands is via an existing access to the public road to the north which connects to the N25 National Primary Road to the north. The local county road forms the northern site boundary which links the R624 Regional Road to the west at Fota and the N25 National Primary Road at Middleton. There is an existing quarry operated by a third party located adjacent to the western boundary.

10.48 Further beyond the immediate adjacent land uses there is Fota Island Wildlife Park (located to the northeast), the commercial/retail/residential centre of Carrigtwohill (located to the north) and other extractive industries (located to the north-east).

10.49 The site is accessed by a private road that leads northwards forming a crossroads with the east-west LP3619-0 local public road and onwards on the L7645-0 local road to the Barryscourt interchange and the N25. The private road also serves the Rossmore Landfill and Civic Amenity Centre, which is operated by Cork County Council.



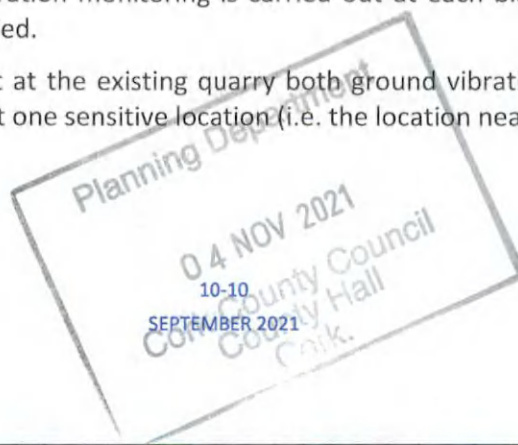
- 10.50 The surrounding landscape is characterised by Cork Harbour and the numerous islands, tidal estuaries, loughs and channels that make up Cork Harbour. The land use consists primarily of agricultural land but also includes a number of other quarries as well as golf courses. A private road enters the Site from the north to accommodate quarry traffic. A local county road, with a number of residential dwellings located along it, runs in an east-west direction north of the Site.
- 10.51 Rossmore Bay is immediately adjacent to the southern boundary of Rossmore Quarry. Rossmore Bay forms part of Cork Harbour Special Protected Area (SPA) 004030 and the Great Island Channel Special Area of Conservation (SAC) 001058 – refer to Chapter 5 (Biodiversity).
- 10.52 There are isolated private residential property and agriculture farms located throughout the surrounding rural landscape, predominantly along the local road network.
- 10.53 The application site is not subject to any statutory or non-statutory nature conservation designations. Dwellings in the vicinity of application site are generally located along the local road network comprise farmsteads or isolated on-off residences, with occasional small clusters.
- 10.54 The nearest dwellings to the application site boundary are shown in Figure 10-1.

Baseline Study Methodology : Noise

- 10.55 Environmental noise surveys were carried out by TMS Environmental at quarry boundary locations. The methodology of the surveys and the results are set out below. The weather conditions during the survey periods were acceptable for noise monitoring, being generally dry with little or no wind.
- 10.56 The baseline noise measurements were taken using a Type 1 sound level meter. The sound level meter was calibrated before the measurements, and its calibration checked after by the operator. No calibration drifts were found to have occurred during surveys. All noise equipment had been calibrated to a traceable standard by UKAS (United Kingdom Accreditation Service) accredited laboratories within 12 months preceding the surveys.
- 10.57 At the measurement positions, the following noise level indices were recorded:
- $LA_{eq,T}$ is the A-weighted equivalent continuous noise level over the measurement period, and effectively represents an “average” value.
 - $LA_{90,T}$ is the A-weighted noise level exceeded for 90% of the measurement period. This parameter is often used to describe the background noise.
 - $LA_{10,T}$ is the A-weighted noise level exceeded for 10% of the measurement period. This parameter is often used to describe traffic noise.
- 10.58 During the surveys, the sound level meter was located in free-field conditions (i.e. at least 3.5m from the nearest vertical reflecting surface, with the microphone approximately 1.5m above ground level).
- 10.59 All noise levels are recorded in ‘A-weighted’ decibels, dB(A). A-weighting is the process by which noise levels are corrected to account for the non-linear frequency response of the human ear. All noise levels are quoted in dB(A) relative to a sound pressure of 20 Pa.

Baseline Study : Vibrations

- 10.60 At the existing quarry, vibration monitoring is carried out at each blasting event. All monitoring results are routinely recorded.
- 10.61 During each blasting event at the existing quarry both ground vibration and air overpressure are monitored at a minimum at one sensitive location (i.e. the location nearest to the blast).



Sources of Information

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

Field Survey / Monitoring : Noise

10.63 The noise monitoring locations identified for the purposes of the noise survey are shown in Figure 10-1 and comprise the following:

- N1 - Situated outside dwelling house on roadside due north of site boundary;
- N2 - Situated outside dwelling house beside road due north of site boundary and adjacent road intersection;
- N3 - Situated at corner of northern and eastern boundaries;
- N4 - Situated at midway point along the eastern boundary ;
- N5 - Situated on southern boundary adjacent track leading to Rossmore Bay;
- N6 - Situated at corner of northern and western boundaries.

10.64 Noise monitoring results for the baseline survey on are provided in Table 10-6; highest recorded (L_{Aeq}) values are provided in Table 10-7 below.

Table 10 - 6
Summary of Measured Noise Levels, Free Field dB

LOCATION	DATE	TIME	$L_{Aeq,T}(dB)$	$L_{A10,T}(dB)$	$L_{A90,T}(dB)$
N1	23/03/2020	10:30-11:00	55	55	35
N1	25/08/2020	07:32-08:02	48	49	44
N1	20/01/2021	13:01-13:31	46	48	54
N2	23/03/2020	12:07-12:37	61	40	40
N2	25/08/2020	08:12-08:42	50	51	48
N2	20/01/2021	11:54-12:54	50	53	44
N3	23/03/2020	12:49-13:24	56	53	53
N3	25/08/2020	08:45-09:15	54	52	48
N3	20/01/2021	11:22-11:52	50	54	45
N4	23/03/2020	13:36-14:06	64	63	63
N4	25/08/2020	09:18-09:48	51	53	48
N4	20/01/2021	10:49-11:19	53	55	49
N5	23/03/2020	14:19-14:49	53	54	54
N5	25/08/2020	07:00-07:30	52	54	48
N5	20/02/2021	10:13-10:43	54	55	45

LOCATION	DATE	TIME	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
N6	23/03/2020	11:20-11:50	46	50	50
N6	25/08/2020	09:56-10:26	51	53	51
N6	20/01/2021	12:27-12:57	47	49	44

- 10.65 The ambient and background noise levels (L_{Aeq}) reported in Table 10-6 above include a continuous noise contribution from ongoing activities in and around Rossmore Quarry, including the adjacent quarry, operated by Kilsaran. Comparison of ambient noise levels with periodic or intermittent noise (L_{A10}) indicates that the averaged ambient noise levels are strongly influenced by intermittent passing traffic along the local road network.
- 10.66 Table 10-7 below identifies the closest receptors affected by noise emissions from activities at the application site, clustered according to nearest noise monitoring location.

Table 10 - 7
Summary of Highest Measured Noise Levels, Free Field dB

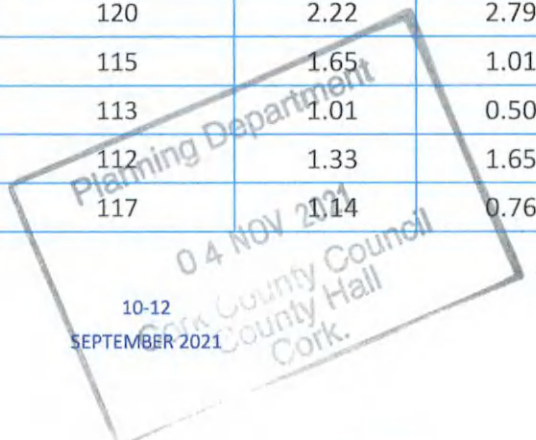
LOCATION	RECEPTORS EFFECTED	PERIOD	L _{AT}
N3	Group 3, R12, R13,R14	Daytime	56
N5	Commercial C	Daytime	54
N6	Group 4, R7,R8,R9,R10,R11	Daytime	51

Field Monitoring : Vibration

- 10.67 Historical blasting operations at Rossmore Quarry have been monitored at neighbouring residences by the Irish Industrial Explosives (IEE) blasting and shot firing team. The blast monitoring locations are shown on Figure 10-1 and are described as follows:
- Location 1 – Located north-west of the existing quarry footprint
 - Location 2 – Located north-east of the existing quarry footprint
 - Location 3 – Located south of the existing quarry footprint
 - Location 4 – Located north-west of the existing quarry footprint
- 10.68 Blast monitoring results for Rossmore Quarry are provided in Table 10-8 below.

Table 10 - 8
Blast Monitoring Results

DATE	LOCATION OF SEISMOGRAPH	AIR OVERPRESSURE dB(L)	PEAK PARTICLE VELOCITY (mm/sec)		
			Horizontal	Transverse	Vertical
19/02/2018	Location 1	117	2.54	2.92	2.54
19/02/2018	Location 2	120	2.22	2.79	1.27
26/03/2018	Location 1	115	1.65	1.01	1.27
26/03/2018	Location 2	113	1.01	0.50	0.63
11/04/2018	Location 1	112	1.33	1.65	1.01
11/04/2018	Location 2	117	1.14	0.76	0.88



DATE	LOCATION OF SEISMOGRAPH	AIR OVERPRESSURE dB(L)	PEAK PARTICLE VELOCITY (mm/sec)		
			Horizontal	Transverse	Vertical
01/05/2018	Location 1	<120	<0.5	<0.5	<0.5
01/05/2018	Location 2	<120	<0.5	<0.5	<0.5
08/05/2018	Location 1	-	-	-	-
08/05/2018	Location 2	<120	<0.5	<0.5	<0.5
15/05/2018	Location 1	120	0.44	0.63	0.50
15/05/2018	Location 2	-	-	-	-
22/05/2018	Location 1	116	0.63	0.63	0.57
22/05/2018	Location 2	-	-	-	-
29/05/2018	Location 1	117	0.31	0.31	0.31
29/05/2018	Location 2	-	-	-	-
22/01/2019	Location 1	119.4	1.65	0.76	1.02
22/01/2019	Location 2	117	1.0	0.80	0.80
19/02/2019	Location 1	121.90	2.22	1.78	0.19
19/02/2019	Location 2	125.00	1.80	1.00	1.20
22/03/2019	Location 1	116.70	1.14	1.40	0.89
22/03/2019	Location 2	120.00	1.00	0.60	0.60
17/04/2019	Location 1	120.30	1.02	0.83	1.59
17/04/2019	Location 2	119.00	0.76	0.51	0.64
14/05/2019	Location 1	113.80	0.64	0.89	1.02
14/05/2019	Location 2	100.00	0.76	0.51	0.64
21/06/2019	Location 1	113.00	0.64	0.89	1.02
21/06/2019	Location 2	100.00	0.76	0.51	0.64
22/07/2019	Location 1	<117	<0.57	<0.57	<0.57
22/07/2019	Location 2	123.00	<0.57	<0.57	<0.57
20/08/2019	Location 1	114.00	0.70	0.51	0.63
20/08/2019	Location 2	117.80	1.14	1.08	1.52
19/09/2019	Location 1	105.00	1.27	0.95	1.40
19/09/1029	Location 2	88.00	0.76	0.64	0.89
14/10/2019	Location 1	88.00	0.83	0.70	1.33
14/10/2019	Location 2	96.00	0.89	0.89	0.64
05/12/2019	Location 1	121.00	2.22	1.96	2.73
05/12/2019	Location 2	103.00	1.33	1.33	1.21
30/01/2020	Location 1	117	0.76	0.89	0.57
30/01/2020	Location 2	114	1.14	0.89	0.57
25/02/2020	Location 1	91	1.13	1.71	1.39

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DATE	LOCATION OF SEISMOGRAPH	AIR OVERPRESSURE dB(L)	PEAK PARTICLE VELOCITY (mm/sec)		
			Horizontal	Transverse	Vertical
25/02/2020	Location 2	115	1.27	1.08	0.76
19/05/2020	Location 3	111.2	0.70	0.95	0.95
19/05/2020	Location 4	112	1.14	1.65	1.27
06/07/2020	Location 1	115	1.21	1.59	1.21
06/07/2020	Location 2	n/a	<0.5	<0.5	<0.5
28/07/2020	Location 1	109.9	1.65	1.65	2.29
28/07/2020	Location 2	108.8	1.14	1.02	1.02
09/09/2020	Location 1	109.9	0.89	1.14	2.29
09/09/2020	Location 2	112	0.76	0.76	0.76
21/09/2020	Location 1	114.8	1.4	1.14	1.4
21/09/2020	Location 2	112.4	1.14	1.27	0.76
21/09/2020	Location 3	122	0.80	0.60	0.60
21/10/2020	Location 1	110.6	1.01	1.52	1.27
21/10/2020	Location 2	110.6	0.889	0.635	0.635
21/10/2020	Location 3	122	2.30	1.4	1.8
17/11/2020	Location 1	115.9	1.39	1.52	3.04
17/11/2020	Location 2	118.6	1.27	1.14	0.89
17/11/2020	Location 3	118.0	1.0	0.8	1.0
08/12/2020	Location 1	111.2	1.01	1.27	1.27
08/12/2020	Location 2	112.3	1.01	0.76	0.76
08/12/2020	Location 3	117	1.4	1.4	2.2
19/01/2021	Location 1	116.4	1.14	1.02	0.76
19/01/2021	Location 2	124.1	2.16	2.79	1.40
19/01/2021	Location 3	116.0	0.40	0.80	0.80
15/02/2021	Location 1	116.7	0.76	0.89	0.51
15/02/2021	Location 2	113.1	0.76	0.89	1.40
15/02/2021	Location 3	105.0	0.80	0.80	1.40
02/04/2021	Location 1	116.3	1.40	1.78	1.02
02/04/2021	Location 2	110.9	2.54	2.54	2.03
02/04/2021	Location 3	119.0	1.00	0.60	0.40
30/04/2021	Location 1	113.1	0.76	1.02	1.40
30/04/2021	Location 2	117.1	2.41	1.91	2.41
30/04/2021	Location 3	112.0	0.80	0.00	1.00
28/05/2021	Location 1	115.9	0.889	0.889	0.762
28/05/2021	Location 2	112.6	0.889	1.08	2.54
28/05/2021	Location 3	116.9	0.762	1.143	1.461

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DATE	LOCATION OF SEISMOGRAPH	AIR OVERPRESSURE dB(L)	PEAK PARTICLE VELOCITY (mm/sec)		
			Horizontal	Transverse	Vertical
16/07/2021	Location 1	123.2	2.286	1.397	2.413
16/07/2021	Location 2	123.9	1.397	1.143	1.397
26/07/2021	Location 3	116	1.800	1.400	2.200
29/06/2021	Location 1	108.8	2.16	1.40	1.52
29/06/2021	Location 2	113.3	1.02	0.89	0.76
29/06/2021	Location 3	109.0	1.00	0.60	1.20

10.69 All of the ground vibration and air overpressure levels recorded are within recognised threshold and planning compliance limit values.

Sensitive Receptors

Human Receptors

10.70 Sensitive locations are those where people may be exposed to noise from the existing or planned activities. The closest receptors to the application site have been identified and assessed on the basis of their distance from the application site boundary. This is a cautious approach, as noise generating activities are often located at greater distances within the site. The relevant receptors are listed in Table 10-7 and their locations are shown in Figure 10-2.

10.71 There are 10 sensitive receptors identified within the 500 m study area of the application site. A list of the closest sensitive receptors in each direction surrounding the site and their distance from the site boundary at its closest point are outlined in Table 10-9 below.

Table 10 - 9
Noise Sensitive Receptors within 500m (Refer to Figure 10-1)

RECEPTOR REFERENCE	RECEPTOR	SENSITIVITY	DISTANCE (m) / FROM APPLICATION AREA
Group 3	Residential	Medium	426
Group 4	Residential	Medium	445
R7	Residential	Medium	342
R8	Residential	Medium	267
R9	Residential	Medium	234
R10	Residential	Medium	213
R11	Residential	Medium	193
R12	Residential	Medium	178
R13	Residential	Medium	237
R14	Residential	Medium	214
C1	Commercial	Low	319

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Ecological Receptors

10.72 The application site is not subject to any statutory nature conservation designation. There is one Natura 2000 site designated under the EU Habitats Directive (92/43/EEC) located within a 2km radius of the application site, identified in Table 10-10 below.

**Table 10 - 10
Natura 2000 or Designated Site(s) within a 2km of Application Site**

NATURA 2000 SITE	LOCATION AT CLOSEST POINT TO EXTRACTION AREA (m)
Cork Harbour Special Protected Area (SPA) 004030 and the Great Island Channel Special Area of Conservation (SAC) 001058	130

10.73 Based on the nature, size and scale of the planned development, it is considered that the maximum distance for which the project should be evaluated in terms of Natura 2000 or designated nature sites is up to a maximum radius of 2km unless there are any potential source-pathway-receptor links between the proposed development at Rossmore and any Natura 2000 or designated site(s) beyond this distance. At a distance greater than 2km, and in the absence of any potential source-pathway-receptor link, it is generally considered that no Natura 2000 or designated sites would be affected by any direct loss of habitat or otherwise impacted upon.

10.74 At a distance of 130m from the extraction area, at its closest point, the SAC/SPA lies within the potential zone of influence of the proposed development at Rossmore Quarry and as such, it is therefore deemed appropriate to screen it in as part of this noise assessment.

NOISE IMPACT ASSESSMENT

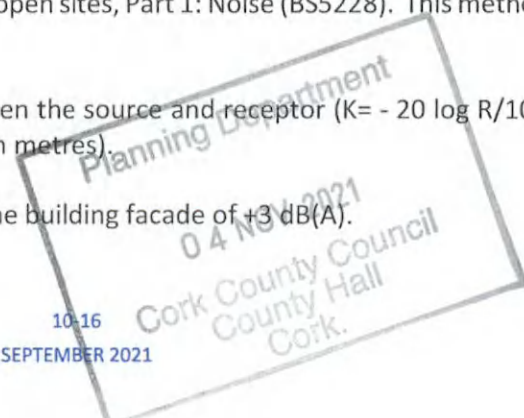
10.75 To determine the noise impact from the activities within the application site, SLR Consulting Ireland carried out a noise prediction assessment, using the existing measured noise levels within the overall quarry site (including manufacturing and ancillary plant operational noise).

10.76 The site activity noise levels measured at the Rossmore Quarry site boundary were used to assess the noise levels at residences due to quarry operations and to assess where the noise emissions are in compliance with daytime noise limits at residences. As stated above these measured noise levels take in account the activities in the adjacent operational quarry.

10.77 The EPA 2006 Guidance on Quarries and Ancillary Activities suggest noise limit values are 55dB LAeq, 1hr for daytime operations.

10.78 Noise levels (arising from site activities) at the residences have been calculated using the methodology set out in British Standard 5228:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites, Part 1: Noise (BS5228). This methodology includes provision for:

- Attenuation with distance between the source and receptor ($K = -20 \log R/10$ dB(A), for hard ground R=distance from source in metres).
- Adjustment for reflection from the building facade of +3 dB(A).



- Adjustment for tonal / impulsive component +5 dB(A) at each receptor.

10.79 No adjustment has been made for partial screening between the site and residences by existing banks, walls. In all likelihood, for deepening of the existing quarry void greater noise attenuation will be provided by the high quarry faces and the actual reduction will be greater.

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

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

10.81 The highest L_{Aeq} values of the measured noise levels from N3 and N6 (used in this assessment) with corresponding receptors are provided in Table 10-11.

Table 10 - 11
Summary of Measured Noise Levels, Free Field dB (Highest Measured Values)

Location	Receptors	Period	L_{Aeq}
N3	Group 3, R12, R13,R14	Daytime	56
N5	Commercial	Daytime	54
N6	Group 4, R7,R8,R9,R10,R11	Daytime	51

10.82 A penalty of +5dB(A) was applied in respect of the tonal noise associated with activities at the quarry.

Quarry Deepening Operational Noise Prediction

10.83 The noise prediction / assessment was undertaken to calculate the level of noise generated by proposed site activities (and activities in the adjacent operational quarry) at the nearest sensitive receptors, shown on Figure 10-1. Detailed noise assessment calculations are provided in Appendix 10-B.

10.84 The operational $L_{Ar, 1hr}$ noise prediction for each receptor location is presented in Table 10-13 below. Table 10-13 also shows the comparison between the predicted operational $L_{Ar, 1hr}$ noise level and the prescribed noise limit of 55dB(A) at each receptor.

Table 10 - 12
Operational Noise Levels: Rossmore Quarry

RECEPTOR	PERIOD	NOISE LIMIT $L_{Aeq, 1hr}$ dB(A)	OPERATIONAL $L_{Aeq, 1hr}$ dB(A)*	DIFFERENCE
Group 3	Daytime	55.0	31	-24
Group 4	Daytime	55.0	26	-29
R7	Daytime	55.0	28	-27
R8	Daytime	55.0	30	-25
R9	Daytime	55.0	32	-23
R10	Daytime	55.0	32	-23

RECEPTOR	PERIOD	NOISE LIMIT L _{AEQ, 1HR} dB(A)	OPERATIONAL L _{AEQ, 1HR} dB(A)*	DIFFERENCE
R11	Daytime	55.0	33	-22
R12	Daytime	55.0	39	-16
R13	Daytime	55.0	37	-18
R14	Daytime	55.0	37	-18
Commercial C	Daytime	55.0	32	-23

*Operational Noise Level = Predicted Noise Level with a 5 dB penalty

- 10.85 It can be seen from the results in Table 10-13 above that the noise levels generated by proposed development and existing activities within Rossmore Quarry (and the adjacent operational quarry), even in a worst case scenario, are comfortably below the prescribed noise limit at all nearby residential noise sensitive locations.
- 10.86 In view of the above findings, it is considered that mitigation measures to reduce the noise impacts of plant associated with the planned development are not strictly required to mitigate long term noise impacts arising at the application site. Notwithstanding this, and in line with accepted best practice, a number of measures will be implemented at the quarry to minimise the noise levels generated by site operations.

Ecological Receptors

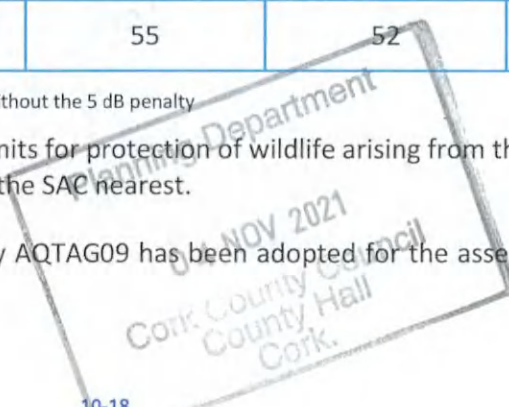
- 10.87 As previously noted, Rossmore Quarry and the application site are not subject to any statutory nature conservation designation and the nearest designated nature site (Cork Harbour Special Protected Area (SPA) 004030 and the Great Island Channel Special Area of Conservation (SAC) 001058) is located at a distance of approximately 130m from the extraction area, at its closest point.
- 10.88 SLR Consulting carried out noise measurements at EN1 and EN2 to measure the operational noise level – refer to Figure 10.1.
- 10.89 The measured operational L_{Ar, 1hr} noise for ecological receptor location is presented in Table 10-15 below. It also presents a comparison between the predicted operational L_{Ar, 1hr} noise level and the prescribed noise limit for protection of wildlife.

Table 10 - 13
Operational Noise Levels at Ecological Receptors at Rossmore

RECEPTORS	PERIOD	NOISE LIMIT L _{AEQ, 1HR} dB(A)	MEASURED* L _{AEQ, 1HR} dB(A)	DIFFERENCE
EN1	Daytime	55	49	-6
EN2	Daytime	55	52	-3

*Measured Noise Level = Predicted Noise Level without the 5 dB penalty

- 10.90 As can be seen, the noise criterion limits for protection of wildlife arising from the planned activities at Rossmore are comfortably met at the SAC nearest.
- 10.91 The noise criterion recommended by AQTAG09 has been adopted for the assessment and used to define two noise impact categories:



- 'negligible impact' is implied when average noise emission levels are below LAeq 55dB and maximum noise emission levels are below LMax 80dB;
- 'possible adverse impact' is implied when average noise emission levels are above LAeq 55dB or maximum noise emission levels are above LMax 80dB.

10.92 Noise levels measured at the Rossmore site boundary (EN1 and EN2) from all quarry operations do not and will not exceed the AQTAG09 noise guidance limits of LAeq 55dB and maximum noise emission levels are below LMax 80dB therefore there will be a negligible noise impact on the Natura 2000 or designated site.

10.93 The proposed operations will not exceed the AQTAG09 noise guidance limits of LAeq 55dB and maximum noise emission levels are below LMax 80dB therefore there will be a negligible noise impact on the Natura 2000 or designated sites.

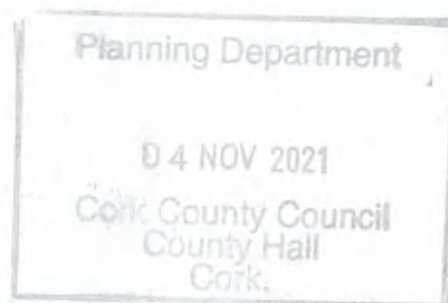
Traffic

10.94 For the purposes of assessment, it is assumed that the total volume of traffic generated in the future by all extraction and production activities at Rossmore (including production of aggregates, concrete and ground lime) will not exceed total of 186 movements in or out of the quarry per day. On most days, traffic levels will likely be less than this.

10.95 In view of

- the existing permitted levels of quarry output and associated HGV traffic movements across the local road network;

it is considered that the extent of any change and the likely impact of the quarry extension and site activities can be deemed 'negligible' in terms of traffic and that no further assessment is necessary.



VIBRATION IMPACT ASSESSMENT

- 10.96 Rock extraction at Rossmore Quarry will be carried out by blasting and blasted rock materials will be removed for further processing (crushing) by mechanical excavators.
- 10.97 The duration of a blast in terms of noise is of short duration, similar to a clap of thunder. Blasting-induced vibration is also of short duration and transient in nature. A typical blast comprises a number of drilled holes into which explosive charges are placed. The charged holes are detonated individually by use of detonators, each with a different micro-second delay.
- 10.98 The number of blasts carried out at the quarry over a defined period is ultimately dependent on demand for aggregates and other quarry products. Drilling of holes for blasting will involve the use of a mobile rig to drill holes through the upper rock surface, parallel to the active / exposed quarry face. The extent and duration of drilling prior to each rock blast will vary with the number and depth of charge holes required. Drilling of holes will be carried out during permitted operational hours.
- 10.99 The closest vibration sensitive receptors (within 500m) to the blasting activities within the application area are identified in Table 10-16 below. Attenuation of ground-borne vibration increases with distance such that vibration impacts reduce with increased distance from the blast site.

Table 10 - 14
Vibration Sensitive Receptors (Refer to Figure 10-1)

RECEPTOR REFERENCE	RECEPTOR	DISTANCE (m) FROM APPLICATION AREA
Group 1	Residential	752 S
Group 2	Residential	550 NE
Group 3	Residential	426 NE
Group 4	Residential	445 NW
Group 5	Residential	514 N
Group 6	Residential	650 N
R7	Residential	342 N
R8	Residential	267 N
R9	Residential	234 N
R10	Residential	213 N
R11	Residential	193 N
R12	Residential	178 N
R13	Residential	237 N
R14	Residential	214 N
R15	Residential	511 N
C	Commercial	319 S

Residences

- 10.100 The principal cause of complaints from blast-induced vibration is usually attributed to the fear of damage and/or nuisance rather than actual physical damage or nuisance itself. The human body is

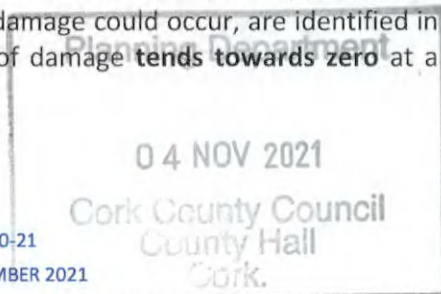
very sensitive to vibration, and this can result in concerns being raised at vibration levels well below the threshold of cosmetic damage to buildings, or levels identified in planning conditions.

- 10.101 In general terms a person will become aware of blast-induced vibration at levels of around 0.3mm/second peak particle velocity (ppv). However, people are very poor at determining relative magnitudes of vibration, for example, the difference between 4.0mm/sec ppv and 6.0mm/sec ppv is unlikely to be distinguishable by an individual person. Even though vibration levels between 0.6 mm/sec ppv and 50.0 mm/sec ppv are routinely experienced in everyday life within a property and are considered wholly safe, when similar levels are experienced through blasting operations, it is not unusual for such levels to give rise to subjective concern.
- 10.102 Table 10-17 overleaf gives examples of vibration levels routinely generated with a conventional residential property.

Table 10 - 15
Vibration Levels Generated by Everyday Activities

ACTIVITY	VIBRATION LEVEL (PEAK PARTICLE VELOCITY, mm/sec)
Walking, measured on a wooden floor	1.0 to 2.5
Door slam, measured on a wooden floor	2.0 to 5.0
Door slam, measured over the doorway	12.0 to 35.0
Foot stamps, measured on a wooden floor	5.0 to 50.0

- 10.103 With regard to physical damage to properties, extensive research has been carried out around the world, the most prominent being undertaken by the United States Bureau of Mines (USBM). Damage to a structure could occur if the dynamic stresses induced in a structure exceeds the allowable design stress for the specific building material. Classifications of building damage range from very fine plaster cracking up to major cracking of structural elements.
- 10.104 When defining damage to buildings, the following classification is applied:
- *Cosmetic – the formation of hairline cracks or the growth of existing cracks in plaster, dry wall surfaces, or mortar joints.*
 - *Minor – the formation of large cracks or loosening or falling of plaster on dry wall surfaces, or cracks through bricks / concrete blocks.*
 - *Major or Structural – damage to structural elements of the building*
- 10.105 Studies by USBM concluded that vibration levels in excess of 50 mm/sec ppv are required to cause structural damage. It should be noted that this limit is set for worst-case structural conditions and that it is independent of the number of blasting events and their durations.
- 10.106 British Standard 7385-2:1993 *Evaluation and Measurement for Vibration in Buildings – Part 2: Guide to Damage Levels from Ground-borne Vibration* gives guidance on vibration limits to prevent building damage. It is applicable to blasting associated with mineral extraction. The damage threshold criteria provided in the standard are based on systematic studies using carefully controlled vibration sources in the vicinity of buildings. Vibration limits for transient vibrations (such as those associated with blasting operations), above which cosmetic damage could occur, are identified in Table 10-5 of this EIA Chapter. It notes that the probability of damage **tends towards zero** at a peak component particle velocity below 12.5mm/sec.



- 10.107 Historical blast monitoring results at Rossmore Quarry confirm that past blasting operations undertaken at the quarry have complied with the DoEHLG (2004) and EPA (2006) recommended threshold limit values both for ground-borne vibration (12 mm/sec peak particle velocity) and air overpressure (125 dBL Linear max peak with a 95% confidence limit), and the site specific ground vibration and air overpressure emission limit values set out under An Bord Pleanála Planning Ref. QD 04.QD0010 Condition No. 12.
- 10.108 The comprehensive environmental monitoring programme implemented at the quarry and the monitoring results presented previously in Table 10-8 confirms that the quarry has always operated within the recommended blasting emission limit values set out in the best practice guidelines for the sector and by existing planning conditions.
- 10.109 Based on the above, it is concluded that any future blasting operations associated with deepening of the existing quarry void will not have a significant impact on any sensitive receptors.

Ecological Receptors

- 10.110 The impact from blasting activities for ecological receptors largely comprises disturbance (including noise, vibration, and visual disturbance). Increases in human disturbance, including noise and visual disturbance from human activity, can have a range of impacts on an ecological receptor depending upon its sensitivity and the nature and duration of the disturbance and its timing.
- 10.111 The response of individual species to increased levels of human disturbance will depend upon several factors including the sensitivity, reproductive status, previous exposure to human disturbance, behaviour during the event, species tolerance to disturbance, location in relation to the source, availability of alternative nearby habitat, and environmental factors (i.e. topography, vegetation and atmospheric conditions which can influence noise levels).
- 10.112 The level of disturbance will also be dependent upon the existing ambient noise levels and maximum noise levels.
- 10.113 Any future blasting operations will be undertaken subject to the emission limit values recommend by the EPA and DoEHLG guidance and set by existing planning conditions (maximum peak particle velocity of 12mm/sec and maximum air overpressure of 125dB with a 95% confidence limit). Ground borne vibration is likely to be limited in extent to the area immediately around the quarry.
- 10.114 At a distance of 130m to the extraction area at its closest point, the SAC is considered to be sufficiently distant that no changes in baseline disturbance levels are predicted to occur within its boundaries which would affect any of its Annex II qualifying species. Extraction activities will become deeper removed from the designated site. As a consequence, with no likely exposure to hazard, no effects are predicted on any qualifying Annex II species, or on the integrity of the SAC.

Cumulative Impacts

- 10.115 In essence, cumulative impacts are those which result from incremental changes caused by other past, present or reasonably foreseeable actions together with those generated by the proposed development. Therefore, the potential impacts of the proposed development cannot be considered in isolation but must be considered in addition to impacts already arising from existing or planned development.
- 10.116 This noise impact assessment is based on measured noise levels that include other activities at the site, including current ancillary activities (asphalt plant, ready-mix plant and lime plant) and activities

in the vicinity of the site, including the adjacent operational quarry. On this basis, any existing cumulative noise effects have been incorporated into the assessment.

- 10.117 This noise impact assessment shows that the proposed deepening of the existing quarry excavation long-term cumulative noise impact from the proposed operations at receptors is determined to be NEGLIGIBLE.
- 10.118 Noise levels arising from proposed activities will not have the potential to increase the existing ambient noise levels in the vicinity of proposed deepening of the existing quarry extraction at Rossmore.
- 10.119 Local existing and planned developments were reviewed as part of this assessment. Planning permission was granted by Cork County Council in December 2020 under planning file reference number 20/4124 for a ready-mix concrete batching plant and a ground limestone processing plant, ground limestone storage buildings, closed circuit settlement system and all ancillary works. The granted planning permission is regulating noise emission by prescribed noise emission levels.
- 10.120 During application process noise prediction assessment was carried out, whereby the levels of noise were calculated at the nearest noise sensitive receptor and ecological receptor. To identify the potential impact of proposed activity, predicted noise levels have been logarithmically added to existing ambient/ baseline noise levels. The ambient/baseline measurements contained noise derived from Rossmore quarry operations and off-site sources from across the area. . The ambient/baseline measurement was carried out during a typical day at the quarry; during the daily activities such as rock crushing and screening activities, aggregates loading and despatch, and asphalt plant production.
- 10.121 The cumulative impacts of the proposed ready-mix and limes plant in relation to the existing operations were assessed to be negligible with the mitigation measures. On this basis it is concluded that the long-term cumulative noise impact from deepening of the existing quarry and the proposed development granted under planning file reference number 20/4124, at receptors, is determined to be NEGLIGIBLE.
- 10.122 The cumulative effects of both developments if not mitigated, in uncontrolled circumstance could possibly lead to occasional increases in noise levels immediately surrounding the area. However, these are not considered to be significant given the limited duration of such conditions.
- 10.123 This vibrations impact assessment shows that the proposed operations at receptors will not have a significant impact on any sensitive receptors from vibrations.

'Do-nothing Scenario'

- 10.124 At present, the noise environment within the study area is dominated by road traffic noise generated by cars and occasional HGV traffic along the local road network (some relating to existing operations at Rossmore Quarry). There is an existing operational quarry located to the east of the site. There are further industrial sites located to the north and existing quarries located to the north east.
- 10.125 Some natural sounds such as farmyard animals or barking dogs are also audible in close proximity of the quarry.
- 10.126 Over time, it is anticipated that the volume of road traffic in general, will increase as economic activity increases and that this in turn is likely to lead to a gradual increase in ambient and background noise levels.



Interaction with Other Impacts

10.127 The potential impact of noise and vibration generated by the proposed development on sensitive receptors including local residents and sensitive ecological receptors has been assessed in this Chapter of the EIAR. The impact of the proposed development activity on these receptors is further considered in Chapter 4 'Population and Human Health' and Chapter 5 'Biodiversity'.



MITIGATION MEASURES

Noise

10.128 Where necessary, the three established strategies for impact mitigation are avoidance, reduction and remedy. Where it is not possible or practical to mitigate all impacts, then the residual impacts must be clearly described in accordance with the system for impact description set out in the EPA Guidelines. The adoption of Best Practicable Means is generally considered to be the most effective means of controlling noise emissions.

10.129 Notwithstanding the findings of the impact assessment presented above, which determined that the proposed development at Rossmore Quarry will have negligible noise impact, and in line with best operating practice, the following measures will continue to be implemented wherever practicable across the application site to minimise the potential noise impacts of on-site activities:

Screening :-

- existing screening berms will be retained and will act as acoustic barriers to the closest residences;
- existing perimeter hedge planting will be retained along the northern, southern and western quarry boundaries;
- screening berms will be inspected on a regular basis and maintained as necessary.

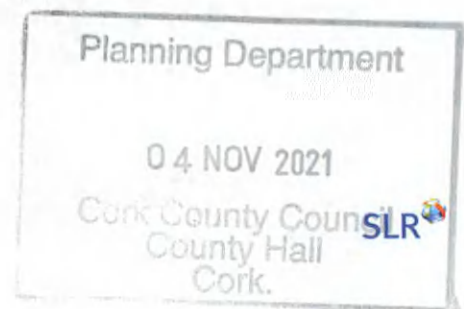
Plant :-

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

Traffic :-

- care will be taken when unloading vehicles to reduce or minimise potential noise disturbance to local residents;
- access / internal haul roads will be kept clean and maintained in a good state of repair, i.e. any potholes are filled, and large bumps removed, to avoid unwanted rattle and "body-slap" from heavy goods vehicles;
- vehicles waiting within the quarry will be prohibited from leaving their engines running and there will be no unnecessary revving of engines.

10.130 Experience from other sites has shown that by implementing these measures, ambient noise levels from site activities and operations can be reduced by up to 5dB(A).



Vibration

- 10.131 Historical blast monitoring results confirm that the air overpressure levels and the ground-borne vibration levels (i.e. measured peak particle velocity) are fully compliant with the limits specified under the current planning permission for the quarry (PL04.QD.0010).
- 10.132 The blast design and blasting methodology for the site operations carried out at the quarry have, and will continue to be, optimised to ensure that any resulting ground borne vibration levels are comfortably within the prescribed limits. The following measures will continue to be implemented at the application site to minimise disturbances due to any future blasting operations:
- Blasting will not be carried out on Saturdays, Sundays or public holidays;
 - Written notification of each blast will continue to be provided 7 days in advance of each blast, to all residences within c. 1km radius of the quarry;
 - On the morning of each blast, the quarry manager provides verbal confirmation (by telephone) to local residents to confirm that the blast is due to take place on the day;
 - Additional verbal confirmation is provided by the quarry manager later in the day, when the exact time of the blast is confirmed;
 - Blast notification is provided by pre-blast and post-blast siren warnings;
 - All blasting operations are carried out by a certified 'shotfirer' in accordance with the relevant health and safety regulations;
 - The optimum blast ratio is maintained, and the maximum instantaneous charge shall be optimised.
 - The blast design and blasting methodology uses the monitoring results to optimise and ensure consistent blast designs.

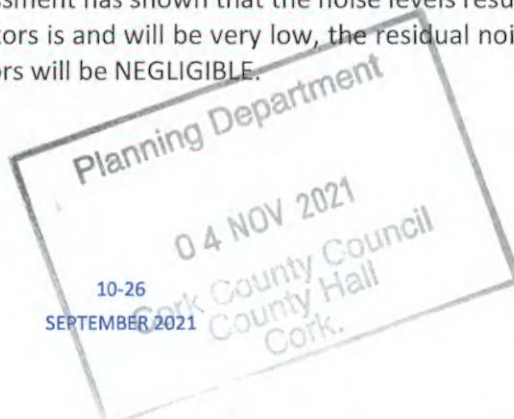
Efficient blasts use as much of the explosive energy as possible for rock fragmentation. By implication therefore, any energy dissipated through ground vibration and air overpressure is inefficient use of energy which would otherwise be used to fragment rock. It is therefore in the Applicant's economic interest to ensure that there is continual, ongoing optimisation of blast design to ensure efficient and effective blasting. The added benefit in optimising blast design is that it also minimises potential environmental impacts.

- 10.133 Lagan Materials Ltd. submit annual reviews of blast monitoring data to Cork County Council in compliance with Condition 12(b) of PL04.QD0010. Annual reviews show that blast monitoring is in place and confirms compliance with the conditions.
- 10.134 To avoid any risk of damage to properties in the vicinity of the application site, the ground-borne vibration levels from blasting will continue to be limited to a maximum peak particle velocity of 12mm/sec.

RESIDUAL IMPACT ASSESSMENT

Noise

- 10.135 The worst-case scenario noise assessment has shown that the noise levels resulting from the quarry operations at noise sensitive receptors is and will be very low, the residual noise impact associated with the development at all receptors will be NEGLIGIBLE.



Vibration

10.136 Based on the proven past performance at the quarry and available historical blasting results, it is concluded that blasting operations carried out within the application site will not have any residual impact on nearby sensitive receptors.

MONITORING

10.137 Noise monitoring will continue to be carried out at the exiting quarry. Monitoring will be carried out bi-annually at six locations N1, N2, N3, N4, N5 and N6. The results of the noise monitoring will be submitted to Cork County Council on a regular basis for review and record purposes.

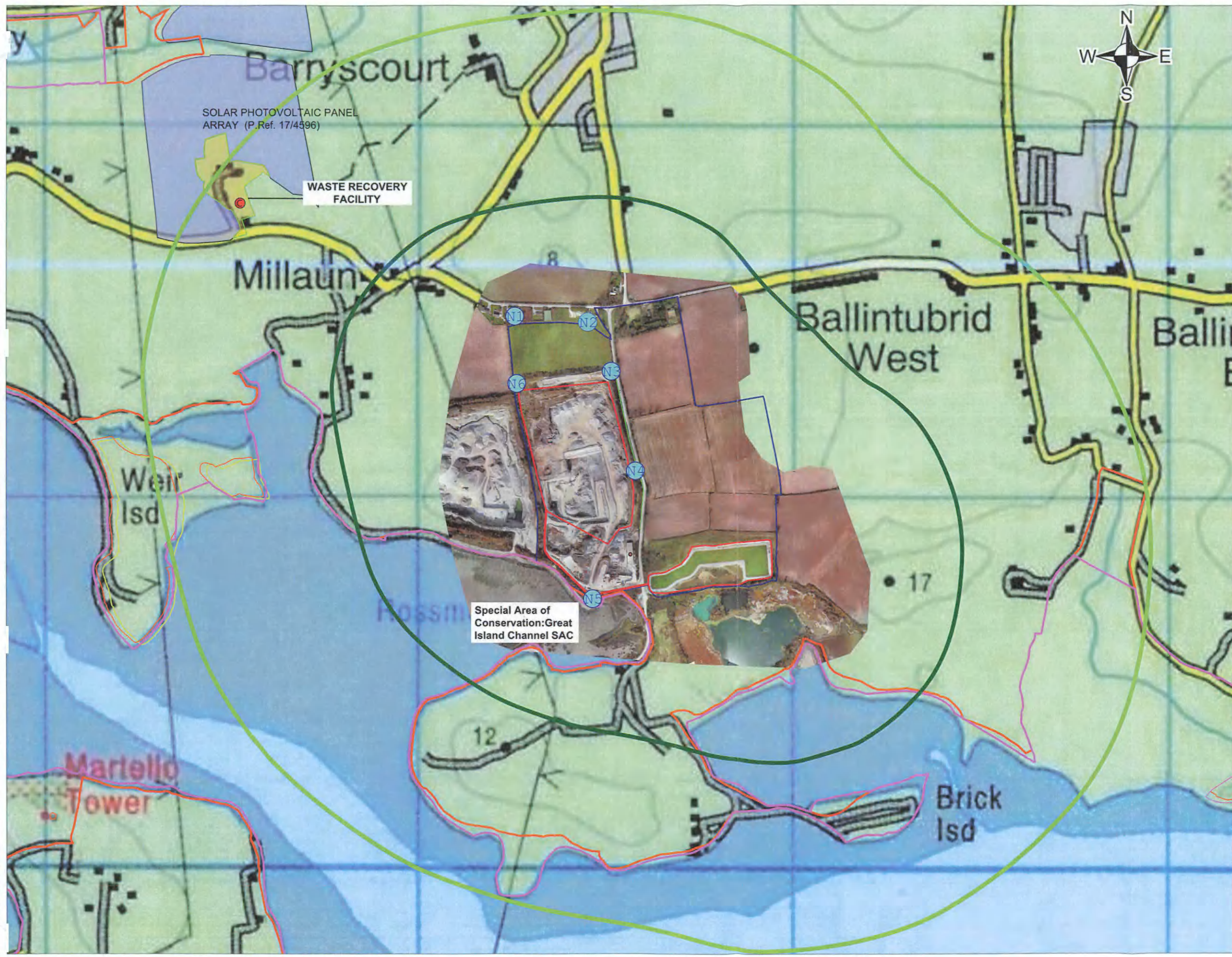
10.138 All blasts carried out at the quarry at Rossmore will continue to be monitored to confirm vibration and air overpressure is within the acceptable range for extractive activities and complies with the emission limit values set out in planning conditions. Ground-borne vibration and air overpressure will be measured utilising portable seismographs, located at nearby residences (subject to the owner's agreement). Air overpressure will be measured utilising a calibrated microphone, incorporated into the seismograph. Each seismograph shall be calibrated in accordance with the manufacture's requirements. The results of the blast monitoring will be submitted to Cork County Council on a regular basis for review and record purposes



FIGURES

Figure 10-1
Noise / Blast Monitoring Locations & Receptors





NOTES

1. ORDNANCE SURVEY IRELAND LICENCE NO. CYAL50167032 (C) ORDNANCE SURVEY IRELAND / GOVERNMENT OF IRELAND
2. AERIAL PHOTOGRAPHY CARRIED OUT BY SLR CONSULTING MARCH 2021

LEGEND

	APPLICATION AREA
	NOISE MONITORING LOCATIONS
	1 KM OFFSET
	500 M OFFSET

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LAGAN MATERIALS LTD.
 EXISTING LIMESTONE QUARRY
 ROSSMORE TOWNLAND, CARRIGTWOHILL,
 CO. CORK

NOISE MONITORING LOCATIONS

FIGURE 10.1

Scale 1:10,000 @ A3 Date AUGUST 2021

501.00584.01 FIGURE 10.1_Rev1.dwg



NOTES

1. ORDNANCE SURVEY IRELAND LICENCE NO. CYAL50167032 (C) ORDNANCE SURVEY IRELAND / GOVERNMENT OF IRELAND
2. AERIAL PHOTOGRAPHY CARRIED OUT BY SLR CONSULTING MARCH 2021

LEGEND

- APPLICATION AREA
- R RECEPTOR: RESIDENCE
- C RECEPTOR: COMMERCIAL
- 1 KM OFFSET
- 500 M OFFSET
- GROUPS OF RECEPTORS

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 ROSSMORE TOWNLAND, CARRIGTWOHILL,
 CO. CORK

LOCAL RECEPTORS LOCATIONS

FIGURE 10.2

Scale: 1:10,000 @ A3 Date: AUGUST 2021

501.00584.C
 FIGURE 10.2_Rev1.dwg

APPENDICES

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APPENDIX 10-A GLOSSARY OF TERMINOLOGY

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

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

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

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

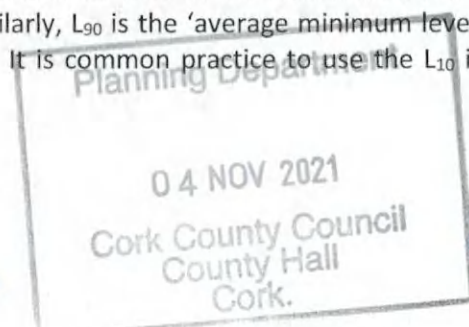
Acoustic Terminology

dB (decibel) The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2×10^{-5} Pa).

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

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

L₁₀ & L₉₀ If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence, L₁₀ is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L₉₀ is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L₁₀ index to describe traffic noise.



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



APPENDIX 10-B NOISE ASSESSMENT

Operational Stage : Deepening of Existing Quarry

Receptor	Relevant Noise Monitoring Location	Maximum L_{Aeq} dB(A)	Reflection dB(A)	Activity Distance (m)	Attenuation with distance dB(A)	Adjustment for tonal / impulsive component +5 dB(A)	Operational Noise Level at Receptor L_{Aeq} dB(A)
Group 3	N3	56	3	426	33	5	31
Group 4	N6	51	3	445	33	5	26
R7	N6	51	3	342	31	5	28
R8	N6	51	3	267	29	5	30
R9	N6	51	3	234	27	5	32
R10	N6	51	3	213	27	5	32
R11	N6	51	3	193	26	5	33
R12	N3	56	3	178	25	5	39
R13	N3	56	3	237	27	5	37
R14	N3	56	3	214	27	5	37
C	N5	54	3	319	30	5	32

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11. Material Assets

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MONITORING 9

REFERENCES 9

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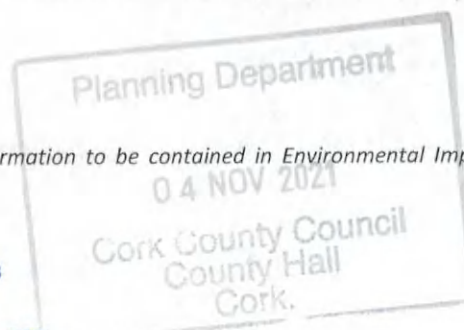
INTRODUCTION

- 11.1 This Chapter of the Environmental Impact Assessment Report (EIAR) relates to the potential effects associated with the further development of the existing permitted quarry at Rossmore, Carrigtwohill, Co. Cork on material assets.
- 11.2 The development is similar to that previously granted under An Bord Pleanála reference number PL04.QD.0010 and will consist of the deepening of the existing quarry extraction area by 2 no. 15 metre benches from -20m OD to -50m OD, along with minor amendments to the permitted quarry layout (Plan File ref. no's: S/02/5476 & ABP Ref. PL04.203762 and ABP Ref. PL04.QD.0010) all within the existing permitted quarry footprint and the continued use of the existing water management system (settlement pond / infiltration pond system, permitted under PL04.QD.0010) for the life of the proposed development, all within an application area of c. 12.6 hectares.
- 11.3 An extraction capacity of up to 375,000 tonnes per annum is sought to provide the applicant with the ability to respond to demand for aggregates for large infrastructure projects in the Region. Permission is sought for twenty years plus two years for final restoration (total duration 22 years).
- 11.4 The operator of the existing quarry and applicant is Lagan Materials Ltd. (hereafter referred to as "Lagan").
- 11.5 For further detail of the proposed development and the application site, refer to Chapter 2 of this EIAR.

Scope of Work / EIA Scoping

- 11.6 According to the EPA (EPA (2003) Advice Notes on Current Practice:
- "Resources that are valued and that are intrinsic to specific places are called 'material assets'. They may be of either human or natural origin and the value may arise for either economic or cultural reasons".*
- 11.7 Under Schedule 6 of the Planning and Development Regulations (2001) as amended, material assets also refer to architectural and archaeological heritage and cultural heritage.
- 11.8 The draft EPA guidelines in relation to the preparation of EIAR¹ note the following in respect of material assets:
- "Material assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes roads infrastructure."*
- 11.9 The specific headings in the guidelines in relation to material assets refer to built services, roads and traffic and waste management.
- 11.10 Chapter 14 of this EIAR addresses traffic impacts arising from the proposed development and Chapter 12 addresses architectural heritage, archaeological heritage and cultural heritage issues, separately to this chapter.

¹ Environmental Protection Agency (2017) *Guidelines on the Information to be contained in Environmental Impact Assessment Reports*.



11.11 This chapter comprises the consideration of existing resources pertinent to the proposed development and the application area that are not addressed elsewhere in the EIAR, and the likely development impacts on those resources. On this basis, this chapter addresses built services and waste management. Built services are understood to refer to electricity, telecommunications, gas, water supply infrastructure and sewerage.

Consultations / Consultees

11.12 Consultation was not undertaken in the preparation of this chapter of the EIAR.

Contributors / Author(s)

11.13 This chapter of the EIAR was prepared by Tim Paul, Director, SLR Consulting Ireland. Tim is a chartered mineral surveyor and chartered engineer with over 25 years' experience in providing strategic development advice, mineral reserve valuation, minerals planning & EIA; mine waste management; and transactional due diligence services for mining and minerals developments in Ireland and internationally.

Difficulties Encountered

11.14 No limitation or difficulties were encountered in the preparation of this chapter of the EIAR.

REGULATORY BACKGROUND

Guidelines

11.15 As outlined above, this chapter of the EIAR has been prepared in accordance with the draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports by the EPA (2017).

Technical Standards

11.16 There are no technical standards relevant to this chapter of the EIAR.

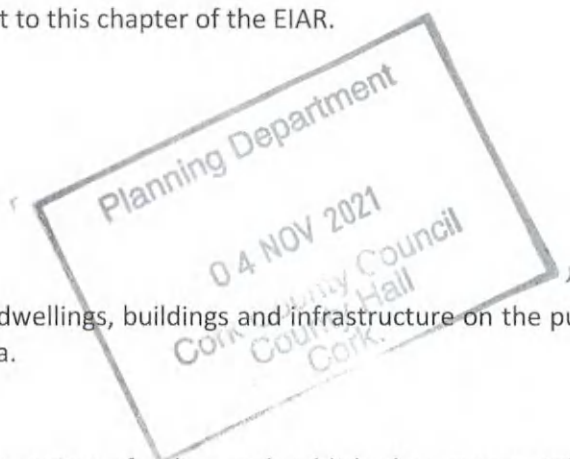
RECEIVING ENVIRONMENT

Study Area

11.17 The study area relates to the land uses, dwellings, buildings and infrastructure on the public road network surrounding the application area.

Baseline Study Methodology

11.18 The baseline study comprises a desk-top review of online and published resources, information provided by the applicant and information contained in the other chapters of this EIAR. Ordnance Survey maps and aerial photography were also examined.



Sources of Information

- 11.19 Baseline information was obtained from the following sources:
- Myplan.ie (<http://myplan.ie>);
 - Cork County Development Plan;
 - Specialist environmental topic chapters of this EIAR;
 - Ordnance Survey maps;
 - Aerial photographs;
 - Openstreetmap.org.

Built Services / Infrastructure

- 11.20 Rossmore Quarry is served by mains electricity which feeds directly into the overall site.
- 11.21 Potable water is supplied by large dispenser bottles. Process and ancillary water is supplied from the existing quarry water management (settlement lagoon system) and an on-site borehole. (refer to EIAR Chapter 7 – Water).
- 11.22 Effluent from toilet facilities is treated using the existing on-site treatment system. Surface water is managed as outlined in Chapter 7 of this EIAR and treated water is discharged under the existing discharge licence.

Waste Management

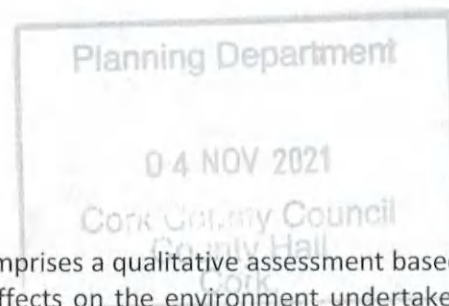
General Waste Management

- 11.23 General waste produced within the overall site is transported to local designated waste storage areas, where it is collected in bins and removed for recycling or disposal by a licensed waste contractor.
- 11.24 Waste oils are collected periodically by a licensed company. Any light bulbs, batteries, rubber tyres and scrap metal arising on the site are stored within local designated scrap storage areas prior to collection by a licensed collector.
- 11.25 The Environmental Management System (EMS) provides details of waste management procedures and details on the reuse/recycling/disposal route for waste that may arise on the overall site.

IMPACT ASSESSMENT

Evaluation Methodology

- 11.26 The evaluation of effects on built services and waste comprises a qualitative assessment based on the quantitative and qualitative analysis of potential effects on the environment undertaken in



other chapters of this EIAR. The assessment also takes into account a review of relevant literature and professional judgement in relation to impacts on built services and waste.

Built Services / Utilities

Construction and Operational Stage Impacts

- 11.27 The proposed development relates to the further development of the existing permitted quarry. No construction stage arises and accordingly there will be no construction stage impacts.
- 11.28 The existing road access infrastructure, processing, and ancillary development is in place and there will be no site establishment or preparatory works required.
- 11.29 The proposed development will not require the installation of electricity, water supply, telecommunications or wastewater infrastructure and there are no existing built services within or traversing the application area. All of the necessary infrastructure is already provided within the overall site.
- 11.30 The proposed development will have no impact on third party water wells as any such wells are upgradient and outside the potential radius of influence (refer to EIAR Chapter 7 – Water).
- 11.31 Given that the proposed development does not require the provision of any additional built services and the overall site currently operates without significant adverse effects on built services, it is considered that the proposed development would not have any significant, adverse, direct or indirect effects on water supply, wastewater, telecommunications or electricity supply.

Post-Operational Stage Impacts

- 11.32 The post-operational stage relates to the application area following the cessation of extraction operations and the completion of any restoration works.
- 11.33 No activities that would have the potential to affect any built services in the vicinity would be undertaken during this stage. It is not anticipated that there would be any significant direct or indirect effects on built services / utilities during this phase of the development.

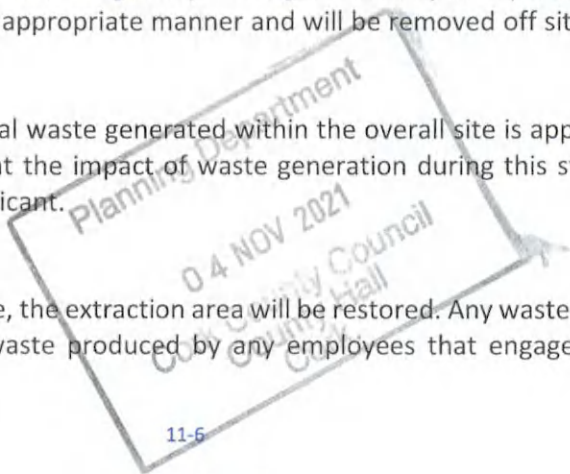
Waste

Construction and Operational Stage Impacts

- 11.34 The proposed development relates to deepening of the existing permitted quarry. No construction stage arises and accordingly there will be no construction stage impacts.
- 11.35 There are existing waste management arrangements in place in relation to general waste that would be generated by the staff working at the overall site. These arrangements will remain in place for the duration of the operational stage. Any waste generated by the operational stage works will be handled and stored in an appropriate manner and will be removed off site by an appropriately licenced waste collector.
- 11.36 The limited volume of general waste generated within the overall site is appropriately handled. It is considered, therefore, that the impact of waste generation during this stage will be medium-term, temporary and insignificant.

Post-Operational Stage Impacts

- 11.37 By the post-operational stage, the extraction area will be restored. Any waste generated on the site will be limited to general waste produced by any employees that engaged in aftercare on an



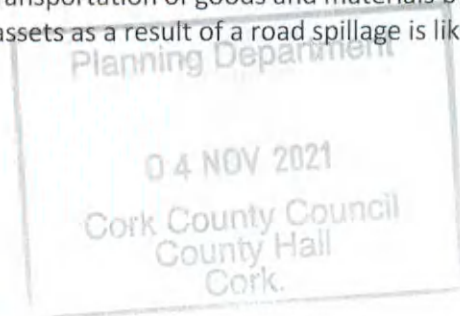
intermittent basis over a limited time period. Any such limited volumes of waste will be handled in accordance with the established practices on the overall site and will be removed by a licenced contractor.

- 11.38 It is considered, therefore, that the generation of waste during this period will be short-term, temporary and insignificant in its effects.

Unplanned Events (i.e. Accidents)

- 11.39 According to the EPA guidelines, unplanned events, such as accidents, can include “*spill from traffic accidents, floods or land-slides affecting the site, fire, collapse or equipment failure on the site*”. The 2014 EIA directive refers to “*major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes)*”. In addition, the EPA guidelines note that “*Some types of factors are particularly vulnerable to unplanned events that have the potential to cause significant sudden environmental effects*”.
- 11.40 In this instance, the vulnerability of the proposed development to accidents, unplanned events or natural disasters is relatively limited owing to
- the nature of the materials being handled / extracted;
 - the relatively simple nature of the development works, extraction and processing activities; and
 - the established nature of these activities with proven management systems in place.
- 11.41 Unplanned events in relation to the proposed development could conceivably relate to:
- instability arising from excavation, handling and placement of materials;
 - spill from traffic accidents; and
 - flooding.
- 11.42 The quarry design incorporates industry standard slope angles, bench heights, and bench widths to ensure both short-term and long-term stability. Adhering to the HSA (2020) Safe Quarry Guidelines to the Safety Health and Welfare at Work (Quarries) Regulations 2008 will limit the potential for unplanned events in the form of instability in the quarry faces. In any event, instability following the extraction of rock would be unlikely to have any significant impacts on material assets.
- 11.43 Coastal Flood risk: the risk arising from coastal flooding / long term sea level rise at the site is low. (refer to EIA chapters 7 – Water, and 9 – Climate).
- 11.44 Chapter 14 (Traffic) has concluded that the local road network will continue to operate within capacity for each of the assessment years 2021, 2022, 2027 and 2037 and that the quarry will have a negligible impact on the operation of the road network in the vicinity of the quarry.

It is considered that the risk of an accident resulting in spillage would be no greater than it is for any other form of development that relies on transportation of goods and materials by HGV's. The potential from significant impacts on material assets as a result of a road spillage is likely to be low and any such effects would be temporary.



- 11.45 In light of these factors, it is considered that no material assets identified in this chapter are particularly vulnerable to unplanned or unforeseen events and that any unplanned events, were they to occur, would be unlikely to cause significant, sudden environmental effects in respect of existing built services / utilities and infrastructure or the management of wastes.

Cumulative / Synergistic Impacts

- 11.46 A search of the online planning search facility indicates that there are no other planned developments in the vicinity of the application area, which were granted planning permission in the last five years and have the potential to have any significant adverse cumulative impacts on material assets. Any indirect cumulative impacts related to the adjacent operational quarry have been addressed in the relevant EIAR chapter i.e. Chapter 7 – Water and Chapter 14 -Traffic.

Transboundary Impacts

- 11.47 It is not anticipated that the impacts of the proposed development would have any significant transboundary effects on material assets.

Interaction with Other Impacts

- 11.48 It is not anticipated that the effects of the proposed development on material assets would interact significantly with other impacts.

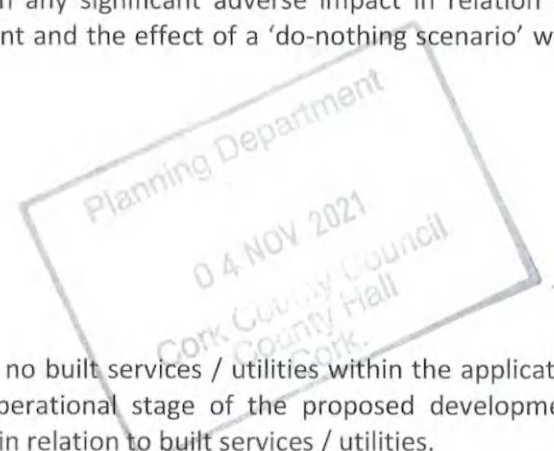
'Do-nothing Scenario'

- 11.49 In a 'do-nothing scenario', the permitted operations would continue until such time as the existing permission expires and the overall site is restored.
- 11.50 A 'do-nothing scenario' would not result in any significant adverse impact in relation to built services and waste generation / management and the effect of a 'do-nothing scenario' would be neutral in relation to these factors.

MITIGATION MEASURES

Construction and Operational Stage

- 11.51 No construction stage arises, and there are no built services / utilities within the application site that would be directly affected by the operational stage of the proposed development. No mitigation measures are therefore required in relation to built services / utilities.
- 11.52 Aside from the continued implementation of established good practice and housekeeping, no additional mitigation measures are required in relation to general waste management.



Post – Operational Stage

- 11.53 There are no built services / utilities within the application site that would be directly affected during the post-operational stage of the proposed development. No mitigation measures are required in relation to built services / utilities.
- 11.54 It is not expected that any significant volumes of waste would be generated during the post-operation stage. Any such waste will be handled in accordance with the established practices on site and will be removed by a licenced contractor. No mitigation measures are proposed in relation to waste management.

RESIDUAL IMPACT ASSESSMENT

Construction Stage

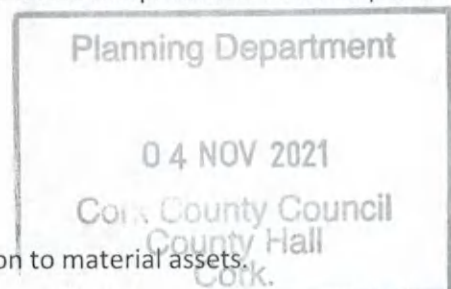
- 11.55 The proposed development relates to deepening of the existing permitted quarry. No construction stage arises and accordingly there will be no construction stage residual impacts.

Operational Stage

- 11.56 There will be no significant adverse residual impacts on material assets arising during the operational stage. The residual impacts on built services and waste are predicted to be as per the impact assessment outlined above.

Post – Operational Stage

- 11.57 There will be no significant adverse residual impacts on material assets arising during the post-operational stage. The residual effects on built services and waste are predicted to be as per the impact assessment outlined above.



MONITORING

- 11.58 There is no specific monitoring required or proposed in relation to material assets.

REFERENCES

Environmental Protection Agency (2017) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports'.

Health & Safety Authority (HSA, 2020). 'Safe Quarry – Guidelines to the Safety, Health & Welfare at Work Regulations 2008 (S.I. No. 28 of 2008)'.



12. Cultural Heritage

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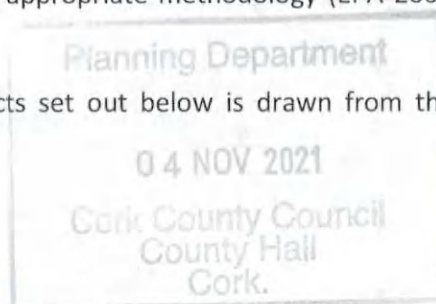
INTRODUCTION

Background

- 12.1 This Chapter of the Environmental Impact Assessment Report (EIAR), commissioned by SLR Consulting Ireland on behalf of Lagan Materials Ltd., addresses the impacts on the archaeological, architectural and cultural heritage of the application site and the surrounding area of a proposal for the further development of the existing permitted quarry at Rossmore Townland, Carrigtwohill in Co. Cork. The site location and study area are indicated in Figure 12-1.
- 12.2 The proposed development being applied for under this current planning application is shown on EIAR Figure 2-1 and is similar to that previously granted under An Bord Pleanála reference number 04.QD.0010 and will consist of:
- Deepening of the existing quarry extraction area by 2 no. 15 metre benches from -20m OD to -50 m OD, along with minor amendments to the permitted quarry layout (Plan File ref. no's: S/02/5476 & ABP Ref. PL04.203762 and ABP Ref. PL04.QD.0010) all within the existing permitted quarry footprint and the continued use of the existing water management system (settlement pond / infiltration pond system permitted under PL04.QD.0010) for the life of the proposed development, within an application area of c. 12.6 hectares – refer to EIAR Figures 1.1 and 1.2;
 - An extraction capacity of up to 375,000 tonnes per annum is sought to provide the applicant with the ability to respond to demand for aggregates for large infrastructure projects in the Region;
 - Permission is sought for twenty years plus two years for final restoration (total duration 22 years).
- 12.3 The existing site, operations and the proposed development are described in detail in EIAR Chapter 2 – Project Description.

Scope of Work / Methodology

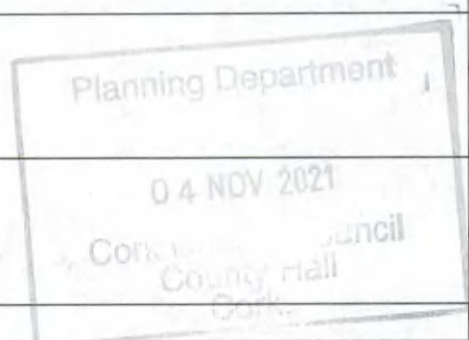
- 12.4 This study which complies with the requirements of Directive EIA 2014/52/EU is an assessment of the known or potential cultural heritage resource within a specified area and includes the information that may reasonably be required for reaching a reasoned conclusion on the significant effects of the project on the environment, taking into account current knowledge and methods of assessment. It consists of a collation of existing written and graphic information in order to identify the likely context, character, significance and sensitivity of the known or potential cultural heritage, archaeological and structural resource using an appropriate methodology (EPA 2002, 2003 and 2017).
- 12.5 The criteria and definitions for describing effects set out below is drawn from the 2017 EPA Guidelines.



Quality of Effects	Positive A change which improves the quality of the environment.
	Neutral No effects or effects that are imperceptible, within normal bounds or variation or within the margin of forecasting error.
	Negative/adverse Effects A change which reduces the quality of the environment.
Significance of effects	Imperceptible An effect capable of measurement but without noticeable consequences.
	Not significant An effect which causes noticeable changes in the character of the environment but without noticeable consequences.
	Slight effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate effects An effect that alters the character of the environment in a manner that is consistent with existing and emerging trends.
	Significant effects An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very Significant effects An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment.
	profound effects An effect which obliterates sensitive characteristics
Describing the extent and context of effects	Extent Describe the size of the area, the number of sites, and the proportion of population affected by an effect.
	Context Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions.
Describing the Probability of effects	Likely effects The effects can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.

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	Unlikely effects The effects can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Describing the duration and frequency of effects	Momentary effects Effects lasting from seconds to minutes.
	Brief effects Effects lasting less than a day.
	Temporary effects Effects lasting less than a year.
	Short-term effects Effects lasting one to seven years.
	Short-term effects Effects lasting seven to fifteen years.
	Long term-term effects Effects lasting fifteen to sixty years.
	Permanent effects Effects lasting over sixty years.
	Reversible effects Effects that can be undone, for example through remediation or restoration.
	Frequency of effects Describe how the effect will occur.
Describing the types of effects	Indirect effects Impacts on the environment which are not a direct result of the project.
	Cumulative effects The addition of minor or significant effects, including effects of other projects, to create a larger more significant effect.
	'Do-Nothing Effects' The environment as it would be in the future should the project not be carried out.
	'Worst case' effects The effects arising from a project in the case where mitigation measures substantially fail.
	Indeterminable effects When the full consequences of a change in the environment cannot be described.
	Irreversible effects When the character distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
	Residual effects The degree of environmental change that will occur after the proposed mitigation measures take effect.
	Synergistic effects



	Where the resultant effect is of greater significance than the sum of its constituents.
--	---

- 12.6 The study involved detailed investigation of the archaeological and historical background of the development site, the landholding and the surrounding area extending 1km from the development boundary (Fig. 12-1). This area was examined using information from the Record of Monuments and Places of County Cork, the Sites and Monuments Record, the Cork County Development Plan, the National Inventory of Architectural Heritage, lists of excavations and cartographic and documentary sources.
- 12.7 An impact assessment and mitigation strategy have been prepared. An impact assessment is undertaken to outline potential adverse impacts that the proposed development may have on the cultural resource, while a mitigation strategy is designed to avoid, reduce or offset such adverse impacts.
- 12.8 The application site is located in the Townland of Rossmore, Co. Cork on OS Six Inch sheet No. 75, and on a local county road approximately 2km south of Carrigtwohill and 6km southwest of Midleton, Co. Cork. It is located approximately 2km south of N25 National Primary Road.
- 12.9 Extracts from the Record of Monuments and Places for County Cork are presented on a map of the local area around the site in Figure 12-1. RMP sites included on the Records of Monuments and Places statutory mapping are identified by black circles. The application area is shown in red.

Contributors / Author(s)

- 12.10 The assessment was prepared by Dr. Charles Mount who is a member of the Institute of Archaeologists of Ireland and a member of the Discovery Programme and has more than thirty years of cultural heritage assessment experience. He holds M.A. and Ph.D. degrees in archaeology as well as a professional diploma in EIA and SEA Management.

Limitations / Difficulties Encountered

- 12.11 No difficulties were encountered during the desktop study, field survey or in the preparation of this report.

REGULATORY BACKGROUND

- 12.12 The following paragraphs set out the regulatory background with regard to cultural impact assessments in Ireland in general and the site-specific planning background relevant to this cultural impact assessment, in particular.

Legislation

- 12.13 No specific Irish legislation exists governing cultural heritage assessments.



Planning Policy and Development Control

- 12.14 The Cork County Development Plan 2014-2020 (CDP) is the statutory plan detailing the development objectives/policies of the local authority. The plan includes objectives and policies, relevant to this assessment, i.e. with regard to cultural heritage. The draft Cork County Development Plan 2022-2028 was also consulted.

Cultural Heritage

- 12.15 Chapter 7 of the Cork County Development Plan 2014-2020 sets out the policies on heritage within the county. The Council recognises the importance of identifying, valuing and safeguarding the archaeological and architectural heritage of Cork.

- 12.16 The Council's objectives regarding archaeology are to:

ENV 3-1 Sites, Features and Objects of Archaeological Interest

(a) It is an objective to safeguard sites, features and objects of archaeological interest generally.

(b) It is an objective of the Planning Authority to secure the preservation (i.e. preservation in situ or in exceptional cases preservation by record) of all archaeological monuments included in the Record or Monuments and Places as established under Section 12 of the National Monuments (Amendment) Act, 1994, and of sites, features and objects of archaeological and historical interest generally.

In securing such preservation, the planning authority will have regard to the advice and recommendations of the Department of the Environment, Heritage and Local Government.

ENV 3-2 Newly Discovered Archaeological Sites It is an objective to protect and preserve archaeological sites discovered since the publication of the Record of Monuments and Places.

ENV 3-3 Zones of Archaeological Protection It is an objective to protect the Zones of Archaeological Potential located within both urban and rural areas as identified in the Record of Monuments and Places.

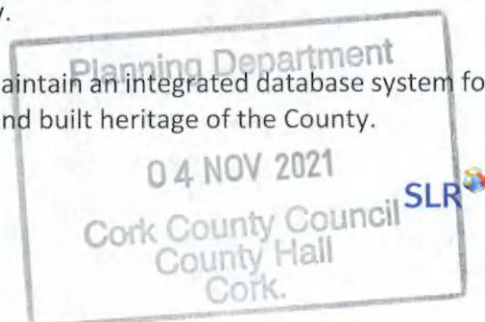
ENV 3-4 Archaeology and Infrastructure Schemes the Council will have regard to archaeological concerns when considering proposed service schemes (including electricity, sewerage, telecommunications, water supply) and proposed roadworks (both realignments and new roads) located in close proximity to Recorded Monuments and Places and the Zones of Archaeological Potential.

ENV 3-5 Underwater Archaeology It is an objective to protect and preserve the archaeological value of underwater archaeological sites. In assessing proposals for development, the Council will take account of the rivers, lakes, intertidal and sub-tidal environments.

ENV 3-6 Industrial Archaeology It is an objective to protect and preserve the archaeological value of industrial sites such as mills, lighthouses, harbours etc. Proposals for refurbishment, works to or redevelopment/conversion of these sites should be subject to a full architectural and archaeological assessment.

ENV 3-7 Raising Archaeological Awareness It is an objective to raise awareness and improve practice in relation to archaeology in County Cork. Guidance material will be produced setting out the requirements for archaeological protection in the County.

ENV 3-8 It is an objective of the Council to develop and maintain an integrated database system for all relevant information pertinent to the archaeological and built heritage of the County.



Protected Structures

12.17 The Council's objectives are to:

ENV 4-1 General Protection of Structures (a) It is an objective to seek the protection of all structures within the County, which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. (b) In accordance with this objective, a Record of Protected Structures has been established and is set out in Volume 2 of this Plan.

ENV 4-2 Record of Protected Structures It is a particular objective to ensure the protection of all structures (or parts of structures) contained in the Record of Protected Structures.

ENV 4-3 Developing a Comprehensive Record (a) It is an objective, during the lifetime of this plan, to extend the Record of Protected Structures in order to provide a comprehensive schedule for the protection of structures of special importance in the County. (b) The identification of structures for inclusion in the Record will be based on criteria set out in the Architectural Heritage Protection - Guidelines for Planning Authorities (2005).

ENV 4-4 Protection of Structures Not Included in Record of Protected Structures It is an objective to recognise the County's heritage, which is not included in the Record of Protected Structures and in particular the importance of the County's Railway and Maritime Heritage.

ENV 4-5 It is an objective to protect important non-structural elements of the built heritage. These elements include historic gardens/designed landscapes, stone walls, landscapes and demesnes, curtilage features and street furniture. The Council will promote awareness and best practice in relation to these elements.

Guidelines

12.18 The report format and some of the descriptions of effects are based on the **Guidelines on the Information to be contained in Environmental Impact Assessment Reports** (Draft), published by the Environmental Protection Agency (EPA) in May 2017.

Significant Risks

12.19 There are no known significant risks to human health or environmental effects, which may occur in relation to this cultural heritage assessment.

RECEIVING ENVIRONMENT

Study Area

12.20 The overall study area is shown in Figure 12-1.



Baseline Study Methodology

- 12.21 Research has been undertaken in two phases. The first phase comprised a paper survey of all available archaeological, historical and cartographic sources. The second phase involved the archaeological assessment of the proposed development area.

Paper Study

- 12.22 This is a document search. The following sources were examined and a list of sites and areas of archaeological potential compiled:

- Record of Monuments and Places County Cork
- The Sites and Monuments Record
- Available aerial photography
- Cartographic and written sources relating to the study area
- Cork County Development Plan 2014-2020 and the Draft Cork County Development Plan 2022-2028
- The National Inventory of Architectural Heritage

The Record of Monuments and Places

- 12.23 This was established under section 12 (1) of the 1994 National Monuments (Amendment) Act and provides that the Minister shall establish and maintain a record of monuments and places where the Minister believes there are monuments, such record to be comprised of a list of monuments and relevant places and a map or maps showing each monument and relevant place in respect of each county in the State. The associated files contain information of documentary sources and field inspections where these have taken place. 12 Recorded monuments were noted within the study area. All available information on these sites is provided in Appendix 12-1.

Cartographic Sources

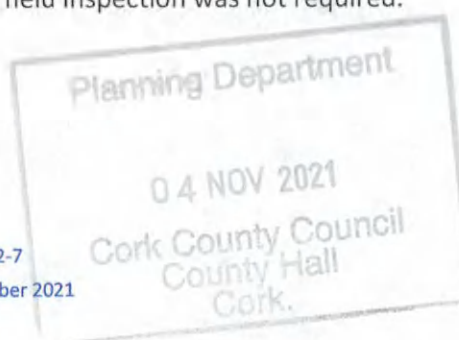
- 12.24 This included seventeenth century mapping as well the 1st and 2nd editions of the Ordnance Survey six-inch maps and Documentary sources provide more general historical and archaeological background.

The County Development Plan

- 12.25 This notes structures listed for preservation.

Field Inspection

- 12.26 As this is the deepening of an existing quarry footprint that has already undergone EIAR cultural heritage assessment with a field inspection by Irish Archaeological Consultancy Ltd submitted to An Bord Pleanála under reference No. QD04.QD0010, and the entire application area has already been excavated to geological levels, an additional field inspection was not required.



RECEIVING ENVIRONMENT, HISTORICAL AND ARCHAEOLOGICAL LANDSCAPE

The Landscape

- 12.27 The application site is located in the Townland of Rossmore, Co. Cork on OS Six Inch sheet No. 75, and on a local county road approximately 2km south of Carrigtwohill and 6km southwest of Midleton, Co. Cork. It is located approximately 2km south of N25 National Primary Road. The application site is situated in low-lying and undulating countryside next to Rossmore Bay.

Historical and Archaeological Background

- 12.28 The following is a brief summation of the main types of sites and monuments that are known from the county along with the historical development of the study area. It is intended as a guide to the types of sites and monuments that might be encountered in the study area.
- 12.29 The site is situated in the Townland of Rossmore, in the Barony of Barrymore, and the civil parish of Mogeasha.

The Prehistoric Period

- 12.30 Prehistoric activity in the study area is indicated by the presence of four Fulacht fia (RMP CO075-018002-, CO075-070----, CO075-071---- and CO075-072----) in Barryscourt townland and a midden, possibly of prehistoric or later date, in Rossmore townland (RMP CO076-011----). A Linear earthwork in Barryscourt townland (CO076-002----) may have formed part of the prehistoric Cliadh Dubh, an ancient linear earthwork over 20km long dating prior to 100AD which runs north-south for 24 kilometres from the Ballyhoura Hills to the Nagle Mountains passing over the River Blackwater.

The Early Medieval Period

- 12.31 In the Early Medieval period (500 AD-1170 AD) the study area formed part of the cantred of Uí Meic Caille, later known as Ymakille, which formed part of the Kingdom of Uí Liatháin (MacCotter 2008, 1156).
- 12.32 Classically settlement at this period is indicated by the presence of enclosed farmsteads known as ringforts, when enclosed with earthen banks, and cashels when enclosed by stone walls. There are no ringforts known in the study area.

The Later Medieval Period

- 12.33 In the 1170s following the Anglo-Norman conquest the Barry family came into possession of Olethan and established their chief seat at Barryscourt outside the study area to the north. In the 13th/14th century a hall-type structure was constructed at Barryscourt that developed in the 15th century into a Tower House enclosed by a bawn (RMP CO075-018001). The Barrys gave up the Tower House in 1617 when Castlelyons Castle became their chief seat in Barrymore.

The Post-Medieval Period

- 12.34 By 1655-6 the Down Survey records that Rossmore townland, referred to as Tullogh Glinikelly, Collanaloonge & Killtowne, was held by Florence McCarthy 1641 and by John Reade in 1670 (<http://downsurvey.tcd.ie>). By the 18th century Rossmore had come into the hands of the Coppinger family. William Coppinger died unmarried in 1862 and all his estates passed to his nephew, Morgan John O'Connell, brother of Daniel O'Connell of Derrynane who held the lands into the twentieth century (<http://landedestates.nuigalway.ie/LandedEstates/jsp/estate-show.jsp?id=2058>).

BUILDINGS

Protected Structures

- 12.35 The Cork County Development Plan 2014-20 and the Draft Co. Cork Development Plan 2022-2028 and the Record of Protected Structures was examined as part of the baseline study for this chapter of the EIAR. The review established that there are no Protected Structures situated within the application area or the study area.

Non-designated Structures

- 12.36 The National Inventory of Architectural Heritage (NIAH) which is maintained by the Dept. of Culture, Heritage and the Gaeltacht was examined as part of the baseline study for this chapter of the EIAR on the 6th of September 2021. The review established that there are no additional structures included in the NIAH situated within the application area.
- 12.37 There is one structure included in the NIAH situated outside the application area in the study area. This house in Barryscourt townland No. 20907613, is located 0.52km to the north of the application area (Fig. 12-1). This structure is considered to be too far distant to be directly or indirectly impacted by the development proposal. The structure description is provided below.

House No. 20907613 Barryscourt townland

Detached four-bay two-storey house, built c. 1830, having gabled half-glazed porch with to front (west) elevation. Pitched slate roof with red brick chimneystacks and cast-iron rainwater goods, decorative timber bargeboards and finial to porch. Rendered walls, roughcast rendered stall riser to porch. Segmental-headed openings with render surrounds to front elevation, square-headed openings to other elevations, having two-over-two pane timber sliding sash windows. Square-headed openings with one-over-one pane timber sliding sash windows with coloured glass margins to porch. Square-headed openings with half-glazed timber panelled door to front elevation and to front porch, timber battened door to rear (east) elevation. Rendered garden wall and square-profile piers to rear of house. Roughcast rendered plinth wall with concrete balustrade and rendered square-profile piers to front boundary of house. Three-bay single-storey outbuilding to rear elevation forming north range of yard, four-bay single-storey outbuilding forming east range of yard, both with pitched corrugated-iron roofs, rendered walls and square-headed openings. Yard to south with five-bay single-storey outbuilding to south range, four-bay single-storey house to north range, both having pitched corrugated-iron roof, rendered walls and square-headed openings. Rendered garden walls and square-profile piers to front (south) of house. Multiple-bay two-storey outbuilding forming east range having pitched corrugated-iron roof, rubble stone walls, and square-

headed openings with timber fittings. Rendered boundary wall and square-profile piers to yard entrance to west.

ARCHAEOLOGY

Archaeological Assessment

Recorded Monuments

- 12.38 Examination of the Record of Monuments and Places for Co. Cork indicated that there are no Recorded Monuments located within the application area (see Fig. 12-1 and Appendix 12-1).
- 12.39 The closest Recorded Monument to the application area externally is RMP CO076-007---- a Lime Kiln in Barryscourt townland. This monument is situated 0.42km north of the application area and is considered to be too far distant to be directly or indirectly impacted by the proposal.
- 12.40 The remaining Recorded Monuments in the study area are situated further from the application area and are considered too far distant to be directly or indirectly impacted by the current proposal.

Undesignated Monuments

- 12.41 Examination of the Sites and Monuments Record (SMR) which is maintained by the Dept. of Culture, Heritage and the Gaeltacht on 6th of September 2021 indicated that there are no undesignated monuments included within the application area or the study area.

Cartographic Sources

- 12.42 The Ordnance Survey 1st and 3rd edition six-inch maps and the first edition 25-inch maps of the area were examined. The analysis did not indicate any previously unrecorded archaeological sites in the application area or vicinity.

Place Name Evidence

- 12.43 The place names were extracted from the cartography in order to facilitate the search for structures and monuments and small finds, to help identify any unrecorded monuments or structures, to search for any published papers and documents related to the study area and to assist in the study of the historical development of the area. The English translations of the townland names of the study presented above below are based on Logainm.ie.
- 12.44 Ballintubbrid West: town of the well
 Barryscourt: enclosure of the Barry family
 Rosslague: promontory of the pillar-stone
 Rossmore: great promontory

Previous assessment and planning permission

- 12.45 The existing quarry was previously assessed by IAC Archaeology Ltd. In 2015 (An Bord Pleanála reference No. QD04.QD0010). The assessment concluded that the current application area has

been subject to previous quarrying activity and disturbance and as such there is no predicted negative impact to the archaeological resource.

Archaeological investigations in the study area

12.46 Examination of the excavations database at excavations.ie indicated that there have been no archaeological excavations carried out within the application area or the study area.

Cork County Development Plan

12.47 No sites of archaeological importance, National Monuments, or protected structures listed in the Cork Co. Development Plan 2014-20, or the draft Cork County Development Plan 2022-2028 are located within the proposed development area.

Aerial Photographs

12.48 Examination of the Ordnance Survey 1995, 2000 and 2005 aerial imagery as well as Google Earth imagery from 2003, 2006, 2007, 2009, 2013, 2014, 2017, 2018 and 2020 and Bing imagery did not indicate any additional cultural heritage sites in the application area or vicinity. The Google Earth aerial image taken on the 3rd of May 2009 indicates that all topsoil had been stripped from the application area by that date (see Plate 12-1).

ASSESSMENT OF POTENTIAL IMPACTS

Direct Impacts

12.49 The proposed development comprises deepening of an existing permitted quarry, within the existing quarry footprint. All topsoil has already been stripped from the application area. The quality of effects is neutral, there will be no direct impacts on any known items of archaeology, cultural heritage or buildings of heritage interest in the application area or the vicinity.

Indirect Impacts

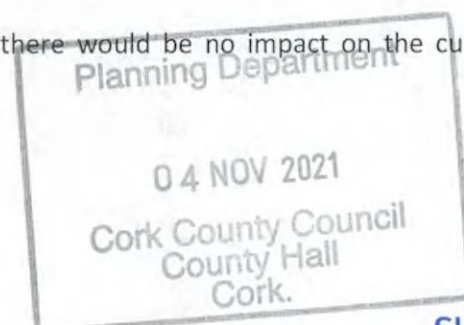
12.50 There will be no indirect impacts on any known items of archaeology, cultural heritage or buildings of heritage interest in the application area or the vicinity.

Interactions with Other Impacts

12.51 No interaction with other impacts has been identified.

Do Nothing Impacts

12.52 If the proposed development were not to proceed there would be no impact on the cultural heritage.



Worst Case Impact

- 12.53 There is no known cultural heritage within the application area or vicinity and no worst case scenario has been identified

Unplanned Events

- 12.54 There is no known cultural heritage present in the application area or vicinity that could be impacted by unplanned events.

Cumulative Impacts

- 12.55 There is no known cultural heritage present in the application area or vicinity that could be impacted by additional cumulative effects.

RECOMMENDATIONS / PROPOSED MITIGATION MEASURES

Direct Impacts

- 12.56 No direct impacts on any items of cultural heritage, archaeology or architectures warranting specific mitigation were identified during the course of the cultural heritage assessment.

Indirect Impacts

- 12.57 No indirect impacts on any items of cultural heritage, archaeology or architectures warranting specific mitigation were identified during the course of the cultural heritage assessment.

BIBLIOGRAPHY

- DAHGI 1995. Recorded Monuments Protected under Section 12 of the National Monuments (Amendment) Act, 1994. County Cork
- EPA 2002. Guidelines on the information to be contained in Environmental Impact Statements.
- EPA 2003. Advice Notes on Current Practice (in the preparation of Environmental Impact Statements).
- EPA 2017. Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft), published by the Environmental Protection Agency (EPA) in May 2017.
- Heritage Council 1999. The role of the Heritage Council in the Planning Process. Kilkenny.
- MacCotter, P. 2008. *Medieval Ireland*. Dublin.
- Orpen, G. 1911-20. Ireland under the Normans. 4 Vols. Oxford.
- Otway-Ruthven, A.J. 1980. A History of Medieval Ireland. London.
- Cork County Council 2014. County Development Plan 2014-20.
- Cork County Council 2021. Draft County Development Plan 2022-28.

PLATES



Plate 12-1

Google earth aerial image of the application area (outlined in red) taken in 2018. The images indicates that the entire application area has been stripped of topsoil.

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FIGURES

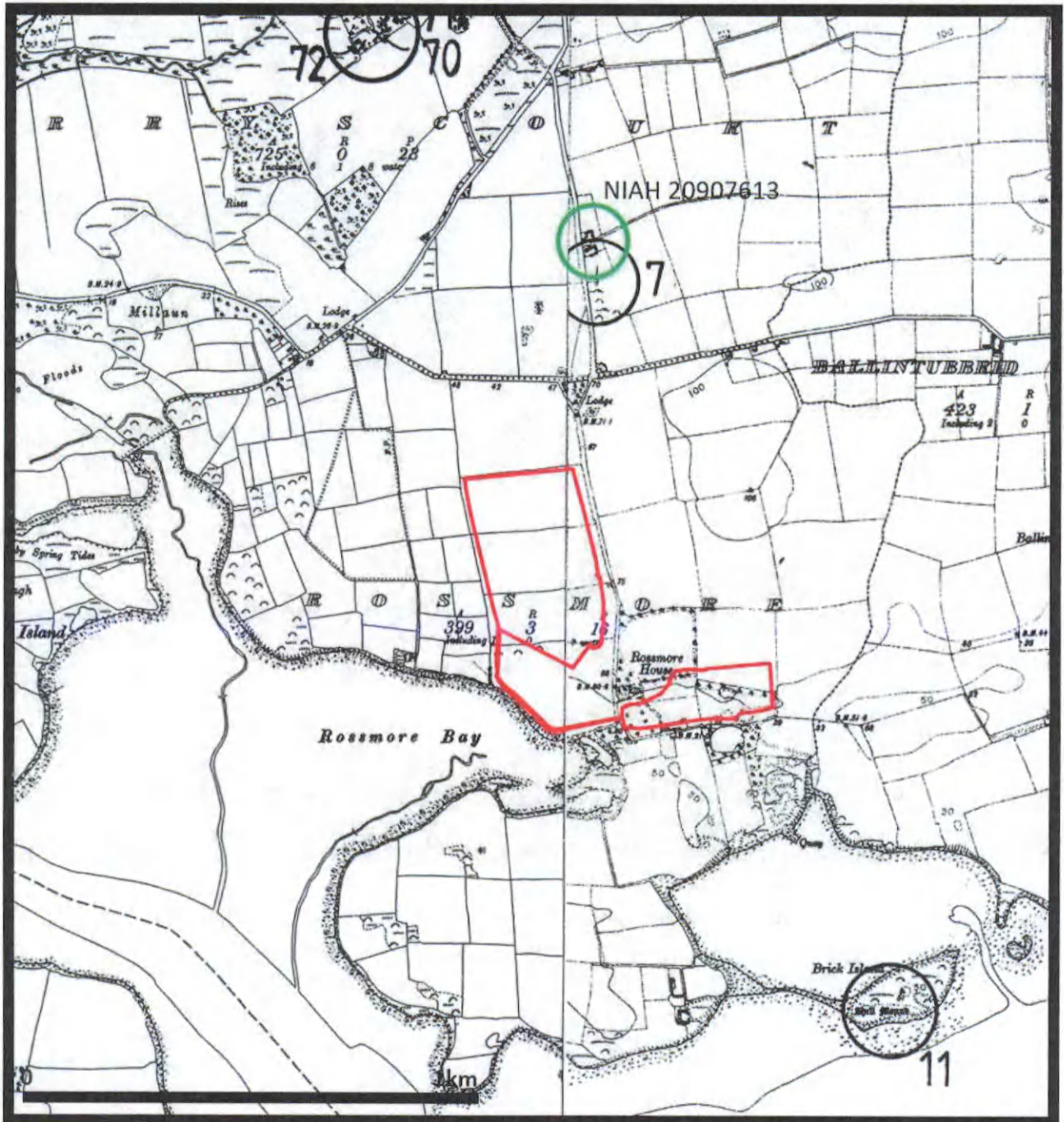


Figure 12-1

The study area. The red line is the application area. RMP sites are indicated with black circles. Structures in the Record of Protected Structures with green circles.

APPENDICES

Appendix 12-1 Sites in the Record of Monuments and Places

CO075-070---- BARRYS COURT Fulacht fia

Spread of burnt material (10m N-S; 8m E-W) in tillage in reclaimed field; adjacent stream shown on 1935 OS 6-inch map now drained. Two other fulachta fiadh (CO075-071---; CO075-072---) in same field.

CO075-071---- BARRYS COURT Fulacht fia

Spread of burnt material (6m N-S; 6m E-W) in tillage in reclaimed field; adjacent stream shown on 1935 OS 6-inch map now drained. Two other fulachta fiadh (CO075-070---; CO075-072---) in same field.

CO075-072---- BARRYS COURT Fulacht fia

Spread of burnt material (8m N-S; 6m E-W) in tillage in corner of reclaimed field; burnt material incorporated in adjacent field fence to W; stream shown on 1935 OS 6-inch map now drained. Two other fulachta fiadh (CO075-070---; CO075-071---) in same field.

CO076-002---- BARRYS COURT Linear earthwork

In pasture, on N-facing slope. According to local information W confines of Clyduff townland forms part of the Cliadh Dubh, a linear earthwork. Similar to surrounding field fences; earthen bank (H 1m), stone faced in parts. O'Driscoll suggests that this may be Atlantic end of Cliadh Dubh, as 'the popular idea is that the Cliadh extends from sea to sea, one the Atlantic'. Second known section (CO018-001---; CO026-099---; CO034-055---) lies in N Cork running in N-S direction between Ballyhoura hills and the Nagle mountains; third section (CO005-033---) lies in NW Cork and forms part of Cork-Limerick county boundary.

CO076-007---- BARRYS COURT Kiln - lime

In quarry, built against rock-face. Front (H 4.5m) NE-facing, E side partially collapsed. Arched recess (H 1.55m; Wth 2.7m; D 1.75m), stoking hole evident. Recess arch filled by masonry, formerly supported by wooden lintel. Funnel (diam. 2.4m) partially infilled.

CO076-011---- ROSSMORE Midden

On Brick Island in estuary to N of Great Island, joined to mainland by narrow neck of land. Island used for mussel farming; midden in SW quadrant. Overgrown; concentration of oyster shells visible in parts along southern shoreline scarp. When surveyed by Power midden measured 'five or six feet thick at the terrace edge' and 'extended along the foreshore for over one hundred and eighty yards and inland for seventy or eighty feet'; it contained 'nearly pure oyster-shells with occasional cockle, mussel, whelk and other marine shells'. 'Thin layers of charcoal were visible in many places' and 'stone pounders varying in size'.

