ANNUAL ENVIRONMENTAL AUDIT 2021

P.Reg.Ref.No.17/64, PL01.SU0024

Old Leighlin Quarry
Bannagagole,
Old Leighlin,
Co. Carlow.

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1. Introduction

Kilkenny Limestone Quarries Ltd. commissioned SLR Consulting Ireland to undertake an environmental audit of its facilities at Old Leighlin Quarry, Bannagagole, Co. Carlow.

The quarry is one of three, strategically located within the Carlow / Kilkenny area operated by Kilkenny Limestone to produce high quality blue limestone for use in modern day architectural and design projects both in Ireland and internationally. The location of the quarry is shown on Figure 1- Site Location.

This document is an Annual Environmental Audit for 2021 in compliance with Condition No. 16 of P. Reg. Ref. No. 17/64, PL01.SU0024.

1.1 Scope of the Audit

The scope of the audit is to examine the activities of Old Leighlin Quarry Ltd. to determine potential environmental impacts, to recommend thresholds and measures to reduce or alleviate any impacts where required. The Condition No. 16 of P. Reg. Ref. No. 17/64, PL01.SU0024 details objectives of the audit as follow:

- A written record, derived from the on-site weighbridge, of the quantity of material leaving the site. This quantity shall be specified in tonnes.
- An annual topographical survey carried out by an independent qualified surveyor agreed with the planning authority. This survey shall show all areas excavated and restored. On the basis of this, a full materials balance shall be provided to the Planning Authority.
- A record of all movements of heavy vehicles.
- A record of groundwater levels measured at monthly intervals.
- A full record of all monitoring results over the previous year for noise, dust and water quality monitoring.
- A written record of all complaints, including actions taken on each complaint.
- A review of the Environmental Management System performance and update of associated performance targets. Notwithstanding this requirement, all incidents where levels of noise or dust exceed agreed levels shall be notified to the Planning authority within two working days. Incidents of surface or groundwater pollution or incidents that may result in groundwater pollution, shall be notified to the Planning Authority within seven working days.
- The report shall also outline the intentions of the applicant with regard to the upgrading of treatment methods or operations should these not fully comply with the terms of this permission. All monthly and annual reports shall be certified accurate and representative by the Plant Manager or other senior officer designated by him. Provision shall be made for the transfer of atmospheric monitoring data and related information to the Planning Authority's computer system, on request.
- Section 4 compliance monitoring.
- Monitoring records for blasting operations.

In addition to summaries of the monitoring data, the Audit will include a detailed discussion of the results identifying reasons for any exceedances and outlining measures to be implemented to prevent any reoccurrences. The Audit will also discuss overall trends for the year and compare with previous years.

1.2 Audit Report Structure

The report is structured as follows:

*Section 1 – **Audit Methodology***

A description of the audit objective(s), methodology, and audit team.

*Section 2 – **Project Description***

A description of the company background, surrounding environment, plant activity, plant history and planning background.

*Section 3 – **Environmental Issues***

This section describes the environmental audit findings arising from the review of the available information and the site inspection.

*Sections 4 & 5 – **Conclusions & Recommendations***

This section summarises the conclusions arising from the environmental audit completed and presents a number of recommendations for consideration by Old Leighlin Quarry Ltd.'s management.

1.3 Audit Methodology

1.3.1 Information Review:

The following information was reviewed for the audit:

- Site history.
- Environmental context of the site – including description of quarry operations: extraction, processing, storage and transport.
- Environmental monitoring programme (noise, dust deposition, discharge monitoring).
- Existing planning conditions.

1.3.2 Environmental Site Assessment Inspection

A site inspection assessing all activities at Old Leighlin Quarry was carried out on Monday 7th February 2022 with senior management representatives.

The main areas addressed during previous inspections related to:

- Compliance with environmental conditions attached to the existing planning permissions.
- Compliance with best environmental management practice for the sector.
- Quarry operations and ancillary activities / facilities.
- Water and wastewater management.
- Review of materials storage and waste management practices.
- Emissions.
- On-site storage of fuels and any other chemicals.
- Existing environmental management / mitigation measures.
- Identification of any existing / potential future environmental liabilities.

1.3.3 Preparation of Audit Report

This audit report has been prepared based on a review of the available information provided and collected over the course of 2021 and 2022.

1.4 Audit Team

The environmental site assessment inspection and the preparation of the audit report were undertaken by:

- Aldona Binchy – Principal Environmental Management Permitting and Compliance.
- Hannah McGurran – Project Environmental Scientist.
- Philip Maher – Old Leighlin Quarry Manager.
- Patrick Carroll- Safety and Environmental Health Officer.

2. Overview of Old Leighlin Quarry

2.1 Company Background

The quarry at Old Leighlin which is operated under the name, Old Leighlin Quarry Limited is part of the Kilkenny Limestone group of quarries which form the Irish operational arm of the parent company located in Belgium, Brachot Hermant Group.

The venture which led to Kilkenny Limestone began in the 1930's when John Sisk & Son acquired an Irish Blue Limestone quarry near Ballinasloe, Co. Galway in response to the growing demand for native Irish stone in the building projects of the new Irish state.

During the 1970s marked a period of change in how Irish Blue Limestone was manufactured and marketed, with a move away from solely ornamental uses for the stone. The company began to innovate more practical and functional applications, such as cladding and paving. A good example of work from this period is the Met Eireann Headquarters at Glasnevin, Dublin with its angled façade of blue limestone cladding.

During the 1980s, an era of economic difficulties for Ireland, Kilkenny Limestone began to forge new export channels for blue limestone products, particularly in Europe, developing a strong reputation within the Dutch and Belgian markets. The operation of a Belgian subsidiary enabled the company to strengthen their foothold in Europe. Over the last two decades, Kilkenny Limestone has made continued investment, not just into the Irish market, but also within the UK and Europe.

The company is expert in the extraction, manufacture, and supply of Irish Blue Limestone, and proudly serve in the construction of prestige edifices worldwide and are a leading supplier of the stone to modern day architectural and design projects from rural Ireland to downtown Manhattan.

The quarry site at Old Leighlin, currently employs between 50 to 60 people in the various stages of extraction and processing of the stone. The company has operated, and continues to operate, Old Leighlin Quarry in accordance with the environmental guidelines of the Irish Concrete Federation (ICF) and current best practice for the quarrying industry as set out in the Department of the Environment, Heritage and Local Government - DoEHLG (2004) and Environmental Protection Agency - EPA (2006) guidelines for the sector.

The company has implemented the ISO:9001 quality management system which consists of an advanced process for documentation, traceability, and result and process refinement. They employ a system of CE marking to highlight the performance standards that are expected from their products. This also demonstrates their commitment to a high level of Health, Safety and Environmental Protection standards as required by European regulation.

The company endeavours to maintain a good relationship with the neighbouring community, local businesses, and the local authority.

- Mr. Phillip Maher – Quarry Manager is responsible for the day-to-day operation of the quarry.
- Mr. Patrick Carroll – Environmental Health Officer.

SLR Consulting Ireland have been retained by Old Leighlin Quarry to carry out implementation of the environmental monitoring plan and prepare annual environmental audit report.

2.2 Quarry Management Structure

For the purpose of the Environmental Audit the senior management representatives consulted with was:

- Mr. Phillip Maher – Quarry Manager
- Mr. Patrick Carroll – Environmental Health Officer

2.3 Site Location and Setting

The site is located within the townland of Bannagagole, approximately 0.7km south of the village of Old Leighlin, and c.2.5km west of Leighlinbridge and c.4.5km northwest of Bagenalstown. The county border between Carlow and Kilkenny is located c.2km to the south of the site (See Figure 1- Site Location Plan).

The overall landholding (c.12.4 hectares) is located entirely within the townland of Bannagagole, Co. Carlow; refer to Figure 2- Environmental Monitoring Plan. The entire landholding is in the ownership of Old Leighlin Quarry Limited (part of the group of quarries operated by Kilkenny Limestone Quarries Limited, with an address in Kellymount, Paulstown, Co. Kilkenny).

Access to the site is via a minor county road c.3km west of the R448 Regional Road (the former N9 National Primary Road). The M9 motorway passes in a north – south direction c.800m to the east of the site.

2.4 Planning and Operation Considerations

The site at Old Leighlin consists of a limestone quarry and a processing facility. The quarry produces premium quality limestone to meet the demands of the modern construction industry, and the unsuitable limestone block is recycled by external contractors into aggregate for concrete products.

The following planning permissions are relevant to the operation of the quarry.

Table 2-1
Planning Permissions.

P. Ref. No.	Description
17/ 64	Continuance of use of the permitted quarry site and existing ancillary facilities. Lateral extension of the existing quarry void from the existing area of c.3.4 hectares (ha.) increasing to total extraction area of c.4.5 ha; Deepening the existing quarry void from the existing floor level at c.42-45m AOD to a final floor depth of c.21m AOD, construction of berm along eastern extraction boundary, Relocation of employee car park, demolition of existing processing factory to allow for lateral quarry extension. Existing rate of rock extraction to remain at c.30000 cubic metres per year.
Section 261A QY /13 (PL01.SU0024)	Application for Substitute Consent (with rEIS & rNIS). Review of Quarries - Section 261A of the P&D Act 2000 (as amended).
Section 261 QY13 (PL01.QC2173)	Registration of Quarry under Section 261 of the Planning & Development Act 2000.
PL99/448	Permission for factory with 1st floor, new entrance and to relocate entrance.
PL98/206	Permission granted to alter existing building and for 2 storey extension.
PL93/112	Permission granted for change of entrance.
CW 9491	Erection of canteen, toilet, and shower facilities.
CW 9233	Erection of Tile Factory.
CW9021	New farm entrance.

P. Ref. No.	Description
CW8883	Workshop.
CW 8883	Erection of Workshop.
CW8460	Saw Shed.
CW7238	Polishing Shed.
CW6666	Polishing Shed.
CW5761	Alteration to existing entrance.
CW5063	Stone Cutting Shed.
CW1768	Reconstruction of Office at Quarry.

The operation of the quarry is currently regulated by these planning conditions, and it is this set of conditions that have been reviewed during this environmental audit. The rock is extracted using conventional cutting techniques and unsuitable limestone is processed within the crushing and screening plant.

Extraction operations are confined to the existing quarry area. Topsoil and overburden have already been stripped over the existing extraction area and is stored in screening berms and dedicated storage areas for future use in restoration of the site.

Once good quality beds of rock have been exposed, the stone is then cut into blocks using a diamond tipped chain or diamond wire saws. There is some drilling of holes using air compressed drills to allow the diamond wire to pass through the holes. Once the limestone is cut into large blocks, they are then initially pushed off the beds using steel bags that are filled with high pressure water. This makes enough room for the excavator to locate a ripper hook into the space made by the steel water bag and then push the limestone block clear of the existing wall of stone.

The machinery involved in the dimension stone extraction process at the quarry typically consists of the following:

- Excavators for moving machines and stone blocks.
- Front loaders for carrying blocks from Quarry to factory and loading the blocks onto lorries.
- Mobile drilling rigs.
- Wire cutting saws.
- Chain cutting saws; and
- Mobile air compressors for supplying the drills with compressed air.

The cut blocks which are of a suitable quality are transported from the quarry area to the processing area located adjacent to the existing processing factory to the east of the site. Within the processing area the blocks are in turn cut into slabs of a more manageable handling size. These slabs are then loaded directly onto lorries for export or transferred to the processing factory for secondary processing into products for use in buildings and urban renewal schemes.

The plant / machinery involved in the processing activities within the processing factory typically consist of:

- Gang saws, stationery wire saws, circular saw for cutting the block into slabs.
- Disc saw for converting slab to strips, disc saw line-strips to tiles/paving, line-slabs, cobbles, and tiles; and

- Gantry cranes & forklifts.

3. Environmental Audit

The findings of the environmental audit carried out by SLR are described in this section under the following headings:

- Annual topographical survey update.
- Emissions to atmosphere.
- Noise.
- Blasting.
- Water.
- Waste management.
- Transport / HGV traffic.
- Quantity of material leaving the site.
- Safety & security.
- Employee training.
- Good housekeeping.
- Environmental incidents.
- Complaints register.
- Environmental improvements planned for 2022.

3.1 Annual Topographical Survey Update

A topographical survey will be carried out in 2022.

3.2 Emissions to Atmosphere

3.2.1 Review of Dust Deposition Monitoring Programme

There have been no complaints during 2021 regarding dust emissions at the site. Dust monitoring in 2021 was carried out three times per annum, during the months May to September at three locations.

A dust deposition monitoring programme was established utilising four "Bergerhoff-Type Dust Deposit Gauges" at the following locations:

- D1 – located at the north-east corner of the site (refer to Figure 2).
- D2 – located at the south-east corner of the site (refer to Figure 2).
- D3 – located at the southwest corner of the site (refer to Figure 2).

The total dust is expressed as deposition of insoluble particulate matter (mg/m^2/day) arising from on-site operations. The results for the year 2021 are as follows:

Table 3-1
Dust Deposition Monitoring Results 2021

Dust Deposition Monitoring 2021				
Monitoring Period		Deposition (mg / m² / day)		
From	To	D1	D2	D3
28/05/2021	25/06/2021	100	152	114
25/06/2021	12/08/2021	183	80	160
12/08/2021	23/09/2021	44	*	254

*Damaged Sample

3.2.2 Assessment of Dust Deposition Monitoring Results

The results of the dust deposition monitoring (May to September 2021) were submitted to the Planning Section, Carlow Co. Council on a regular basis throughout 2021, refer to Appendix B.

Dust monitoring indicates that dust deposition levels at the site are in compliance with Condition no. 15 (b) of P. Reg. Ref. No. 17/64, PL01.SU0024 which states that:

> *'Condition 15*
>
> *(a) Dust monitoring shall be carried out twice per annum, during the Months May – September at revised dust Monitoring Locations D1, D2 and D3. Dust limits shall be in accordance with the limits set out in "Environmental Management for the Extractive Industry (EPA). A Dust Management Plan shall be submitted, for approval, within 3 months of grant of permission.*
>
> *(b) The total particulate emission arising from all the on-site operations associated with the proposed development shall not exceed 350 milligrams per square metre per day, averaged over a continuous period of 30 days, when measured as deposition of insoluble particulate matter at any position along the boundary of the site. Monitoring shall be carried out annually at a any position along the boundary of the site. Monitoring shall be carried out annually at a minimum of 3 locations on-site to be agreed with the Environmental Section of the Local Authority. The results of this monitoring programme shall be submitted to the Environment Section and Planning Authority on annual basis. Soil stripping shall not take place in periods of extended windy or dry weather. Water shall be sprayed on the roads and exposed soil heaps in periods of windy and dry weather in order to reduce the potential impact of dust on neighbouring properties. Vehicles used for transport of materials from the site shall be equipped so as to prevent spillage of materials and dust blow. '*

3.2.3 Assessment of Dust Abatement Measures

Several standard mitigation measures are being put in place to aid fugitive dust reduction and ensure that the operations remain within any specified guidelines (refer to 'Quarries and Ancillary Activities Guidelines for Planning Authorities' prepared by the DoEHLG (April 2004) and the 'Environmental Management Guidelines: Environmental Management in the Extractive Industry (Non-Scheduled Minerals) prepared by the EPA (2006):

- All plant and machinery are to be regularly maintained.
- Existing site boundary hedgerows / stone walls are to be retained. These eliminate / minimise migration of dust beyond the site boundary.
- Perimeter screening berms are in place to minimise dust blows and migration of dust beyond the site boundary.

- Internal haul roads are be maintained to minimise dust generation.
- Vehicle speeds will be controlled on all internal haul roads.
- A wheel washing facility is provided within the existing quarry. All trucks exiting the site leaving via the wheel wash.
- The internal road between the wheel wash and the existing quarry entrance will be surfaced.
- Vehicle speeds are controlled on the access road.
- Water sprays and water bowsers are used for dust suppression during dry weather. A new bowser was purchased in 2020 for this purpose.
- In the event of material being spilled on the public road the operator will ensure that spilled material is removed from the road surface in a safe and timely manner as soon as they notice or are notified that a spillage has arisen.

Dust is monitored using Standard Bergerhoff dust deposition gauges. Dust monitoring at Old Leighlin Quarry will continue during 2022. It will assess the effectiveness of the measures adopted and ensure continued compliance with the accepted thresholds. In the event of organic contamination of dust samples, colour photographs will be submitted with the report.

Based on the above, Old Leighlin Quarry's operations comply with best environmental management practices for the control of fugitive dust as set out in the DoEHLG (2004) and EPA (2006) guidelines.

3.3 Noise

3.3.1 Review of Noise Monitoring Programme

Noise is generated from various operations within the quarry development: saws, forklifts, movement of trucks on and off site, mechanical loaders.

Continuous noise monitoring was carried out at four locations: N1, N2 and N3 using a Larson Davis 831 Sound Level Meter which was calibrated using a Larson Davis Acoustic Calibrator CAL 200. The locations of the 3 noise monitoring stations are shown on Figure 2.

Noise Monitoring was carried out in accordance with International Standard ISO 1996: *Acoustics Description and Measurement of Environmental Noise*.

Noise Measurement Parameters

During the noise surveys, 3 environmental noise parameters were measured. These are defined below.

- L_{Aeq} is the A-weighted equivalent continuous steady sound level during the sample period and effectively represents an "average" value.
- L_{A10} is the A-weighted sound level that is exceeded for 10% of the sample period; this parameter is typically used to quantify traffic noise.
- L_{A90} is the A-weighted sound level that is exceeded for 90% of the sample period; this parameter is typically used to quantify background noise.

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

Noise Measurement Locations

Noise monitoring is carried out at the site boundary at following locations:

- N1 – located at northeast of the site (refer to Figure 2).
- N2 – located at the south-east corner of the site (refer to Figure 2).
- N3 – located at the south-west boundary of the site (refer to Figure 2).

The monitoring results for 2021 are provided below in Table 3-2.

Table 3-2
Noise Monitoring Results 2021, at the Site Boundary

Location	Date	Time	Measured Noise Levels – dB(A)		
			$L_{Aeq,\ 1hr}$	$L_{A10,\ 1hr}$	$L_{A90,\ 1hr}$
N1 (831)	28/05/2021	09:12- 10:12	53.9	55.2	48.1
		09:12 – 09:27	54.2	55.5	50.3
		09:27 – 09:42	53.6	55.3	49.5
		09:42 – 09:57	53.8	55.2	48.8
		09:57 - 10: 12	53.9	54.5	46.3
N2 (831)	28/05/2021	10:37- 11:37	51.4	53.6	47.4
		10:37- 10:52	50.1	52.2	47.2
		10:52 –11:07	51.8	54.1	48.3
		11:07-11:22	52.8	55.6	48.8
		11:22- 11:37	49.5	51.4	47.5
N3 (831)	28/05/2021	11:49- 12:49	66	69.2	55
		11:49-12:04	65.3	68.2	56.2
		12:04- 12:19	66.4	69.1	55.5
		12:19-12:34	67.5	71.1	55.6
		12:34 -12:49	64.0	68.3	53.8
N1 (831)	12/08/2021	11:50-12:50	57.8	54.2	45.6
		11:50-12:05	63.2	56.1	46.3
		12:05-12:20	50.7	53.6	45.0
		12:20-12:35	49.9	52.5	45.2
		12:35-12:50	51.1	53.7	46.3
N2 (831)	12/08/2021	09:37-10:37	53.3	55.7	47.1
		09:37-09:52	54.2	56.1	48.4
		09:52-10:07	52.4	55.8	46.6
		10:07-10:22	53.4	55.8	48.1
		10:22-10:37	53.2	54.5	46.1

Location	Date	Time	Measured Noise Levels – dB(A)		
			$L_{Aeq,\ 1hr}$	$L_{A10,\ 1hr}$	$L_{A90,\ 1hr}$
N3 (831)	12/08/2021	10:42-11:42	53.3	55.3	46.5
		10:42-10:57	53.8	57.0	46.2
		10:57-11:12	52.9	55.2	46.4
		11:12-11:27	53.4	54.4	46.2
		11:27-11:42	53.2	54.9	47.4
N1 (831)	23/09/2021	09:37-10:37	48.5	53.1	36.0
		09:37-09:52	48.1	50.2	36.2
		09:52-10:07	44.1	45.4	35.1
		10:07-10:22	49.8	54.2	41.7
		10:22-10:37	50.0	53.8	42.4
N2 (831)	23/09/2021	10:43-11:43	50.5	54.0	42.8
		10:43-10:58	51.6	55.3	44.1
		10:58- 11:13	49.9	52.6	45.1
		11:13 -11:28	49.8	53.4	40.9
		11:28- 11:43	50.3	53.9	43.1
N3 (831)	23/09/2021	11:46-12:46	56.6	59.3	44.4
		11:46-12:01	57.4	61.6	47.0
		12:01 -12:16	57.5	60.3	47.6
		12:16-12:31	56.2	58.3	42.8
		12:31-12:46	54.6	56.1	44.1

3.3.2 Assessment

Noise measurements were carried out at the boundary of the site and a calculation of noise levels from site activities at noise sensitive properties were carried after each of monitoring round. The site activity noise levels measured at the Old Leighlin site boundary were used to assess the noise levels due to the site activity at residences and to assess emissions in compliance with noise limits at residences.

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:

i. Attenuation with distance between the source and receptor (K= - 20 log R/10 dB(A), for hard ground R=distance from source in metres).

ii. -10 dB adjustment has been made for screening (full) between the site and residences.

Calculations of noise levels arising from Old Leiglin site activities at the three nearest noise sensitive locations N1 (distance 161m), N2(distance 53m) and N3(distance 248m) around the site are provided in each of the noise monitoring reports which are attached in Appendix B.

It can be seen that allowing for location of monitoring points (i.e., the distance between the monitoring point and the nearest dwelling) and screening between the noise sensitive receptors, noise monitoring results indicate

that quarrying and ancillary operations comply with condition no. 3 imposed under Section 261 of the Planning and Development Act, 2000 (Quarry Ref. QY 13), as amended by ABP Ref. No. 01.QC.2173 which states that:

> *"The noise levels associated with day to day quarrying activity when measured from the nearest sensitive noise receptor, shall not exceed 55 dB(A) L_{Aeq} over a measured time interval of one hour by day time (0800 hours to 2000 hours) and shall not exceed 45 dB(A) L_{Aeq} over a measured time of 15 minutes by night-time (2000 hours to 0800 hours). 95 per cent of all noise levels shall comply with the specified limit values. No noise level shall exceed the limit value by more than two dBA. These levels may be exceeded to allow temporary but exceptionally noisy phases in the extraction process or for a short-term construction activity which is required to bring long term environmental benefits following written agreement by the planning authority."*

And condition no. 22 under Planning Permission 17/64 which states that:

> *"The proposed development shall not give rise to noise levels off site, at noise sensitive locations which exceed the following sound pressure limits (Leq, 15 minute):*
>
> *Daytime (08.00 hours and 18.00 hours): 55 dB(A)*
>
> *Night-time (all other times): 45 dB(A)*
>
> *There shall be no clearly audible tonal or impulsive component in the noise emission from the development at any noise sensitive location. Low noise emitting plant shall be used at the development where possible and all plant and machinery shall be maintained as to minimise noise emissions."*
>
> *"Noise monitoring shall be carried out three times per annum, during normal operating conditions, at revised noise monitoring locations N1, N2 and N3. Noise limits shall be in accordance with NG4 'Guidance Note for Noise: License Applications, Surveys and Assesments in Relation to Scheduled Activities' (EPA). Should noise exceedances occur, additional noise barriers will be required to reduce levels at sensitive receptors. A Noise Management Plan shall be submitted, for approval, within 3 months of the grant of permission."*

The results of the noise monitoring were submitted to the Planning Section, Carlow County Council on a regular basis throughout 2021 and a copy of the noise monitoring reports are included in Appendix B.

3.3.3 Assessment of Noise Mitigation Measures

The following noise mitigation measures have been implemented at the quarry to minimise noise emissions within the site and to ensure continued compliance with the specified noise limit of 55 dB (A). These mitigation measures are in accordance with the *'best practice / mitigation'* measures described in the DoEHLG (2004) planning guidelines and EPA (2006) environmental management guidelines:

- The cutting saws and machinery are be located within the quarry void where possible.
- Existing boundary hedgerows / stone walls, perimeter screening berms, and topography of adjoining lands will provide acoustic as well as visual screening.
- Internal haul roads and access roads will have as low a gradient as possible.
- The cutting saws are housed / enclosed in sheds to reduce noise emissions.
- Regular maintenance of plant and haulage vehicles will be an integral part of site management. This is important in helping to minimise noise impact.

- Noise monitoring will continue to be carried out, to ensure noise levels are within thresholds specified by the EPA Guidelines and Carlow County Council.

3.4 Blasting

Rock Blasting was carried out twice in 2021 on 24th February and 28th September 2021. Results of the blasts can be seen in Table 3-3 below and blast monitoring records are provided in Appendix C.

Table 3-3
Blasting Results 2021

Location	Date	Peak Particle Velocity (mm/sec)			Air Over Pressure
		Tran	Vert	Radial	(dBA)
Quarry office	24/02/2021	8.573	11.811	11.811	118.5
Quarry office	28/08/2021	7.493	9.906	9.398	123

The blast monitoring was carried out at the quarry office all levels recorded are within the threshold limit recommended in Condition No. 7 a of the P. Reg. Ref. No. 17/64 which states:

a) *"Vibrations levels from blasting shall not exceed a peak particle velocity of 12 millimetres / second when measured in any three mutually orthogonal directions at any sensitive location. The peak particle velocity relates to low frequency vibration of less than 40 hertz. Blasting shall not give rise to air overpressure values at sensitive locations which are in excess of 125 dB (Lin) max peak with a 95 per cent confidence limit. No individual air overpressure value shall exceed the lilt value by more than 5 dB (Lin). "*

The following precautions are undertaken within the quarry to minimise disturbance during blasting:

- Air overpressure is minimised through proper blast design, avoiding the detonation of large unconfined charges, and by consideration of atmospheric conditions before blasting.
- A siren is sounded for one minute ten minutes before the blast and for another 30 seconds one minute before the blast. The siren is sounded for another one minute after the inspection just before the blast.
- Regular monitoring of blast and blasting practice is carried out to ensure strict adherence to the present standards. All drilling, blasting, and shot firing is carried out by Irish Industrial Explosives.

3.5 Water

The principal components of the water management system at the site are detailed below:

- Rainfall in the quarry void is captured in a series of sumps on the quarry benches, which is then pumped to the main sump on the quarry floor.
- Water from the sump is used to top up the process closed water system in the cutting saws (Processing Factory). Runoff from the Processing Factory roof is captured and harvested and used as top up for the cutting saws.

- There is a water treatment plant (filter plant) at the site where a flocculent is used and a silt press helps remove fines.
- The process water is treated to remove suspended solids and is reused in the stone cutting process.
- There is an overflow from the clean water holding tank for the treated water which goes to the discharge point.
- Surface water runoff from the paved process yard areas is captured in drains and gullies and goes to the water treatment plant (via the processing factory water management system) to remove fines before it is discharged off site.
- Silt produced on site from the water treatment and silt press is mixed with subsoils and is used in restoration around the site.
- Excess water from the quarry void is treated in the water treatment plant before being discharged under licence to a ditch which flows to the Madlin River.
- Outside of the quarry void, rainfall infiltrates to ground across the majority of the site.
- Water for the site canteen and toilets is sourced from a supply well at the site.
- There is a wastewater treatment system at the site comprising a biodisc treatment system (Klargester BioDisc BF with a capacity for 60 persons). The treated effluent is discharged to the surface water at the discharge point along with the surface water runoff from the site.
- Fuel is stored in bunded tanks at the site which are also under cover; oils and lubricants are stored under cover on drip trays at the site. There is a paved refuelling area at the bunded fuel tank.

All water from the quarry sump is passed through the filter plant and silt press and then to the clean water tanks where it is either recycled within the site or if excess water exists, is discharged off-site, therefore quarry sump water is treated prior to discharge.

All factory grey water (similar to quarry sump water) is passed from the factory sump into the water treatment plant and from there into the clean water tanks where it is either recycled within the site or if excess water exists, is discharged off-site via the overflow from the clean water holding tank. The factory grey water is treated prior to discharge.

3.5.1 Site Drainage

There are no hydrological features at or in the immediate vicinity of the site. The Madlin River is located approximately 700m to the north of the quarry.

There is a small ditch immediately to the east of the site which the discharge from the site goes to, and which discharges into a small tributary of the Madlin River.

3.5.2 Water Usage

The site requires water for a number of different operations, including:

- Dimension stone cutting.
- Site Office/Toilet Facilities.
- Dust Suppression.

Water in the quarry is used to cool saws during cutting operations. Within the quarry void incident rainfall is captured in a series of sumps on the quarry benches, which is then pumped to the main sump on the quarry floor, before being used in the cutting process or is discharged off site.

Dust suppression is required on an intermittent basis during periods of dry weather.

3.5.3 Groundwater

The site is underlain by Carboniferous Limestone from the Clogrenan Limestone Formation and the Ballyadams Limestone Formation. Bedrock aquifer maps published on the GSI website indicate that the groundwater in the Clogrenan and Ballyadams Limestone Formations beneath the site are classified as a Regionally Important Karstified Aquifer (Rkd) with diffuse groundwater movement.

The site at Bannagagole is located within the Bagnalstown Groundwater Body (GWB), which extends to the east of the site and in a north to south direction along the valley floor of the River Barrow and corresponds to the Clogrenan and Ballyadams Limestone Formations.

The GSI has published a Summary of Initial Characterisation for the Bagnalstown GWB. The characterisation states that in the undolomitised pure limestones only secondary permeability exists. Fissuring in the pure limestones is common in the upper 20m of the aquifer, but rapidly reducing with depth and probably does not exist below 90m. Sands and gravels that overlie significant areas of this groundwater body and are themselves discrete groundwater bodies. The sands and gravels are very coarse and poorly sorted. Clay layers often separate individual layers of the sands and gravels.

Under Ireland's obligations for the Water Framework Directive, the status of groundwater bodies nationally has been assessed, both on the basis of their quality and availability. The Bagnalstown GWB is classified as being of Good status and has a WFD risk rating of 1a indicating that it is at risk from diffuse sources of pollution in the catchment.

The site is not located within any identified GSI or EPA groundwater supply source zone of contribution or protection zones (www.gsi.ie, 2016).

The closest abstraction boreholes are located to the north-north west of the site at Old leighlin, centred at approximately 0.7km from the site.

To the north east of the site, and east of Old leighlin, is a public supply owned by Carlow County Council. The public supply is located approximately 1km north east of the site. There is no source protection zone associated with the supply and the yield class is poor.

To the north east of the site at Ballynolan, a public supply abstraction borehole is centred approximately 1km from the site. The abstraction at Old leighlin is for local Group Water Supply (GWS) scheme.

Groundwater levels will be monitored on a quarterly basis at 2 no. wells:

- R2 - the closest residence to the north of quarry area which is a residential property in the ownership of the quarry.
- R11 - potable water supply to the quarry site which is located in the southeast corner of the landholding.

Groundwater Quality Monitoring at the Quarry Site

Groundwater Quality was carried out three times over the course of 2021. Results of Ground water quality can be viewed in Table 3-4 with the certificate of analysis in Appendix D.

Results show that water should not be used for drinking due to coliforms contamination.

In 2022 is proposed to undertake sampling and groundwater quality testing bi-annually at potable water supply to the quarry site which is located in the southeast corner of the landholding and the closest residence to the north of quarry area which is a residential property in the ownership of the quarry.

Groundwater samples were analysed at an accredited laboratory for the following parameters:

- Conductivity
- PH

- Total Coliforms
- Ammonia
- Nitrate
- Nitrite
- Ortho Phosphate
- TPH
- PRO
- DRO

Table 3-4
Ground Water Quality Results 2021

Parameters	Units	Location			
		Canteen water 22/06/2021	Well Water 13/07/2021	Canteen water 24/11/2021	Bungalow well Water 24/11/2021
Aluminium	ug/l	72	53	-	
Total Coliforms	MPN/100ml	1.0	0	3.1	4.1
E.Coli	MPN/100ml	0	0	-	
Ammonium	mg/l NH4	0.04	0.03	-	
Colour	pt co	4.3	8.6	-	
Nitrite	mg/l NO2	<0.03	<0.03	<0.03	0.03
Nitrate	mg/l NO3	9.64	<2.2	11.97	<2.2
Sulphate	mg/l SO4	33.20	16.46	-	
Conductivity	µSiem 20°c	593	548	655	612
Total Hardness	mg/l CaCO3	340.1	349	-	
Iron	ug/l	52	583	-	
Manganese	ug/l	8	17	-	
pH	pH units	7.2	7.3	7.2	7.5
Turbidity	NTU	1.64	18.97	-	
Ammonia	mgl/NH3	-	-	0.01	0.01
Orthophosphate	mg/l PO4	-	-	<0.01	<0.01
Total Petroleum Hydrocarbons	µg/l	-	-	<10	<10
<10Diesel Range Organics	µg/l	-	-	<10	<10
Petrol Range Organics	µg/l	-	-	<10	<10

Monitoring of Wells and Boreholes within 200 metres of the Site Boundary

There were no groundwater levels measurements obtained in 2021, as a result of the Covid-19 pandemic.

Ground water level monitoring will be carried out at wells and boreholes within 200 metres of the site boundary see Table 3-5: subject to the agreement of the relevant landowner/occupier.

Table 3-5
Monitoring of Wells and Boreholes within 200 metres of the Site Boundary.

Residence		Approx. Distance to Site Boundary	Well Top of Casing Location (ITM)			Dipped 30/06/17	GW Elevation
		m	*Easting*	*Northing*	*Elevation*	*m AOD*	*m AOD*
R1	Jim Sheedy	185	666182.105	664901.228	77.841	No access	-
R2	Old Leighlin Quarry Res.	16	666177.498	664709.813	80.566	10.39	70.176
R3	Seamus Brennan	35	666322.155	664223.985	72.727	5.7	67.027
R4	Michael Sheedy	35	No access				
R5	Stephen Bambrick	205	666301.890	663957.105	72.653	2.95	69.703
R6	Jimmy Manning (House)	180	Derelict House – location of well not found				
R6	Jimmy Manning (Farm Supply Well)	173	666235.775	664006.179	77.286	3.54	73.746
R7	Darren Kavanagh	226	665718.405	664216.724	179.591	No access	-
R8	Phillip Kavanagh	180	665762.325	664305.783	179.743	36.58	143.163
R9	Unknown	211	No access				
R10	Brendan Murphy	194	No access				
	Quarry Site Well	-	666281.5*	664207.6*	74.8*	5.37	69.43

3.5.4 Discharge Water Licence DL/S4/2016/1

There is an existing discharge from the site to a small field drain which flows into a stream and then the Madlin River. The existing water management system includes the discharge of water, comprising surface water runoff and minor groundwater inflow, from the quarry void off site. The discharge is carried out under the current

discharge licence (DL/S4/2016/1) for the site granted by Carlow County Council in February 2016. The discharge water from the site is treated as required with flocculants and in the filter plant to reduce suspended solids to meet the required discharge licence limits. The discharge water goes to a small ditch to the east of the site and then flows in an easterly and then northerly direction to the Madlin River.

Results of the discharge sampling in 2021 are presented in Table see Table 3-6 below.

Table 3-6
Discharge Water Quality Results 2021

Parameter	Units	27th Jan	24th Feb	30th Mar	23rd April	11th May	8th Jun	7th Jul	13th Aug	27th Sep	12th Oct	17th Nov	21st Dec	ELV
Total Suspended Solids	mg/l	26	72	78	64	28	35	71	37	46	45	28	13	35
Calcium	mg/l	73.9	68	120.9	78.3	78.6	79.5	90.4	108.4	86.3	73.1	89.2	73.5	
pH	pH Units	-	-	8	-	8	8.1	-	-	8.1	-	8	-	6-9
BOD	mg/l	-	-	62	-	<1	6	-	-	3	-	17	-	5
COD	mg/l	-	-	216	-	2	36	-	-	20	-	69	-	100
Nitrate	mg/l NO3	-	-	<2.2	-	4.62	6.47	--	-	4	-	5.37	-	15
Ammonia	mg/l NH3	-	-	142.63	-	59.66	25.64	-	-	11.04	-	67.89	-	
Orthophosphate	mg/l P	-	-	15.61	-	20.31	8.14	-	-	1.59	-	6.35	-	
TPH	µg/l	-	-	918	-	412	126	-	-	105	-	216	-	1000
Copper	µg/l	-	-	-	-	-	-	-	-	-	-	11	-	
Zinc	µg/l	-	-	-	-	-	-	-	-	-	-	148	-	
Cadmium	µg/l	-	-	-	-	-	-	-	-	-	-	<0.5	-	
Chromium	µg/l	-	-	-	-	-	-	-	-	-	-	<5	-	
Nickel	µg/l	-	-	-	-	-	-	-	-	-	-	5.4	-	
Mercury	µg/l	-	-	-	-	-	-	-	-	-	-	<0.01	-	
Lead	µg/l	-	-	-	-	-	-	-	-	-	-	<1	-	

The results for 2021 show high values for the Total Suspended Solids, BOD and COD on intermitted basis, it was noted that there was issue with the Klargester effluent treatment system in the quarry. It was repaired in February 2022 and there is a period of time indicated to laps before resuming testing. Discharge water testing is going to be resumed after the recommended period of time and continued during the 2022.

The Ammonia results are very high and there is investigation being carried out of to identify the reason of ammonia present in the discharge water. This process water at the quarry is managed in a closed system where

it is treated to remove suspended solids and then reused. There is no source of ammonia within the quarry processes.

The general groundwater flow at the site is in an easterly direction from the higher ground towards the River Barrow. It looks like the Ammonia results are high during the winter to spring months, this could be associated with the land spreading upstream of the quarry and the contaminated groundwater incoming into the quarry.

3.5.5 On Site Storage of Fuel and Chemicals

The following measures relating to fuel and lubricant storage / use are, and will continue to be implemented at Old Leighlin Quarry:

- All fuel is stored in bunded tank areas with a capacity of 110% of the storage capacity, or in tanks with built-in integral bunding system (i.e., double skinned tanks).
- All petroleum-based products (lubricating oils, waste oils, etc.) are stored under cover within existing bunded areas or on drip trays to prevent pollution due to accidental leakages.
- All plant used on the site is regularly maintained and inspected daily for leaks of fuels, lubricating oil or other contaminating liquids.
- Mobile plant and machinery are serviced / maintained on the hardstand refuelling area to minimise the risk of uncontrolled release of polluting liquids to groundwater. Hydrocarbon interceptors are provided at the refuelling hard standing area.

3.5.6 Assessment of Water Management Measures

The following water management measures are or are planned to be put in place at the site:

- Process water from the dimension stone processing operations in the shed will continue to be collected, treated and reused in the closed water management system at the site until the facility is moved to a new of site location.
- Three settlement lagoons will be established on the quarry floor with the option of a fourth if required for the treatment of all water before discharge of site.
- All water from the yard areas and quarry void will be passed through the settlement lagoons and treated to remove suspended solids before being discharged off site.
- Surface water runoff from the paved process yard areas will be collected and directed to the settlement lagoons on the quarry floor, treated and discharged off site.
- Surface water runoff from the quarry void and any inflowing groundwater will be collected and directed to the settlement lagoons where it will be treated before being discharged off site.
- A hydrocarbon separator will be installed on the discharge line and all water discharged off site will pass through the separator. The type and model of hydrocarbon separator to be installed at the site will be advised by the manufacturer and will be suitable for discharge to surface water.
- A flow meter and sampling chamber will be installed at the discharge point.
- Fuel is stored in bunded tanks at the site, some of which are also covered.
- There is a hard-standing area for refuelling beside the workshop.
- All chemicals and petroleum-based products are stored under cover at the site in designated containers on drip trays / spill palettes.
- Waste oil at the site is stored under cover at the site in the workshop.

- All plant is regularly maintained and inspected daily for leaks of fuels, lubricating oil or other contaminating liquids/liquors.
- Mobile plant is not serviced / maintained within the quarry void to minimise the risk of uncontrolled release of polluting liquids.
- A separate fuel tank is used to refuel plant and machinery on the quarry floor. The fuel tank is bunded and located beside the quarry void.
- A spill kit is kept on-site to stop the migration of any accidental spillages, should they occur, a second spill kit will be kept on the quarry floor at the settlement lagoons which will be available to hand in the event of an accidental spillage in the quarry void.
- Attenuation for storm surface water runoff within the quarry void is provided for on the quarry floor, as required, before the water is pumped to the settlement lagoons.
- All wastewater generated at the site from the washrooms and canteen facilities is directed to a Klargester BioDisc wastewater treatment plant. The treated effluent is discharged off site to surface water.
- Mechanical repairs take place on one of the hardstand areas at the site.
- An Emergency Response Kit is kept on site to prevent any leaks of petroleum-based products.

3.6 Waste Management

Kilkenny Limestone Quarries Limited have implemented comprehensive waste management procedures at the quarry. Waste management is an integral part of everyday activities in Old Leighlin Quarry Ltd. Waste prevention, minimisation, reuse, and recycling are all part of the current waste management plan. Where waste must be placed in landfill, it is done using a licensed waste management contractor.

Old Leighlin are committed to best practice principles in relation to waste management. Detailed records of the type and quantities of all wastes generated on site are maintained and available for inspection. Waste types are segregated and stored in designated areas. All waste collection companies used by KLQ have the relevant waste collection permits and deliver the waste materials to licensed facilities. All servicing of plant and machinery takes place at the existing site workshop on the hard-standing area.

There are no 'dangerous' substances or technologies used at the quarry. The only chemicals stored on site that have the potential to cause water pollution are lubricating oil, hydraulic oils and diesel fuel.

Fuel is required on site for plant and machinery, and lubricating oil is required for the cutting saws. Fuel and oils are stored under cover beside the workshop. The fuel tanks are bunded and the oils and lubricants are stored on drip trays. A hard stand area is provided for the refuelling of vehicles. Fuel is also stored beside the quarry void in a bunded tank and is used to refuel vehicles on the quarry floor. Waste oil is stored under cover beside the workshop.

3.6.1 Scrap Metal

Steel is used extensively in and around the quarry to provide walkways, hold safety netting etc. It is currently company policy to, wherever possible; re-use any existing steel instead of purchasing new materials. This has led to reduction in the amount of metal which is scrapped annually. Material which cannot be salvaged is segregated and stored in a metal recycling skip prior to collection by One 51 ES Metals (Ireland) Ltd. (WCP-LK-08-589-01).

3.6.2 Batteries

Exhausted batteries are segregated from the waste stream and are placed in a dedicated bin provided by ENVA Ireland Ltd (Waste Permit Register No. CK WMC 16/01. This bin is emptied, as necessary.

3.6.3 Waste Oil

Quantities of oils / lubricants used on site are variable and dependent upon the source of power used at any one time. Waste oil from the site is stored in a designated indoor storage area for collection and recycling off site by an approved contractor, presently ENVA Ireland Ltd (Waste Permit Register No. CK WMC 16/01).

Used engine oil filters are segregated from the main waste stream and stored in dedicated wheelie bins provided by ENVA.

3.6.4 Domestic Waste

General waste from the site is stored in the workshop area and then collected by Ray Wheelan. Waste produced in the offices is typical of an average office. Separate bins are provided for paper and plastic waste.

Packing material is almost entirely composed of cardboard and plastic. This material is segregated from other waste streams and placed in separate recycling containers provided by Ray Wheelan.

Staff regularly communicate via e-mail and printing of documents is kept to a minimum. Rechargeable batteries are used in cameras, wireless mice, etc.

3.6.5 Tyres

Used tyres are currently re-used in several different ways on site. The larger tyres are used to provide a base for "Goal Posts". Both the smaller and larger tyres are used as rudimentary shock absorbers when knocking large stacks of rock. When a significant number of tyres accumulate on site, they are collected by Crossmore Tyre Recycling (Waste Permit No. NWCPO-11-01309-02).

3.6.6 Timber

Timber is used in the quarry to provide a stable platform for wire saws in certain areas of the quarry. Timber is used in the factory to provide a cutting base on a number of saws. Most of this timber is then used as skids for bocks and slabs when they are loaded onto containers. Timber which is not suitable for this purpose is segregated from the waste stream and stored in a designated area for collection by Conroy Recycling Ltd and Ray Wheelan.

3.6.7 Electrical Waste

Damaged copper cables, LCB's and other electrical wastes are stored in a designated area on site for collection by Hi-Volt Ireland Ltd.

3.6.8 Sub Standard Stone

Quarrying of dimensional block has a high wastage factor. This can vary from 60% to 80%. The current waste factor at the quarry is c.65% of the gross volume of extracted rock.

Unsuitable dimension stone rock taken directly from the working quarry is stored in temporary storage areas to the south of the quarry void which is periodically recycled by external contractors into crushed stone aggregate for concrete products.

3.6.9 Sludge Disposal

Sludge is used in the berms around the site perimeter.

3.7 Resource Consumption Summary

Table 3-7 presents an estimate of resources used on-site from January to December 2021.

Table 3-7
Resource Consumption Summary

Energy Stream	Annual Quantity	Units	Period
Electricity	1 790 00	kWh	2021
Diesel	220 000	Litres	2021

3.8 Transport

All materials (slab, finished and crushed (unsuitable dimension stone) rock) is transported from the site using heavy goods vehicles (HGVs).

There is no heavy goods traffic on Sundays or Bank Holidays. Old Leighlin Quarry have confirmed that there was no movement of heavy vehicles (traffic into / out of the quarry) outside the permitted operating hours during 2021.

3.9 Quantity of Material Leaving the Site

Total quantity of material leaving the site in 2021 specified in tonnes was 64,943, this total consist of 47,976 tonnes of crushed stone and 16,967 tonnes of dimensional stone.

3.10 Safety and Security

3.10.1 Signage

There are a number of signs around the perimeter of the site and at the site office / reception area / entrance. Speed limits are imposed within the site.

3.10.2 Security

The perimeter of the entire site is secured by provision of a series of fencing. These include appropriate fencing, screening embankments, and / or other features such as hedgerows. The entrance gates to the site are locked outside operational hours.

3.10.3 Safety

Sufficient lighting is already provided within the quarry to ensure safe operations during winter periods. This lighting comprises arc lights orientated in a downward direction to prevent light pollution.

3.11 Employee Training

Toolbox talks are carried out on regular basis, other relevant employee training is carried out as needed this includes standard training such as manual handling, machine training and first aid training.

3.12 Good Housekeeping

Site is kept in good order. The main areas to be enforced in 2022 are keeping the designated waste storage areas clean and tidy.

3.13 Environmental Incidents

There were no environmental incidents during 2021.

3.14 Complaints

Old Leighlin Quarry Ltd. have an environmental complaint register in place at the quarry office to record complaints relating to environmental matters, if any, made by third parties to the company. No such complaints have been recorded in the register during 2021.

3.15 Environmental Improvements Planned for 2022

3.16 Site Maintenance

In recent years, a significant portion of the mobile and fix equipment fleet was upgraded on site and Kilkenny Limestone Quarry Ltd. will continue to do this during 2022. New forklifts and a new excavator are planned as well as the maintenance of large loader engines.

During 2021, relevant training will be provided to employees to facilitate the proper running and maintenance of upgraded equipment and production lines.

The stone crushing will continue in 2022 to deal with the unsuitable waste stone and keep mountains low.

The stone crushing area has its own water tank to suppress dust during dry periods during a crushing campaign;

the stone crushing is intermittent in that regard.

4. Conclusions

Based on the review of the available information provided and our site inspection it is concluded that:

i) Dust control measures in place at the quarry comply with best environmental management practice for the sector.

ii) Noise control measures in place at the quarry comply with best environmental management practice for the sector.

iii) Groundwater level monitoring to be implemented during 2022 in accordance with conditions imposed on the operation of the quarry.

iv) Generally, on-site fuel and chemical storage complies with best environmental management practice for the sector.

v) There are a significant number of environmental conditions imposed on the operation of the quarry under relevant planning permissions. Old Leighlin has implemented an ongoing compliance programme to address requirements under these conditions.

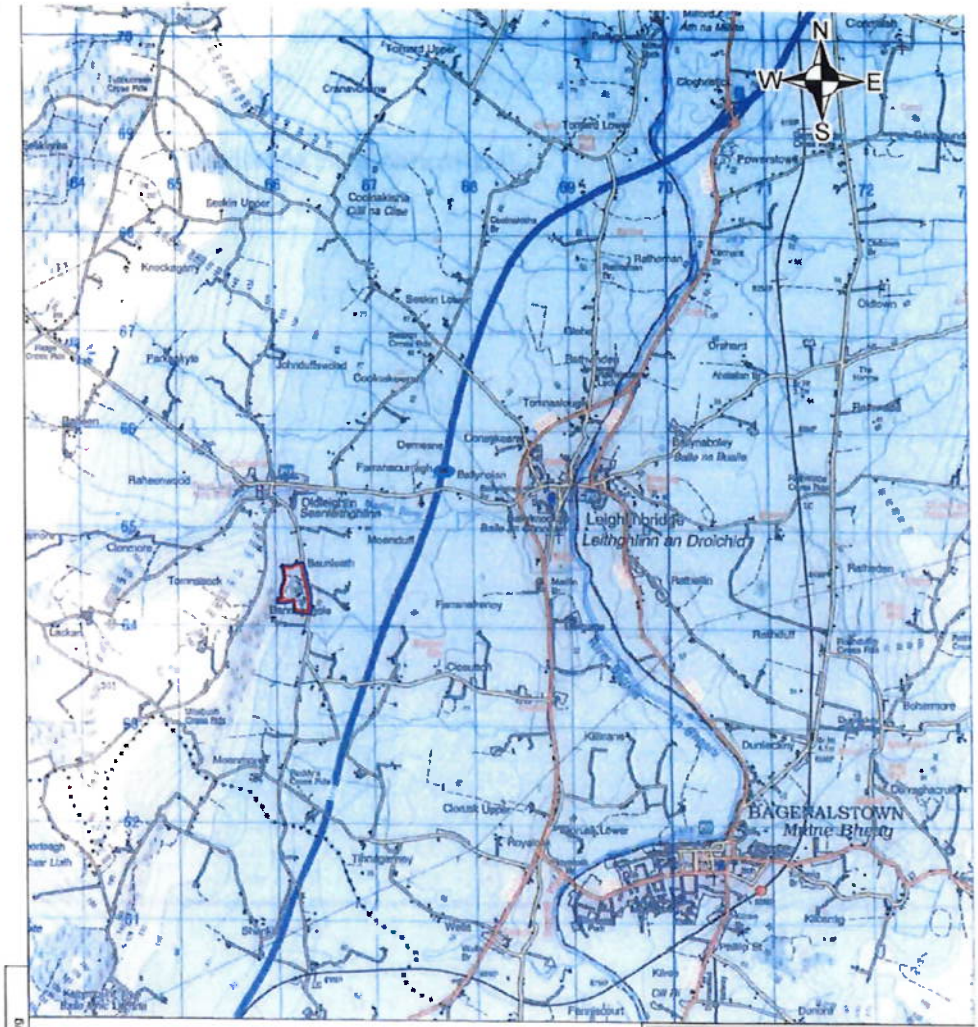
5. Recommendations

Arising from the audit, the following recommendations are provided to assist Kilkenny Limestone Limited in further implementing and developing the high standard of environmental management at Old Leighlin Quarry.

- Groundwater level monitoring to be implemented during 2022 in accordance with conditions imposed on the operation of the quarry.
- The ongoing compliance programme should be prioritised to ensure that each of the conditions imposed under the relevant planning permissions and Discharge Licence are addressed.
- The Improvements programme should be prioritised for implementation of water management measures.

The findings and recommendations of the environmental audit have been presented in Appendix E. The action plan proposed has been discussed and agreed with the management of Old Leighlin Quarry.

Figure 1
Site Location Map



LANDHOLDING AREA
c.12.4 Hectares / 30.6 Acres

PLANNING APPLICATION AREA
c.12.4 Hectares / 30.6 Acres

Extract from Ordnance Survey Discovery Series Map No 61

Ordnance Survey Ireland Licence No: SU 0000717
(c) Ordnance Survey Ireland and Government of Ireland

0 500 1000 1500 2000m 3000 4000 5000
Metres
1:50,000

00372.000\5.18.Dwg-1-Planning-Site-Location_R0.dwg

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OLD LEIGHLIN QUARRY LIMITED
Planning Application

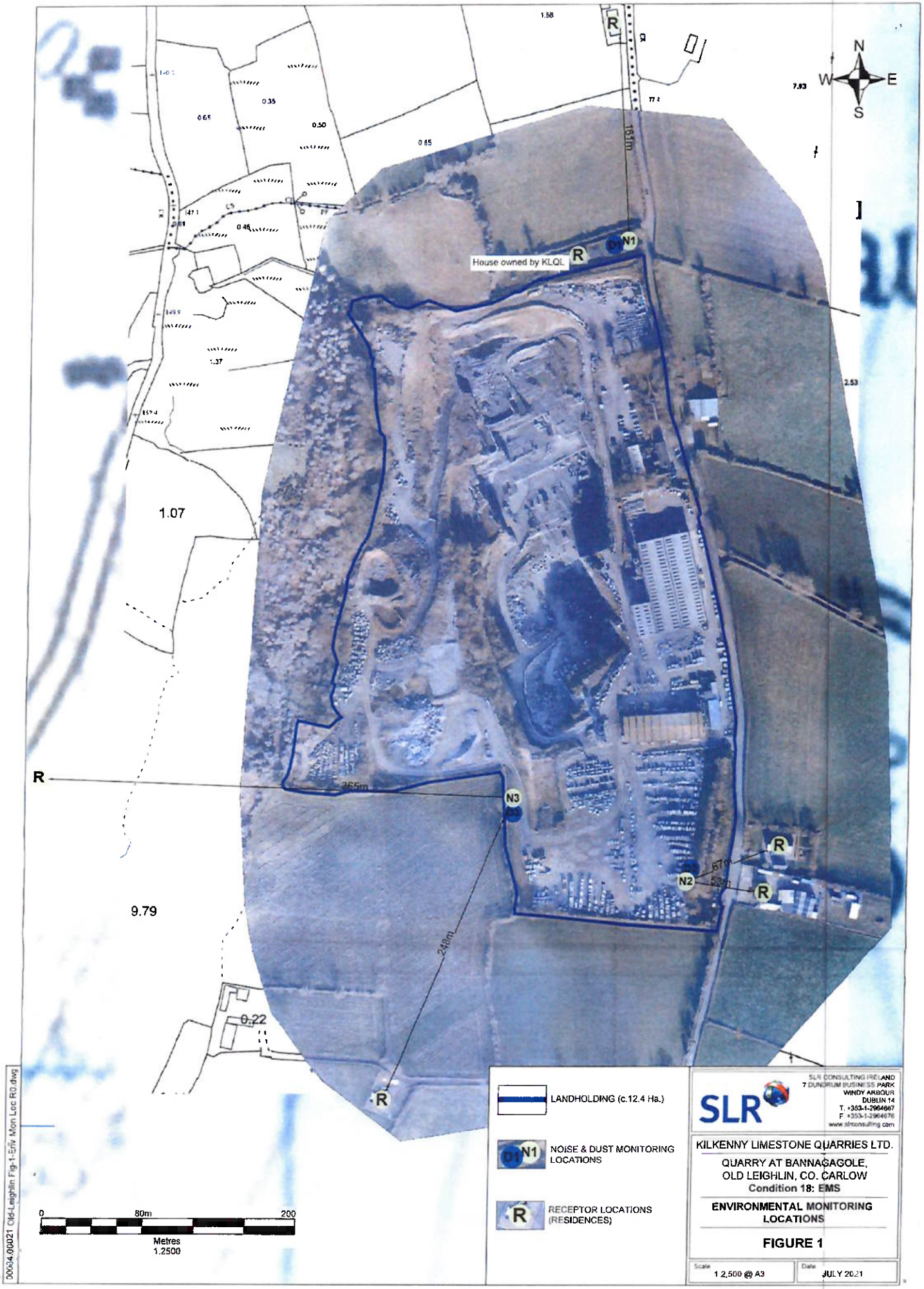
PROPOSED QUARRY EXTENSION AT BANNAGAGOLE, OLD LEIGHLIN, CO. CARLOW (Ref: QY12-13)

SITE LOCATION MAP

DRAWING 1

Scale	Date
1:50,000 @ A4	MARCH 2017

Figure 2
Environmental Monitoring Location



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KILKENNY LIMESTONE QUARRIES LTD.

QUARRY AT BANNAGAGOLE,
OLD LEIGHLIN, CO. CARLOW
Condition 18: EMS

ENVIRONMENTAL MONITORING LOCATIONS

FIGURE 1

Scale: 1 2,500 @ A3

Date: JULY 2021

30604.06021 Old-Leighlin Fig-1-Env Mon Loc R0.dwg

CARLOW COUNTY COUNCIL

COMHAIRLE CHONTAE CHEATHARLOCHA

County Buildings, Athy Road, Carlow.
Tel: 059 9170100
Fax: 059 9141503
Email: secretar@carlowcoco.ie
Web: www.carlow.ie

Ref: QY 13

STONE DEVELOPMENTS LTD
OLD LEIGHLIN, CARLOW.
26 APR 2007
RECEIVED

24th April, 2007.

Registered Post

Stone Developments Ltd.,
Old Leighlin,
Co. Carlow.

Re: Application to Carlow County Council for Registration of a Quarry under Section 261 of the Planning & Development Act 2000

Location of Quarry: Banagagole, Old Leighlin, Co. Carlow.

File Reference: QY 13

A chara

I refer to your application to have the above Quarry registered with Carlow County Council on 26th April, 2005.

The Council hereby serves notice on you/your company as owners and operators of the above quarry, that the Quarry is now registered in accordance with Section 261 of the Planning & Development Act 2000 in accordance with the 18 no. conditions as set out on the attached Schedule.

Under Section 261 (9)(a) of the Planning & Development Act 2000 *'a person who provides information to a Planning Authority in accordance with subsection (1) or in compliance with a requirement under subsection (3) may appeal a decision of the Planning Authority to impose, restate, add to or modify conditions in accordance with subsection (6) to the Board (An Bord Pleanala) within 4 weeks from the date of receipt of notification by the authority of those conditions.'*

Mise le meas

Eamonn Brophy,
Senior Executive Officer,
Planning Department

MATTERS CONSIDERED

In making its decision, the Board had regard to those matters to which, by virtue of the Planning and Development Acts and Regulations made thereunder, it was required to have regard. Such matters included any submissions and observations received by it in accordance with statutory provisions.

Member of An Bord Pleanála
duly authorised to authenticate
the seal of the Board.

Dated this 20th day of November 2007.

Noise minimisation measures shall be incorporated into quarrying operations in accordance with best practice as set out in the Guidelines for Planning Authorities 'Quarries and Ancillary Activities' issued by the Department of the Environment, Heritage and Local Government in April, 2004, shall be agreed with the planning authority within three months of the date of this order and shall be incorporated into the quarry's environmental management system.

Reason: To protect the amenities of the properties in the vicinity.

6. On-site quarrying operations shall only be carried out between 0700 hours and 1900 hours, Monday to Friday inclusive and between 0700 hours and 1400 hours on Saturdays. The facility shall not operate on Sundays or Public Holidays.

Reason: In the interest of the protection of residential amenity.

Further condition

Blasting operation shall only take place between 1100 hours and 1700 hours, Monday to Friday. Blasting shall not give rise to air overpressure values at sensitive locations which are in excess of 125dB(Lin) maximum peak with a 95 per cent confidence limit. The vibration levels from blasting operations shall not exceed a peak particle velocity of 12 millimetres per second when measured in any three mutually orthogonal directions. Monitoring of the noise and vibration arising out of blasting and the frequency shall be carried out at the developer's expense by an independent contractor agreed with the planning authority prior to commencement of development. Prior to the firing of any blast, the developer shall give notice of his intention to the occupiers of all dwellings within 600 metres of the site. An audible alarm for a minimum period of one minute shall be sounded. This alarm shall be of sufficient power to be heard at all dwellings adjacent to the quarry.

Reason: In the interest of residential amenity and public safety.

REASONS AND CONSIDERATIONS

It is considered that condition numbers 3 and 6, as amended, together with the new condition are necessary for the protection of the amenities of the area.

An Bord Pleanála

PLANNING AND DEVELOPMENT ACTS 2000 TO 2006

Carlow County

Planning Register Reference Number: QY13

An Bord Pleanála Reference Number: 01.QC.2173

APPEAL by Stone Developments Limited care of John Barnett and Associates of CSA House, 7 Dundrum Business Park, Windy Arbour, Dublin against the decision made on the 24th day of April, 2007 by Carlow County Council to impose conditions on the operation of a registered quarry at Banagagole, Old Leighlin, County Carlow.

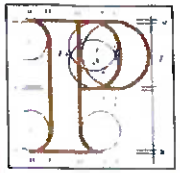
DECISION

The Board, in accordance with subsection (9)(b) of section 261 of the Planning and Development Act, 2000, confirms with modifications the decision of the planning authority and directs the said Council, based on the reasons and considerations set out below, to AMEND conditions numbers 3 and 6 and the reasons therefor and to ATTACH a further condition so that it shall be as follows for the reason set out:

3. The noise levels associated with day to day quarrying activity when measured from the nearest sensitive noise receptor, shall not exceed 55 dB (A) L_{aeq} over a measured time interval of one hour by day time (0800 hours to 2000 hours) and shall not exceed 45 dB (A) L_{aeq} over a measured time of 15 minutes by night-time (2000 hours to 0800 hours). 95 per cent of all noise levels shall comply with the specified limit values. No noise level shall exceed the limit value by more than two dBA. These levels may be exceeded to allow temporary but exceptionally noisy phases in the extraction process or for a short-term construction activity which is required to bring long term environmental benefits following written agreement by the planning authority.

- *Our Ref:* QC 01.QC2173
P.A.Reg.Ref: QY13
Your Ref: JBA 3368/L04/QY/13

An Bord Pleanála



John Barnett and Associates,
CSA House,
7 Dundrum Business Park,
Windy Arbour,
Dublin 14.

22 NOV 2007

21 NOV 2007

Appeal Re: Continued operation of quarry,
Banagagole, Old Leighlin, Co. Carlow.

Dear Sir/Madam,

An order has been made by An Bord Pleanála determining the above-mentioned appeal under the Planning and Development Acts 2000 to 2006. A copy of the order is enclosed.

In accordance with section 146(3) of the Planning and Development Act 2000, the Board will make available for inspection and purchase at its offices the documents relating to the appeal within 3 working days following its decision. In addition, the Board will also make available the Inspector's Report and the Board Direction on the appeal on its website (www.pleanala.ie). This information is normally made available on the list of decided cases on the website on the Wednesday following the week in which the decision is made.

Yours faithfully,

M. McGrath

Mary McGrath,
Administrative Assistant.

Encl:

BP 100n.ltr

64 Sráid Maoilbhríde
Baile Átha Cliath 1

Tel: (01) 858 8100
LoCall: 1890 275 175
Fax: (01) 872 2684
Web: http://www.pleanala.ie
email: bord@pleanala.ie

64 Marlborough Street
Dublin 1

30.	Within two months from the grant of this permission, the applicant shall lodge with the Planning Authority a cash deposit, a bond of an insurance company, or other security to secure the satisfactory completion and restoration of the site, coupled with an agreement empowering the Planning Authority to apply such security or part thereof to the satisfactory completion or restoration of the site. Within three months of this decision the amount and form of the security shall be as agreed between the Planning Authority and the developer. **Reason: To ensure the satisfactory completion and restoration of the site.**
31.	Prior to the commencement of development, revised restoration plan for the area and depth authorised by this permission shall submitted for the written agreement of the Planning Authority. **Reason: In the interests of visual amenity and the proper planning and sustainable development of the area.**
32.	The applicant shall submit annually for the lifetime of the permission, an aerial photograph which adequately enables the Planning Authority to assess the progress of the extraction and a map of the progression of the phased development of the quarry which shall be agreed in writing with the Planning Authority. **Reason: In order to facilitate monitoring and control of eth development by the Planning Authority.**

26.	(a) The surface water system shall be protected to ensure no liquid can discharge to the surface water system. The system shall have grit removal and an interceptor in place for the discharge to ensure no suspended solids, which may discharge accidentally to the surface system discharges from the site. Sampling manholes shall be placed on them surface water system at locations to be agreed with the Planning Authority. (b) An appropriate maintenance programme shall be put in place to de-sludge the attenuation pond / settlement lagoon, to ensure it operates on at its optimum capacity. **Reason: In the interests of environmental protection and protection of public health.**
27.	(a) The proposed screening berm shall be topped with soil from the site with planting of local species such as willow, hawthorn and blackthorn which will provide both a visual and barrier screen to the quarry void. The density of planting along the boundary and maintenance regime associated with same shall be agreed prior to the commencement of development. (b) Details of all boundary treatments shall be submitted for the written agreement of the Planning Authority. **Reason: In the interests of visual and residential amenity.**
28.	(a) All environmental mitigation measures identified within the Remedial Environmental Impact Statement and the Remedial Natura Impact Statement, as appropriate, shall be implemented in full for the entire facility, except where modified by conditions of this permission. (b) All waste water generated at the site from the washrooms and canteen facilities hall be directed to a Klargester BioDisc waste water treatment plant. The treated effluent shall be discharged off site to surface water. Details of quarterly compliance monitoring and maintenance inspections shall be submitted with the Annual Return. **Reason: In the interests of environmental protection and protection of public health.**
29.	A development contribution in the sum of €67,950.00 set out hereunder to be paid prior to commencement of the development. **An interest charge will apply from the date permission was granted to the actual payment date, at the rate of 5% per annum (0.0137% per day) rounded to the nearest Euro. The first 90 days interest or part thereof will be discounted.**

Description	Area	M2 per Unit	Rate of Charge per M2	Total
Extraction/Quarrying/Mining/Landfill	4.5ha	0.1 ha	€1510.00	€67,950.00
Sub - Total				€67,950.00
Total				€67,950.00

Reason: In order to contribute to the cost of Local Authority Services which facilitate the development.

19.	The developer shall prevent the spillage/spread of dust and aggregates onto public roads, from all vehicles associated with the development. The developer shall clean up any spillages on public roads from vehicles associated with the development as soon as such spillage arises or is notified. **Reason: To safeguard the amenities of the area.**
20.	All trucks hauling dusty materials onto and from the site shall be covered. **Reason: To safeguard the amenities of the area.**
21.	A 20 metre buffer zone shall be retained undisturbed between the proposed extraction area and boundary hedgerows around the perimeter of the site and the maintenance of a buffer zone outside of any proposed berms/bunds shall be fully landscaped to the satisfaction of the Planning Authority. **Reason: To ensure the protection of the landscape and for the protection of flora and fauna.**
22.	(a) The proposed development shall not give rise to noise levels off site, at noise sensitive locations*, which exceed the following sound pressure limits (Leq, 15 minute): Daytime (08.00 hours and 18.00 hours): 55 dB(A) Night-time (all other times): 45 dB(A) There shall be no clearly audible tonal or impulsive component in the noise emission from the development at any noise sensitive location. Low noise emitting plant shall be used at the development where possible and all plant and machinery shall be maintained so as to minimise noise emissions. *Note: *Noise sensitive location* (b) Noise monitoring shall be carried out three times per annum, during normal operating conditions, at revised noise monitoring locations N1, N2 and N3. Noise limits shall be in accordance with NG4 "Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities" (EPA). Should noise exceedances occur, additional noise barriers will be required to reduce levels at sensitive receptors. A Noise Management Plan shall be submitted, for approval, within 3 months of grant of permission. **Reason: To protect and safeguard the environment and the amenities of the area.**
23.	Notwithstanding the exempt advertising regulations any signage/advertising structure on any element of this proposed development site shall be the subject of a separate planning application. **Reason: In the interests of proper planning and sustainable development of the area.**
24.	All proposals / mitigation measures as outlined in the Environmental Reports shall be fully adhered to throughout the development. **Reason: In the interests of proper planning and sustainable development of the area.**
25.	No ancillary buildings, sheds, stores etc., shall be constructed within the site without the prior approval of the Planning Authority. **Reason: In the interests of orderly development.**

	neighbouring properties. Vehicles used for transport of materials from the site shall be equipped so as to prevent spillage of materials and dust blow. **Reason: To protect air quality.**
16.	On an annual basis, for the lifetime of the facility (before the 1st day of March every year), the developer shall submit to the Planning Authority five copies of an environmental audit. Independent environmental auditors agreed in writing with the Planning Authority shall carry out this audit. This audit shall be carried out at the expense of the developer and made available to the public for inspection at all reasonable hours at a location to be agreed with the Planning Authority. This report shall contain: (a) A written record, derived from the on-site weighbridge, of the quantity of material leaving the site. This quantity shall be specified in tonnes. (b) An annual topographical survey carried out by an independent qualified surveyor agreed with the Planning Authority. This survey shall show all areas excavated and restored. On the basis of this, a full materials balance shall be provided to the Planning Authority. (c) A record of all movements of heavy vehicles. (d) A record of groundwater levels measured at monthly intervals. (e) A full record of all monitoring results over the previous year for noise, dust and water quality monitoring. (f) A written record of all complaints, including actions taken on each complaint. (g) A review of the Environmental Management System performance and update of associated performance targets. Notwithstanding this requirement, all incidents where levels of noise or dust exceed agreed levels shall be notified to the Planning Authority within two working days. Incidents of surface or groundwater pollution or incidents that may result in groundwater pollution, shall be notified to the Planning Authority within seven working days. (h) The report shall also outline the intentions of the applicant with regard to the upgrading of treatment methods or operations should these results not fully comply with the terms of this permission. All monthly and annual reports shall be certified accurate and representative by the Plant Manager or other senior officer designated by him. Provision shall be made for the transfer of atmospheric monitoring data and related information to the Planning Authority's computer system, on request. (i) Section 4 compliance monitoring. (j) Monitoring records for blasting operations. **Reason: In the interest of environmental protection and of protecting residential amenities.**
17.	The developer shall put in place a programme to ensure that members of the public can obtain information concerning all emissions from this activity. The programme shall be agreed with the Planning Authority and be in place prior to commencement of operations covered by this planning permission. **Reason: In the interests of orderly development.**
18.	An Environmental Management / Monitoring System (EMS) shall be put in place and submitted for approval to the Planning Authority within 3 months of the grant of this permission. **Reason: To ensure protection of the environment.**

12.	The access road from the edge of the public road to a point at least 45m inside the entrance gates shall be surfaced in a durable dust-free material to the satisfaction of the Planning Authority. This access road shall be cleaned routinely and as necessary so that deleterious matter is not transported onto the public road on wheels of vehicles. **Reason: In the interests of traffic safety and to safeguard the amenities of the area.**
13.	No surface water shall be discharged or allowed to flow from the site or site access road onto the public road, during the construction or operational phases of the development. **Reason: In the interest of public health and to protect the quality of surface and groundwater.**
14.	(a) The proposed surface water management system, as outlined in the application, shall be implemented in full. (b) Only clean uncontaminated storm water shall be discharged to surface waters. (c) All surface water from vehicular waiting and parking areas shall pass throughout adequately sized and located petrol/oil bypass interceptors before any discharge to surface waters. The developer shall submit full details of the petrol/oil interceptors for agreement of the Municipal District Engineer, prior to the commencement of development. (d) All over ground tanks containing liquids other than water shall be contained in a waterproof bunded area, which shall be of sufficient volume to hold 110 per cent of the volume of the tanks within the bund. All water contaminated with hydrocarbons, including store water, shall be discharged via a grit trap and three-way oil interceptor. The sump shall be provided with an inspection chamber and shall be installed and operated in accordance with the requirements of the Planning Authority. (e) The developer shall take precautions to ensure that oils and fuels used in the operations are stored in a secure place. All waste oil shall be removed from the site and disposed of to the satisfaction of the Planning Authority. **Reason: In the interest of protecting ground and surface waters in the interest of proper planning and sustainable development.** *Note: Under the Local Government (Water Pollution) Act, 1977 (as amended), a licence is required for the discharge of trade effluent or other matter (other than domestic sewage or storm water) to any waters (Section 4).*
15.	(a) Dust monitoring shall be carried out twice per annum, during the months May-September at revised dust monitoring locations D1, D2 and D3, Dust limits shall be in accordance with the limits set out in "Environmental Management for the Extractive Industry" (EPA). A Dust Management Plan shall be submitted, for approval, within 3 months of grant of permission. (b) The total particulate emission arising from all the on-site operations associated with the proposed development shall not exceed 350 milligrams per square metre per day, averaged over a continuous period of 30 days, when measured as deposition of insoluble particulate matter at any position along the boundary of the site. Monitoring shall be carried out annually at a minimum of 3 locations on-site to be agreed with the Environment Section of the Local Authority. The results of this monitoring programme shall be submitted to the Environment Section and Planning Authority on annual basis. Soil stripping shall not take place in periods of extended windy or dry weather. Water shall be sprayed on the roads and exposed soil heaps in periods of windy and dry weather in order to reduce the potential impact of dust on

8.	(a) A ground water monitoring scheme shall be submitted to the Planning Authority for written agreement before development commences. This shall include monitoring of all wells and boreholes within 200 metres of the site boundary, subject to the agreement of the relevant land owner/occupier. Where it is established that a water supply source within this area has been compromised by the quarry development, the quarry operator shall take any necessary remedial measures to restore or replace the said water supply. The results of all monitoring shall be submitted to the Planning Authority at regular intervals as agreed with the Planning Authority. (b) Groundwater quality shall be tested at two locations, to be agreed with the Planning Authority, within the facility. Testing shall be done every 6 months for: • Conductivity • PH • Total Coliforms • Ammonia • Nitrate • Nitrite • Ortho Phosphate • TPH • PRO • DRO **Reason: To protect ground water resources in the area.**
9.	The developer shall ensure that the proposed development does not affect or cause deterioration in water quality, water levels or yields in the domestic wells in the vicinity. In the event of quarrying activities having an adverse impact on existing private wells in the vicinity the developer shall undertake appropriate remedial measures as agreed with the Planning Authority, at his own expense. In the event of any disruption of water supplies, the developer shall crease any operations causing such disruption until water supply has been restored or replaced. **Reason: In the interest of proper planning and development and the protection of the environment.**
10.	(a) A wheel wash facility shall be installed and maintained on the site in accordance to plans and particulars submitted 22/01/2018 (Drawing FI-6 dated January 2018). All heavy goods vehicles carrying material off the site shall pass through the wheel wash. (b) The public road shall be kept free of debris or materials resulting from vehicles associated with the operations on site. **Reason: To prevent deposition of material on the public road.**
11.	Prior to the commencement of development, warning signs shall be provided as appropriate on the approaches to the entrance to the proposed development, to the satisfaction of the Municipal District Engineer, and maintained at all times in satisfactory condition throughout the life of the proposed development. **Reason: In the interest of traffic safety.**

3.	Extraction rate shall not exceed 30,000 cubic metres per annum. **Reason: In the interest of clarity and orderly development.**
4.	This permission shall be for a period of twenty five years from the date of this order unless, prior to the end of the period, a further planning permission for the continuance of use has been obtained. After this period, all plant and machinery items shall be removed from the site and the land shall be restored in accordance with an agreed restoration plan. **Reason: In the interest of clarity and orderly development.**
5.	(a) On site operations in association with the proposed development, including transport of vehicles, shall be carried out only between 08:00 hours and 18:00 hours Monday to Friday, between 08:00 hours and 14:00 hours on Saturday and at no time on Sundays or bank holidays or other public holidays. (b) No direct sales to the public are permitted on site. **Reason: In the interest of residential amenity.**
6.	(a) Blasting operations shall take place only between the hours of 11:00 and 17:00 from Monday to Friday, and shall not take place on Saturdays, Sundays, Bank or Public Holidays. Monitoring of the noise and vibration arising from blasting and the frequency of such blasting shall be carried out at the developer's expense by an independent contractor who shall be agreed in writing with the Planning Authority. (b) Prior to the firing of any blast, the developer shall give notice of his intention to the occupiers of all dwellings within 500 metres of the site. An audible alarm for a minimum period of one minute shall be sounded. This alarm shall be of sufficient power to be heard at all such dwellings. (c) The number of blasting(s) per annum shall not exceed 2 / 3 and shall be agreed with the Planning Authority prior to the commencement of development. **Reason: In the interest of public safety and residential amenity.**
7.	(a) Vibration levels from blasting shall not exceed a peak particle velocity of 12 millimetres/second, when measured in any three mutually orthogonal directions at any sensitive location. The peak particle velocity relates to low frequency vibration of less than 40 hertz. Blasting shall not give rise to air overpressure values at sensitive locations which are in excess of 125 dB (Lin)max peak with a 95 per cent confidence limit. No individual air overpressure value shall exceed the limit value by more than 5 dB (Lin). (b) A monitoring programme, which shall include reviews to be undertaken at annual intervals, shall be developed to assess the impact of quarry blasts. Details of this programme shall be submitted to, and agreed in writing with, the Planning Authority prior to commencement of any blasting on the site. This programme shall be undertaken by a suitably qualified person acceptable to the Planning Authority. The results of the reviews shall be submitted to the Planning Authority within two weeks of completion. The developer shall carry out any amendments to the programme required by the Planning Authority following this annual review. This programme shall be made available for public inspection. **Reason: To protect the residential amenity of property in the vicinity.**

PL Ref: 17/64

Permission continuance of use of the existing permitted quarry site and existing ancillary facilities, regularised by the previous grant of substitute consent (PL01.SU0024); Lateral extension of the existing quarry void from the existing area of c.3.4 hectares(ha.)increasing to total extraction area of c.4.5 ha; Deepening of the existing quarry void from the existing floor level at c.42-45m AOD to a final floor depth of c.21m AOD; Buffer zone of c.20m between the eastern extraction boundary and the public road, with construction of an earthen screening berm (1.5m high) along the eastern extraction boundary; Relocation of the employee car parking spaces (39no.) ; demolition of the existing processing factory to allow for the lateral quarry extension ; Improvements to the existing dedicated HGV site entrance to meet the necessary site line requirements; Provision of a wheel wash facility ; Installation of surface water attenuation and settlement ponds for the treatment of suspended solids in the floor of the quarry; Existing rate of rock extraction to remain at c.30000 cubic metres per year.

For: Old Leighlin Quarry

First Schedule	
Having regard to the nature and scale of the development which comprises of an extension to an existing quarry and the pattern of development in the area it is considered that subject to compliance with the conditions, the proposed development would not seriously injure the amenities of the area, would be acceptable in terms of public health and traffic safety and would therefore, be in accordance with the proper planning and sustainable development of the area.	
Second Schedule	
1.	The development shall be carried out in accordance with the plans and particulars received by the Planning Authority on the 06/03/2017, as amended by the revised particulars received by the Planning Authority on the 22/01/2018 and 30/01/2018, except as may otherwise be required in order to comply with the following conditions. **Reason: In the interest of clarity and the proper planning and sustainable development of the area.**
2.	The depth of the proposed quarry shall not exceed 35m OD unless a subsequent permission is obtained for further extraction. A permanent benchmark shall be set up on the site against which all excavation depths shall be checked. Details in this regard shall be submitted and agreed with the Planning Authority before development commences. **Reason: In the interest of orderly development, to protect the groundwater resources of the area from pollution and to enable the Planning Authority assess any further environmental impacts which may arise due to further extraction from that permitted under this permission.**

CARLOW COUNTY COUNCIL

PLANNING AND DEVELOPMENT ACTS 2000-2017

NOTIFICATION OF FINAL GRANT

TO: Old Leighlin Quarry Limited
c/o Shane McDermott
SLR Consulting Ireland
7 Dundrum Business Park
Windy Arbour
Dublin 14

Planning Register Number: 17/64

Valid Application Receipt Date: 06/03/2017

Further Information Received Date: 30/01/2018

In **pursuance of the powers conferred upon them by the above-mentioned Acts, Carlow County Council have by Order dated 30/03/2018 GRANTED PERMISSION to the abovenamed, for the development of land, namely:-**

Continuance of use of the existing permitted quarry site and existing ancillary facilities, regularised by the previous grant of substitute consent (PL01.SU0024); Lateral extension of the existing quarry void from the existing area of c.3.4 hectares(ha.)increasing to total extraction area of c.4.5 ha; Deepening of the existing quarry void from the existing floor level at c.42-45m AOD to a final floor depth of c.21m AOD; Buffer zone of c.20m between the eastern extraction boundary and the public road, with construction of an earthen screening berm (1.5m high) along the eastern extraction boundary; Relocation of the the employee car parking spaces (39no.) ; demolation of the existing processing factory to allow for the lateral quarry extension ; Improvements to the existing dedicated HGV site entrance to meet the necessary site line requirements Provision of a wheelwash facility ; Installation of surface water attenuation and settlement ponds for the treatment of suspended solids in the floor of the quarry; Existing rate of rock extraction to remain at c.30000 cubic metres per year AT Bannagagole Old Leighlin County Carlow IN ACCORDANCE WITH THE PLANS SUBMITTED WITH THE APPLICATION.

Subject to the 32 conditions set out in the Schedule attached.

Signed on behalf of CARLOW COUNTY COUNCIL.

for SENIOR EXECUTIVE OFFICER

Date: 30th March 2018

APPENDIX A
Planning Conditions

Schedule QY 13

REGISTRATION OF QUARRY at Banagegole, Old Leighlin, Co. Carlow.

For: Stone Developments Ltd.

Conditions & Reasons for Conditions

1a) The development shall be in accordance with drawings and details submitted to the Planning Authority on 26th April, 2005, as amended by the plans and details submitted to the Planning Authority on the 3rd November, 2005, save as amended by the conditions attached hereto.

Reason : In the interests of orderly planning and development.

2. The proposed development shall be operated so that the processes carried on, or the plant or machinery installed are such as could be carried on, or installed close to a residential area, without any detriment to the amenity of that area by reason of noise, vibration, smell, fumes, smoke, soot, ash, dust, or grit.

Reason: In the interests of the proper planning and development of the area.

3. Noise levels from the site, during either construction or operation of the pit, shall not exceed the following limits:
55 dB $L_{Aeq,\ 1\ hour}$ between 8:00a.m. and 6:00p.m. Monday to Friday
55 dB $L_{Aeq,\ 1\ hour}$ between 9:00a.m. and 1:00p.m. on Saturdays
35 dB $L_{Aeq,\ 1\ hour}$ at all other times,
as measure at any point along the boundary of the subject site.

Reason: In the interests of proper development and to prevent noise nuisance.

4. The entrance shall be such that no surface water runoff shall be allowed to discharge onto the adjoining public roadways. The necessary gullies and soakaways shall be provided inside the gateway.

Reason : In the interests of traffic safety and the preservation of the visual amenity of the area.

5. Any necessary licensing as required under environmental legislation shall be obtained prior to the plant being fully commissioned.

Reason : In the interests of pollution prevention

FIGURE 4

Conclusions

Noise monitoring results indicate that quarrying and ancillary operations are in compliance with Condition no. 22 of P. Reg. Ref. No. 17/64 which state that:

(a) The proposed development shall not give rise to noise levels off site, at noise sensitive locations, which exceed the following sound pressure limits (Leq, 15 minute):*

- *Daytime (08:00 hours and 18:00 hours): 55 dB(A)*
- *Night-time (all other times): 45 dB(A)*

There shall be no clearly audible tonal or impulsive component in the noise emission from the development at any noise sensitive location. Low noise emitting plant shall be used at the development where possible and all plant and machinery shall be maintained so as to minimise noise emissions.
*Note: *Noise sensitive location*

(b) Noise monitoring shall be carried out three times per annum, during normal operating conditions, at revised noise monitoring locations N1, N2 and N3. Noise limits shall be in accordance with NG4 "Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities" (EPA). Should noise exceedances occur, additional noise barriers will be required to reduce levels at sensitive receptors. A Noise Management Plan shall be submitted, for approval, within 3 months of grant of permission.

If you have any queries in relation to the above, please contact myself or Aldona Binchy.

Yours sincerely
SLR Consulting Ireland

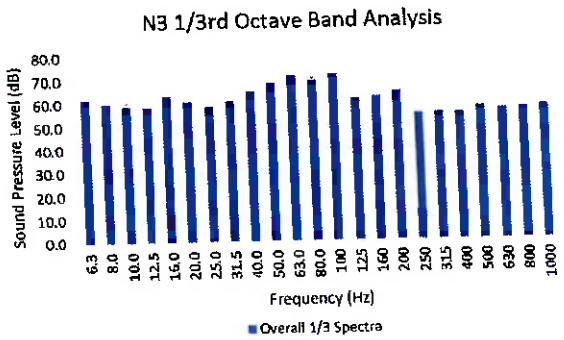
Hannah McGurran

Hannah McGurran
Project Environmental Scientist

Table 2 Noise Levels at Noise Sensitive Locations

Noise Monitoring Location at boundary Noise Sensitive Location	Time of Day	Measured Noise Levels dB(A)	Distance to Residence (m)	Distance Attenuation Adjustment dB(A)	Screening Adjustment dB(A)	Noise Levels at Noise Sensitive Location dB(A)
N1 (28/05/2021)	09:12- 10:12	53.9	161	24	-10	19.9
	09:12 – 09:27	54.2	161	24	-10	20.2
	09:27 – 09:42	53.6	161	24	-10	19.6
	09:42 – 09:57	53.8	161	24	-10	19.8
	09:57 -10: 12	53.9	161	24	-10	19.9
N2 (28/05/2021)	10:37- 11:37	51.4	53	14	-10	27.4
	10:37- 10:52	50.1	53	14	-10	26.1
	10:52 –11:07	51.8	53	14	-10	27.8
	11:07-11:22	52.8	53	14	-10	28.8
	11:22- 11:37	49.5	53	14	-10	25.5
N3 (28/05/2021)	11:49- 12:49	66	248	27	-10	29
	11:49-12:04	65.3	248	27	-10	28.3
	12:04- 12:19	66.4	248	27	-10	29.4
	12:19-12:34	67.5	248	27	-10	30.5
	12:34 -12:49	64.0	248	27	-10	27

Figure 3
N3 1/3rd Octave band Analysis 28th May 2021



Calculated Noise Levels at Noise Sensitive Locations

Noise measurements were carried out at the boundary of the site and a calculation of noise levels from site activities at noise sensitive properties were carried out. The site activity noise levels measured at the Old Leighlin site boundary were used to assess the noise levels due to the site activity at residences and to assess emissions in compliance with noise limits at residences.

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:

i. Attenuation with distance between the source and receptor (K= - 20 log R/10 dB(A), for hard ground R=distance from source in metres).

ii. -10 dB adjustment has been made for screening (full) between the site and residences.

iii.

Calculations of noise levels arising from Old Leiglin site activities at the three nearest noise sensitive locations N1 (distance 161m), N2(distance 53m) and N3(distance 248m) around the site are provided in Table 2.

It can be seen from Table 2 that allowing for location of monitoring points (i.e., the distance between the monitoring point and the nearest dwelling) and screening between the noise sensitive receptors, noise monitoring results indicate that quarrying and ancillary operations comply with condition no. 3 imposed under Section 261 of the Planning and Development Act, 2000 (Quarry Ref. QY 13), as amended by ABP Ref. No. 01.QC.2173 and condition no. 22 under Planning Permission 17/64.

Figure 1
N1 1/3rd Octave band Analysis 28th May 2021

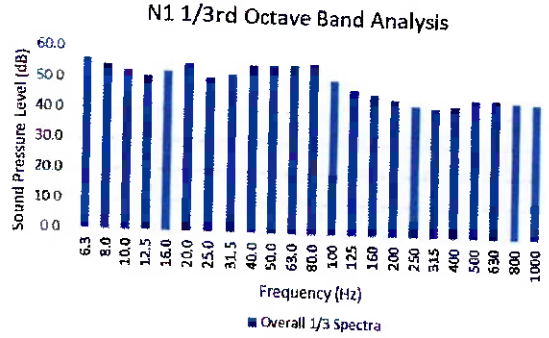
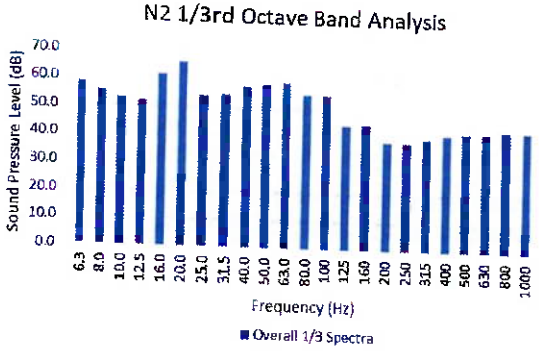


Figure 2
N2 1/3rd Octave band Analysis 28th May 2021



Discussion of Noise Monitoring Results

Location N1

Noise monitoring results obtained at N1 were 53.9 dB $L_{Aeq, 1hr}$. The noise levels obtained at this location were influenced by external traffic passing on the public road, quarry and plant activities such as cutting, screening and reversing, and natural noises (birds / wind through trees).

Noise occurring for the majority of the measurement time (i.e. background noise level which is exceeded for 90% of the time) as indicated by the L_{90} values was 48.1 dB $L_{A90, 1hr}$ at N1.

Location N2

Noise monitoring results obtained at N2 were 51.4 dB $L_{Aeq, 1hr}$. The noise levels obtained at this location were influenced by quarry, plant and factory activities. This includes machinery moving blocks and hitting rock continuously for a brief time. External car noises were audible at this location aswel as natural noises such as birds and wind through trees.

Noise occurring for the majority of the measurement time (i.e. background noise level which is exceeded for 90% of the time) as indicated by the L_{90} values was 47.4 dB $L_{A90, 1hr}$ at N2.

Location N3

Noise monitoring results obtained at N3 were 66 dB $L_{Aeq, 1hr}$. The noise levels obtained at this location were influenced by quarry and factory activities including a plant hitting rock intermittently, forklift activities, reversing alarms and a dumper making constant journeys past the monitoring location.

Noise occurring for the majority of the measurement time (i.e. background noise level which is exceeded for 90% of the time) as indicated by the L_{90} values was 55 dB $L_{A90, 1hr}$ at N3.

Tonal Analysis

The updated Environmental Noise Standard ISO as set out in Annex D, 1996-2:2007(E) details that a prominent, discrete tonal component may be detected in one-third octave spectra if the level of a one-third octave band exceeds the level of the adjacent bands by some constant level difference.

The appropriate level differences vary with frequency. They should be greater than or equal to the following values in both adjacent one-third-octave bands:

- 15dB in low-frequency one-third-octave bands (25Hz to 125Hz);
- 8dB in middle-frequency bands (160Hz to 400Hz), and;
- 5dB in high-frequency bands (500Hz to 10,000Hz).

During monitoring on the 28th May 2021, the observer did not detect any tonal or impulsive components and in such circumstances, we consider that any adjustment of the measured noise levels is unwarranted. (See Figure 1 to Figure 3 below).

A small difference in $L_{A90,T}$, $L_{A10,T}$, and $L_{Aeq,T}$ will indicate a fairly constant noise emission (or a lack of intermittent noise). The greater the difference between the $L_{A10,T}$, $L_{Aeq,T}$ and $L_{A90,T}$ indicates intermittent noise sources such as traffic.

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 20µPa.

The microphone was placed 1.5m above the ground in free-field conditions, *i.e.* at least 3.5m from the nearest vertical, reflecting surface.

The results obtained were as follows: -

Table 1
Noise Monitoring Results

Location	Date	Time	Measured Noise Levels – dB(A)		
			$L_{Aeq,\ 1hr}$	$L_{A10,\ 1hr}$	$L_{A90,\ 1hr}$
N1 (831)	28/05/2021	09:12- 10:12	53.9	55.2	48.1
		09:12 – 09:27	54.2	55.5	50.3
		09:27 – 09:42	53.6	55.3	49.5
		09:42 – 09:57	53.8	55.2	48.8
		09:57 - 10: 12	53.9	54.5	46.3
N2 (831)	28/05/2021	10:37- 11:37	51.4	53.6	47.4
		10:37- 10:52	50.1	52.2	47.2
		10:52 –11:07	51.8	54.1	48.3
		11:07-11:22	52.8	55.6	48.8
		11:22- 11:37	49.5	51.4	47.5
N3 (831)	28/05/2021	11:49- 12:49	66	69.2	55
		11:49-12:04	65.3	68.2	56.2
		12:04- 12:19	66.4	69.1	55.5
		12:19-12:34	67.5	71.1	55.6
		12:34 -12:49	64.0	68.3	53.8

Weather Conditions:

- 28/05/2021: N1-N3: Overcast. Temperature: 12 °C Wind speed: 0.3 m/sec. Wind direction: N.

3rd June 2021

Carlow County Council,
County Buildings,
Athy Road,
Carlow.

Our Ref: 210603 501.00034.00021 R EMR1 Rev0
Your Ref: P. Reg. Ref. No. 17/64

Dear Sir / Madam,

RE: OLD LEIGHLIN QUARRY LTD. - ENVIRONMENTAL MONITORING AT OLD LEIGHLIN QUARRY, BANNAGAGOLE, CO. CARLOW.

We refer to the above-mentioned planning permission and requirements for environmental monitoring and would like to submit the following:

NOISE MONITORING (CONDITION NO. 22)

Continuous noise monitoring was carried out at three locations, N1, N2, N3 on the 28th May 2021 using a Larson Davis Model 831 Sound Level Meter which was calibrated using a Larson Davis Acoustic Calibrator CAL 200. The locations of the 3 noise monitoring stations are shown on Figure 4.

Noise Monitoring was carried out in accordance with International Standard ISO 1996: *Acoustics Description and Measurement of Environmental Noise*.

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

- $L_{Aeq,T}$ – the A-weighted equivalent continuous sound pressure level over the measurement period T, effectively represents an "average" energy level of all the sampled levels.

  The ambient sound level is usually measured as an $L_{Aeq,T}$ and is made up of all the sound in the area from sources near and far.

- $L_{A90,T}$ – the A-weighted noise level exceeded for 90% of the measurement period, T. This parameter is often used to describe the" background" noise level, it gives a clear indication of the underlying noise level, or the level that is almost always there in between intermittent noisy events.

- $L_{A10,T}$ – the A-weighted noise level exceeded for 10% of the measurement period, T. This parameter is often used to describe or identify road traffic noise.

APPENDIX B
Environmental Monitoring Reports

13. No trade effluent from the unit shall discharge to surface or ground waters, other than in accordance with the terms of a current license granted in accordance with the relevant legislation.

Reason: In the interest of public health and to prevent water pollution.

14. This grant does not grant permission to fell or uproot any trees located on the site. With certain exceptions it is an offence, under the Forestry Act, 1946, to fell trees without a felling licence having been granted by the Forest Service. Developers are advised to contact the Felling Section, Forest Service, Department of Agriculture and Food, Johnstown Castle, Co. Wexford, before undertaking any tree felling.

Reason: In the interest of proper planning and development.

15. Within six months of the date of this order, a landscaping/restoration plan for the quarry shall be submitted and agreed in writing with the Planning Authority, showing the locations of where landscaping and restoration will take place and species proposed for planting, upon its cessation or at points of extraction which are exhausted.

Reason: In the interests of visual amenity and in the interests of the proper planning and sustainable development of the area.

16. Within three months of the date of this order, full details and locations of wheelwash facilities and sprinkling systems on site to reduce dust levels shall be submitted to the Planning Authority for formal written agreement.

Reason: In the interests of the amenities of the area and in the interests of the proper planning and sustainable development of the area.

17. Within three months of the date of this order, full details of security fencing along all boundaries of the site shall be submitted to the Planning Authority for formal written agreement.

Reason: In the interests of the proper planning and sustainable development of the area.

18. Any ESB/telecom poles or cabling, which may be affected by the proposed development shall be relocated by the ESB, at the expense of the applicant's.

Reason: In the interests of public health and safety.

AN BORD PLEANÁLA

05 MAR 2024

LTR DATED _____ FROM Appellant

LDG- _____

ABP- 319198-24

6. This development, shall operate strictly between the hours of 8a.m. and 6p.m. Monday to Friday inclusive and Saturdays 8a.m. and 1p.m.. This permission specifically excludes Sunday and Public Holiday working.

Reason : In the interests of residential amenity.

7. No washwater or any other contaminated discharges shall be permitted from the site.

Reason : In the interests of the orderly development of the area.

8. No ancillary buildings, sheds, stores etc.,other than those shown on the plans submitted shall be constructed within the pit without the prior approval of the Planning Authority.

Reason : In the interests of orderly development.

9. The public road off which this development can be accessed will be kept in a clean and safe manner at all times during the operation of this pit.

Reason : In the interests of traffic safety.

10. All unsoiled surface water run-off from roofs, entrances and parking areas shall be collected and disposed of within the site to soakpits, drains or adjacent watercourses. In particular, no such surface water run-off shall be allowed to flow onto the public roadway.

Reason: To prevent flooding of the public road, in the interests of traffic safety and in the interests of public health.

11. Existing road drainage shall not be impaired and the entrance, parking areas and yard shall be designed and shaped or otherwise treated to ensure the uninterrupted flow of road surface water run-off.

Reason: To prevent flooding of the public road in the interests of traffic safety.

12. The surface water system shall be protected to ensure no liquid can discharge to the surface water system. The system shall have grit removal and an interceptor in place for the discharge to ensure no suspended solids, which may discharge accidentally to the surface system discharges from the site. Sampling manholes shall be placed on the surface water system at locations to be agreed with the planning authority.

Reason: In the interests of public health.

FIGURE 4

Conclusions

Noise monitoring results indicate that quarrying and ancillary operations are in compliance with Condition no. 22 of P. Reg. Ref. No. 17/64 which state that:

(a) The proposed development shall not give rise to noise levels off site, at noise sensitive locations, which exceed the following sound pressure limits (Leq, 15 minute):*

- *Daytime (08:00 hours and 18:00 hours): 55 dB(A)*
- *Night-time (all other times): 45 dB(A)*

There shall be no clearly audible tonal or impulsive component in the noise emission from the development at any noise sensitive location. Low noise emitting plant shall be used at the development where possible and all plant and machinery shall be maintained so as to minimise noise emissions.
*Note: *Noise sensitive location*

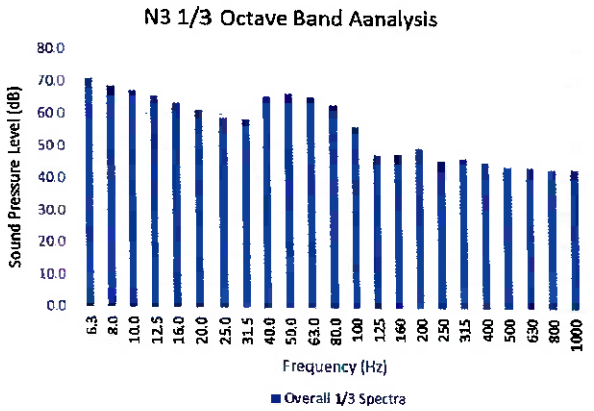
(b) Noise monitoring shall be carried out three times per annum, during normal operating conditions, at revised noise monitoring locations N1, N2 and N3. Noise limits shall be in accordance with NG4 "Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities" (EPA). Should noise exceedances occur, additional noise barriers will be required to reduce levels at sensitive receptors. A Noise Management Plan shall be submitted, for approval, within 3 months of grant of permission...

If you have any queries in relation to the above, please contact myself or Aldona Binchy.

Yours sincerely
SLR Consulting Ireland

Hannah McGurran
Project Environmental Scientist

Figure 3
N3 1/3rd Octave band Analysis 12th August 2021



Calculated Noise Levels at Noise Sensitive Locations

Noise measurements were carried out at the boundary of the site and a calculation of noise levels from site activities at noise sensitive properties were carried out. The site activity noise levels measured at the Old Leighlin site boundary were used to assess the noise levels due to the site activity at residences and to assess emissions in compliance with noise limits at residences.

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:

i. Attenuation with distance between the source and receptor (K= - 20 log R/10 dB(A), for hard ground R=distance from source in metres).

ii. -10 dB adjustment has been made for screening (full) between the site and residences.

Calculations of noise levels arising from Old Leiglin site activities at the three nearest noise sensitive locations N1 (distance 161m), N2(distance 53m) and N3(distance 248m) around the site are provided in Table 2.

It can be seen from Table 2 that allowing for location of monitoring points (i.e., the distance between the monitoring point and the nearest dwelling) and screening between the noise sensitive receptors, noise monitoring results indicate that quarrying and ancillary operations comply with condition no. 3 imposed under Section 261 of the Planning and Development Act, 2000 (Quarry Ref. QY 13), as amended by ABP Ref. No. 01.QC.2173 and condition no. 22 under Planning Permission 17/64.

Table 2 Noise Levels at Noise Sensitive Locations

Noise Monitoring Location at boundary Noise Sensitive Location	Time of Day	Measured Noise Levels dB(A)	Distance to Residence (m)	Distance Attenuation Adjustment dB(A)	Screening Adjustment dB(A)	Noise Levels at Noise Sensitive Location dB(A)
N1 (12/08/2021)	11:50-12:50	57.8	161	24	-10	23.8
	11:50-12:05	63.2	161	24	-10	29.2
	12:05-12:20	50.7	161	24	-10	16.7
	12:20-12:35	49.9	161	24	-10	15.9
	12:35-12:50	51.1	161	24	-10	17.1
N2 (12/08/2021)	09:37-10:37	53.3	53	14	-10	29.3
	09:37-09:52	54.2	53	14	-10	30.2
	09:52-10:07	52.4	53	14	-10	28.4
	10:07-10:22	53.4	53	14	-10	29.4
	10:22-10:37	53.2	53	14	-10	29.2
N3 (12/08/2021)	10:42-11:42	53.3	248	27	-10	16.3
	10:42-10:57	53.8	248	27	-10	16.8
	10:57-11:12	52.9	248	27	-10	15.9
	11:12-11:27	53.4	248	27	-10	16.4
	11:27-11:42	53.2	248	27	-10	16.2

Figure 1
N1 1/3rd Octave band Analysis 12th August 2021

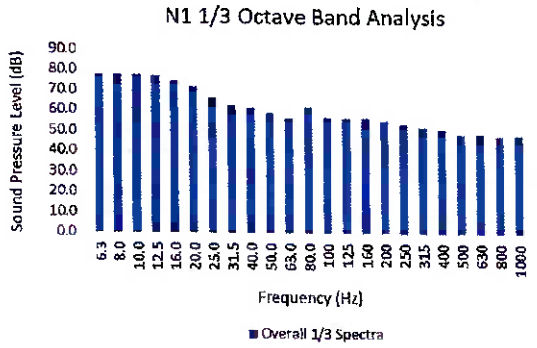
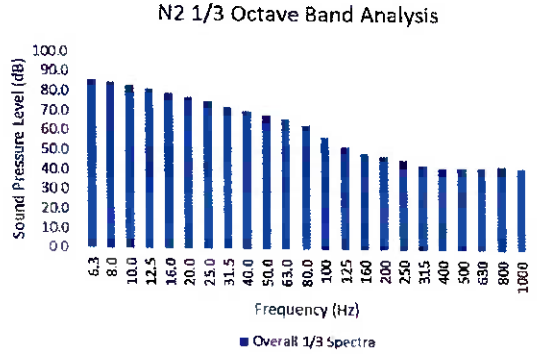


Figure 2
N2 1/3rd Octave band Analysis 12th August 2021



Discussion of Noise Monitoring Results

Location N1

Noise monitoring results obtained at N1 were 57.8 dB $L_{Aeq, 1hr}$. The noise levels obtained at this location were influenced by external traffic passing on the public road, quarry and plant activities such as cutting, screening and reversing, loading and unloading and natural noises such as birds and the wind through trees

Noise occurring for the majority of the measurement time (i.e. background noise level which is exceeded for 90% of the time) as indicated by the L_{90} values was 45.6 dB $L_{A90, 1hr}$ at N1.

Location N2

Noise monitoring results obtained at N2 were 53.3 dB $L_{Aeq, 1hr}$. The noise levels obtained at this location were influenced by quarry, plant and factory activities. This includes machinery and vehicles moving around the quarry and entering and exiting the site. External car noises were audible at this location as well as natural noises such as birds and wind through trees.

Noise occurring for the majority of the measurement time (i.e. background noise level which is exceeded for 90% of the time) as indicated by the L_{90} values was 47.1 dB $L_{A90, 1hr}$ at N2.

Location N3

Noise monitoring results obtained at N3 were 53.3 dB $L_{Aeq, 1hr}$. The noise levels obtained at this location were influenced by quarry and factory activities including a dumper passing intermediately, forklift activities, reversing alarms and natural noises such as wind through trees.

Noise occurring for the majority of the measurement time (i.e. background noise level which is exceeded for 90% of the time) as indicated by the L_{90} values was 46.5 dB $L_{A90, 1hr}$ at N3.

Tonal Analysis

The updated Environmental Noise Standard ISO as set out in Annex D, 1996-2:2007(E) details that a prominent, discrete tonal component may be detected in one-third octave spectra if the level of a one-third octave band exceeds the level of the adjacent bands by some constant level difference.

The appropriate level differences vary with frequency. They should be greater than or equal to the following values in both adjacent one-third-octave bands:

- 15dB in low-frequency one-third-octave bands (25Hz to 125Hz);
- 8dB in middle-frequency bands (160Hz to 400Hz), and;
- 5dB in high-frequency bands (500Hz to 10,000Hz).

During monitoring on the 12th August 2021, the observer did not detect any tonal or impulsive components and in such circumstances, we consider that any adjustment of the measured noise levels is unwarranted. (See Figure 1 to Figure 3 below).

A small difference in $L_{A90,T}$, $L_{A10,T}$, and $L_{Aeq,T}$ will indicate a fairly constant noise emission (or a lack of intermittent noise). The greater the difference between the $L_{A10,T}$, $L_{Aeq,T}$ and $L_{A90,T}$ indicates intermittent noise sources such as traffic.

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 20µPa.

The microphone was placed 1.5m above the ground in free-field conditions, *i.e.* at least 3.5m from the nearest vertical, reflecting surface.

The results obtained were as follows: -

Table 1
Noise Monitoring Results

Location	Date	Time	Measured Noise Levels – dB(A)		
			$L_{Aeq,\ 1hr}$	$L_{A10,\ 1hr}$	$L_{A90,\ 1hr}$
N1 (831)	12/08/2021	11:50-12:50	57.8	54.2	45.6
		11:50-12:05	63.2	56.1	46.3
		12:05-12:20	50.7	53.6	45.0
		12:20-12:35	49.9	52.5	45.2
		12:35-12:50	51.1	53.7	46.3
N2 (831)	12/08/2021	09:37-10:37	53.3	55.7	47.1
		09:37-09:52	54.2	56.1	48.4
		09:52-10:07	52.4	55.8	46.6
		10:07-10:22	53.4	55.8	48.1
		10:22-10:37	53.2	54.5	46.1
N3 (831)	12/08/2021	10:42-11:42	53.3	55.3	46.5
		10:42-10:57	53.8	57.0	46.2
		10:57-11:12	52.9	55.2	46.4
		11:12-11:27	53.4	54.4	46.2
		11:27-11:42	53.2	54.9	47.4

Weather Conditions:

- 12/08/2021: N1-N3: Sunny, 40% cloud cover. Temperature: 16 °C Wind speed: 2.5 m/sec. Wind direction: N.

20th August 2021

Carlow County Council,
County Buildings,
Athy Road,
Carlow.

Our Ref: 210820 501.00034.00021 R EMR1 Rev0
Your Ref: P. Reg. Ref. No. 17/64

Dear Sir / Madam,

RE: OLD LEIGHLIN QUARRY LTD. - ENVIRONMENTAL MONITORING AT OLD LEIGHLIN QUARRY, BANNAGAGOLE, CO. CARLOW.

We refer to the above-mentioned planning permission and requirements for environmental monitoring and would like to submit the following:

NOISE MONITORING (CONDITION NO. 22)

Continuous noise monitoring was carried out at three locations, N1, N2, N3 on the 12th August 2021 using a Larson Davis Model 831 Sound Level Meter which was calibrated using a Larson Davis Acoustic Calibrator CAL 200. The locations of the 3 noise monitoring stations are shown on Figure 4.

Noise Monitoring was carried out in accordance with International Standard ISO 1996: *Acoustics Description and Measurement of Environmental Noise*.

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

- $L_{Aeq,T}$ – the A-weighted equivalent continuous sound pressure level over the measurement period T, effectively represents an "average" energy level of all the sampled levels.

  The ambient sound level is usually measured as an $L_{Aeq,T}$ and is made up of all the sound in the area from sources near and far.

- $L_{A90,T}$ – the A-weighted noise level exceeded for 90% of the measurement period, T. This parameter is often used to describe the" background" noise level, it gives a clear indication of the underlying noise level, or the level that is almost always there in between intermittent noisy events.

- $L_{A10,T}$ – the A-weighted noise level exceeded for 10% of the measurement period, T. This parameter is often used to describe or identify road traffic noise.

LANDHOLDING (c.12.4 Ha.)

NOISE & DUST MONITORING LOCATIONS

RECEPTOR LOCATIONS (RESIDENCES)

0 80m 200

Metres
1:2500

SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964576
www.slrconsulting.com

KILKENNY LIMESTONE QUARRIES LTD.

QUARRY AT BANNAGAGOLE,
OLD LEIGHLIN, CO. CARLOW
Condition 18: EMS

ENVIRONMENTAL MONITORING LOCATIONS

FIGURE 1

Scale: 1:2,500 @ A3

Date: MAY 2021

Env Mon Loc Rev0.dwg

0034.00021.1

LANDHOLDING (c.12.4 Ha.)

NOISE & DUST MONITORING LOCATIONS

RECEPTOR LOCATIONS (RESIDENCES)

SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

KILKENNY LIMESTONE QUARRIES LTD.

QUARRY AT BANNAGAGOLE, OLD LEIGHLIN, CO. CARLOW

Condition 18: EMS

ENVIRONMENTAL MONITORING LOCATIONS

FIGURE 1

Scale: 1:2,500 @ A3

Date: MAY 2021

1-Env Man Loc Rev0.dwg

0034.00021

7th October 2021

Carlow County Council,
County Buildings,
Athy Road,
Carlow.

Our Ref: 211007 501.00034.00021 R EMR3 Rev0
Your Ref: P. Reg. Ref. No. 17/64

Dear Sir / Madam,

RE: ***OLD LEIGHLIN QUARRY LTD. - ENVIRONMENTAL MONITORING AT OLD LEIGHLIN QUARRY, BANNAGAGOLE, CO. CARLOW.***

We refer to the above-mentioned planning permission and requirements for environmental monitoring and would like to submit the following:

NOISE MONITORING (CONDITION NO. 22)

Continuous noise monitoring was carried out at three locations, N1, N2, N3 on the 23rd of September 2021 using a Larson Davis Model 831 Sound Level Meter which was calibrated using a Larson Davis Acoustic Calibrator CAL 200. The locations of the 3 noise monitoring stations are shown on Figure 4.

Noise Monitoring was carried out in accordance with International Standard ISO 1996: *Acoustics Description and Measurement of Environmental Noise*.

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

- $L_{Aeq,T}$ – the A-weighted equivalent continuous sound pressure level over the measurement period T, effectively represents an "average" energy level of all the sampled levels.

  The ambient sound level is usually measured as an $L_{Aeq,T}$ and is made up of all the sound in the area from sources near and far.

- $L_{A90,T}$ – the A-weighted noise level exceeded for 90% of the measurement period, T. This parameter is often used to describe the" background" noise level, it gives a clear indication of the underlying noise level, or the level that is almost always there in between intermittent noisy events.

- $L_{A10,T}$ – the A-weighted noise level exceeded for 10% of the measurement period, T. This parameter is often used to describe or identify road traffic noise.

A small difference in $L_{A90,T}$, $L_{A10,T}$, and $L_{Aeq,T}$ will indicate a fairly constant noise emission (or a lack of intermittent noise). The greater the difference between the $L_{A10,T}$, $L_{Aeq,T}$ and $L_{A90,T}$ indicates intermittent noise sources such as traffic.

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 20µPa.

The microphone was placed 1.5m above the ground in free-field conditions, *i.e.* at least 3.5m from the nearest vertical, reflecting surface.

The results obtained were as follows: -

Table 1
Noise Monitoring Results

Location	Date	Time	Measured Noise Levels – dB(A)		
			$L_{Aeq,\ 1hr}$	$L_{A10,\ 1hr}$	$L_{A90,\ 1hr}$
N1 (831)	23/09/2021	09:37-10:37	48.5	53.1	36.0
		09:37-09:52	48.1	50.2	36.2
		09:52-10:07	44.1	45.4	35.1
		10:07-10:22	49.8	54.2	41.7
		10:22-10:37	50.0	53.8	42.4
N2 (831)	23/09/2021	10:43-11:43	50.5	54.0	42.8
		10:43-10:58	51.6	55.3	44.1
		10:58- 11:13	49.9	52.6	45.1
		11:13 -11:28	49.8	53.4	40.9
		11:28- 11:43	50.3	53.9	43.1
N3 (831)	23/09/2021	11:46-12:46	56.6	59.3	44.4
		11:46-12:01	57.4	61.6	47.0
		12:01 -12:16	57.5	60.3	47.6
		12:16-12:31	56.2	58.3	42.8
		12:31-12:46	54.6	56.1	44.1

Weather Conditions:

- 23/09/2021: N1-N3: Overcast, dry. Temperature: 14 °C Wind speed: 0.7 m/sec. Wind direction: N.

Discussion of Noise Monitoring Results

Location N1

Noise monitoring results obtained at N1 were 48.5 dB $L_{Aeq, 1hr}$. The noise levels obtained at this location were influenced by external traffic passing on the public road, quarry activities such as cutting, screening and reversing, and natural noises such as birds and the wind through trees.

Noise occurring for the majority of the measurement time (i.e. background noise level which is exceeded for 90% of the time) as indicated by the L_{90} values was 36.0 dB $L_{A90, 1hr}$ at N1.

Location N2

Noise monitoring results obtained at N2 were 50.5 dB $L_{Aeq, 1hr}$. The noise levels obtained at this location were influenced by quarry, plant and factory activities. This includes machinery moving around the quarry and entering and exiting the site. External car noises were audible at this location as well as natural noises such as birds.

Noise occurring for the majority of the measurement time (i.e. background noise level which is exceeded for 90% of the time) as indicated by the L_{90} values was 42.8 dB $L_{A90, 1hr}$ at N2.

Location N3

Noise monitoring results obtained at N3 were 56.6 dB $L_{Aeq, 1hr}$. The noise levels obtained at this location were influenced by quarry and factory activities including a dumper passing intermediately, a near by forklift loading unloading large amounts of rock, reversing alarms and natural noises such as wind through trees.

Noise occurring for the majority of the measurement time (i.e. background noise level which is exceeded for 90% of the time) as indicated by the L_{90} values was 44.4 dB $L_{A90, 1hr}$ at N3.

Tonal Analysis

The updated Environmental Noise Standard ISO as set out in Annex D, 1996-2:2007(E) details that a prominent, discrete tonal component may be detected in one-third octave spectra if the level of a one-third octave band exceeds the level of the adjacent bands by some constant level difference.

The appropriate level differences vary with frequency. They should be greater than or equal to the following values in both adjacent one-third-octave bands:

- 15dB in low-frequency one-third-octave bands (25Hz to 125Hz);
- 8dB in middle-frequency bands (160Hz to 400Hz), and;
- 5dB in high-frequency bands (500Hz to 10,000Hz).

During monitoring on the 23rd of September 2021, the observer did not detect any tonal or impulsive components and in such circumstances, we consider that any adjustment of the measured noise levels is unwarranted. (See Figure 1 to Figure 3 below).

Figure 1
N1 1/3rd Octave band Analysis 23rd September 2021

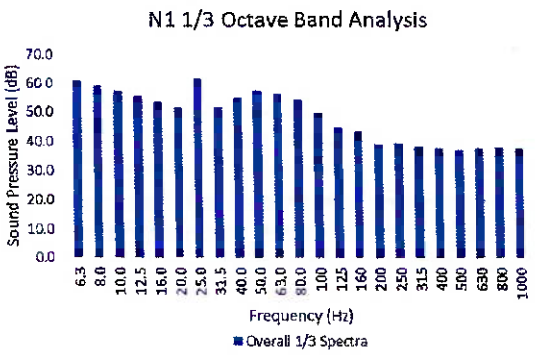


Figure 2
N2 1/3rd Octave band Analysis 23rd September 2021

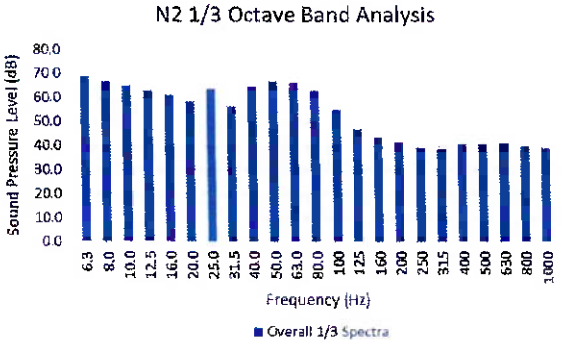
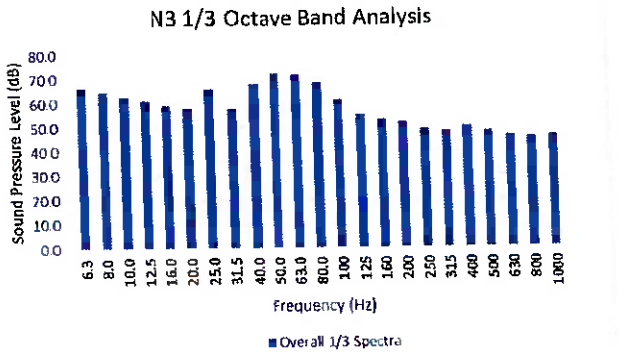


Figure 3
N3 1/3rd Octave band Analysis 23rd September 2021



Calculated Noise Levels at Noise Sensitive Locations

Noise measurements were carried out at the boundary of the site and a calculation of noise levels from site activities at noise sensitive properties were carried out. The site activity noise levels measured at the Old Leighlin site boundary were used to assess the noise levels due to the site activity at residences and to assess emissions in compliance with noise limits at residences.

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:

i. Attenuation with distance between the source and receptor (K= - 20 log R/10 dB(A), for hard ground R=distance from source in metres).

ii. -10 dB adjustment has been made for screening (full) between the site and residences.

Calculations of noise levels arising from Old Leiglin site activities at the three nearest noise sensitive locations N1 (distance 161m), N2(distance 53m) and N3(distance 248m) around the site are provided in Table 2.

It can be seen from Table 2 that allowing for location of monitoring points (i.e., the distance between the monitoring point and the nearest dwelling) and screening between the noise sensitive receptors, noise monitoring results indicate that quarrying and ancillary operations comply with condition no. 3 imposed under Section 261 of the Planning and Development Act, 2000 (Quarry Ref. QY 13), as amended by ABP Ref. No. 01.QC.2173 and condition no. 22 under Planning Permission 17/64.

Table 2 Noise Levels at Noise Sensitive Locations

Noise Monitoring Location at boundary Noise Sensitive Location	Time of Day	Measured Noise Levels dB(A)	Distance to Residence (m)	Distance Attenuation Adjustment dB(A)	Screening Adjustment dB(A)	Noise Levels at Noise Sensitive Location dB(A)
N1 (23/09/2021)	09:37-10:37	48.5	161	24	-10	14.5
	09:37-09:52	48.1	161	24	-10	14.1
	09:52-10:07	44.1	161	24	-10	10.1
	10:07-10:22	49.8	161	24	-10	15.1
	10:22-10:37	50.0	161	24	-10	16
N2 (23/09/2021)	10:43-11:43	50.5	53	14	-10	26.5
	10:43-10:58	51.6	53	14	-10	27.6
	10:58- 11:13	49.9	53	14	-10	25.9
	11:13 -11:28	49.8	53	14	-10	25.8
	11:28- 11:43	50.3	53	14	-10	26.3
N3 (23/09/2021)	11:46-12:46	56.6	248	27	-10	19.6
	11:46-12:01	57.4	248	27	-10	20.4
	12:01 -12:16	57.5	248	27	-10	20.5
	12:16-12:31	56.2	248	27	-10	19.2
	12:31-12:46	54.6	248	27	-10	17.6

Conclusions

Noise monitoring results indicate that quarrying and ancillary operations are in compliance with Condition no. 22 of P. Reg. Ref. No. 17/64 which state that:

(a) The proposed development shall not give rise to noise levels off site, at noise sensitive locations, which exceed the following sound pressure limits (Leq, 15 minute):*

- *Daytime (08:00 hours and 18:00 hours): 55 dB(A)*
- *Night-time (all other times): 45 dB(A)*

There shall be no clearly audible tonal or impulsive component in the noise emission from the development at any noise sensitive location. Low noise emitting plant shall be used at the development where possible and all plant and machinery shall be maintained so as to minimise noise emissions.
*Note: *Noise sensitive location*

(b) Noise monitoring shall be carried out three times per annum, during normal operating conditions, at revised noise monitoring locations N1, N2 and N3. Noise limits shall be in accordance with NG4 "Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities" (EPA). Should noise exceedances occur, additional noise barriers will be required to reduce levels at sensitive receptors. A Noise Management Plan shall be submitted, for approval, within 3 months of grant of permission.

If you have any queries in relation to the above, please contact myself or Aldona Binchy.

Yours sincerely
SLR Consulting Ireland

Hannah McGurran

Hannah McGurran
Project Environmental Scientist

FIGURE 4

Appendix C

Blast Monitoring Records

Version 4.2.4
Executable Date: 18Oct2017

File: c:\SuperGraphics TMP\3(2).NSZ

SuperGraphics - Report

Nomis Seismographs, Inc.

Company: KILKENNY LST OLD LEIGHGLIN Q.

Telephone: (705)592-2488 x 23

Unit #: 4219

24/02/2021 at 15:34:49 Event # 3

Location: QUARRY OFFICE

Operator: CK

Notes: 120M AT 318 DEGREES

Distance: N | Wgt. Per Delay: N | Scaled Distance: 0.0

Record Duration: 3.0 sec
Sample Rate: 1024/sec
Last Calibration: 04Feb21

Seismic

Gain: 2 Trigger: .572 mm/s ▽ Vector Sum: 15.02 mm/s @ 51.20 Hz

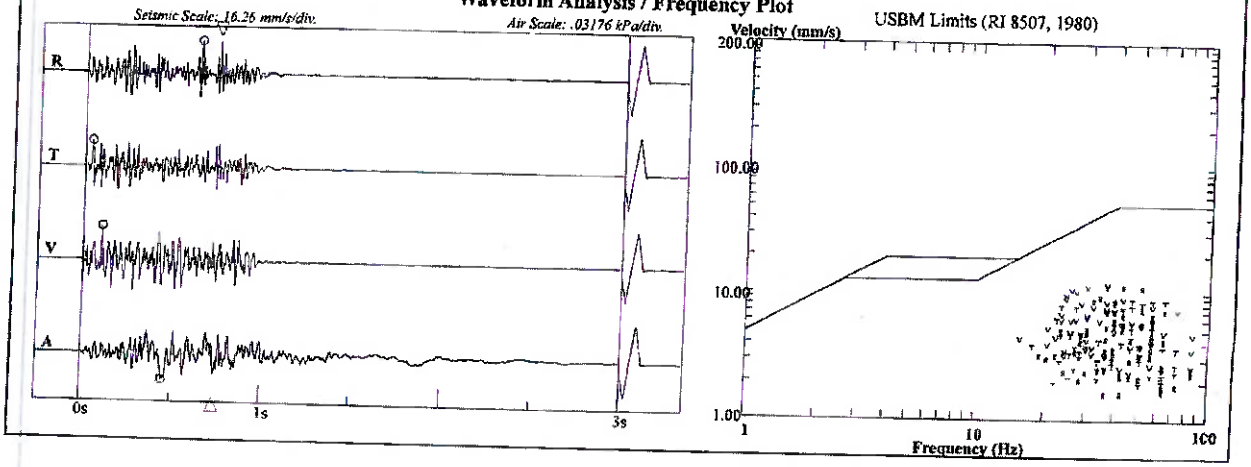
Channel	Radial	Transverse	Vertical
○ Velocity (mm/s)	11.303	8.573	11.811
Frequency (Hz)	42.60	46.50	36.50
Trigger >>> Peak	635.7	39.1	107.4

Air

Gain: 1 Air Trigger: N

Measurement	Value	Trigger >>> Peak
		453.1
kPa	.0167	
dBL	118.5	
Hz	10.8	

Waveform Analysis / Frequency Plot




House owned by KLQL
N1
N2
N3
R
161m
365m
248m
57m
53m
1.07
9.79
0.22
N
S
E
W
0
80m
200
Metres
1:2500
LANDHOLDING (c.12.4 Ha.)
NOISE & DUST MONITORING LOCATIONS
RECEPTOR LOCATIONS (RESIDENCES)
SLR
SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T +353-1-2964667
F +353-1-2964678
www.slrconsulting.com
KILKENNY LIMESTONE QUARRIES LTD.
QUARRY AT BANNAGAGOLE,
OLD LEIGHLIN, CO. CARLOW
Condition 18: EMS
ENVIRONMENTAL MONITORING LOCATIONS
FIGURE 1
Scale 1:2,500 @ A3
Date MAY 2021
0034.00021.13 Fig-1-Env Mon Loc Rev0.dwg

Version 9.0 A
Executable Date: 25Jun10

File: C:\Users\dfarrell\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\NSNLH2LX\013(1).NSZ

Instantel

SuperGraphics - Report

Instantel Inc. Telephone: (203)397-2498 x 23

Company: KILKENNY LST OLD LEIGHGLIN Unit #: 4043 28-Sep-21 at 16:04:46 Event # 13

Location: QUARRY OFFICE Operator: CK

Notes: 115M AT 349DEGREES

Distance: N | Wgt. Per Delay: N | Scaled Distance: 0.0

Record Duration: 3.0 sec
Sample Rate: 1024/sec
Last Calibration: 15Jun21

Seismic

Gain: 2 Trigger: .572 mm/s V Vector Sum: 12.57 mm/s @ 42.67 Hz

Channel	Radial	Transverse	Vertical
Velocity (mm/s)	9.398	7.493	9.906
Frequency (Hz)	28.40	46.50	42.60
Displacement (mm)	0.0527	0.0256	0.0370
Acceleration (g's)	0.171	0.223	0.270
Trigger >>> Peak	405.3	328.1	409.2

Air

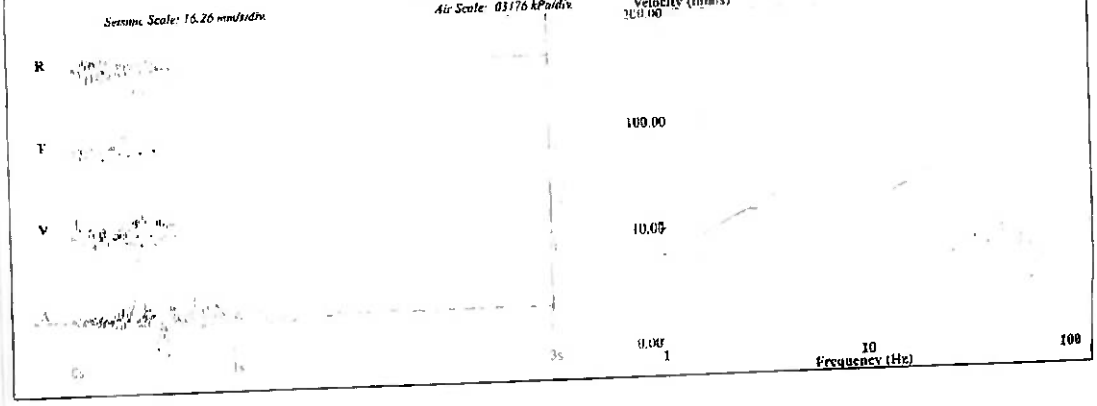
Gain: 1 Trigger: 116 dBL

Measurement	Value	Trigger >>> Peak
		592.8
kPa	.02922	
dBL	123	
Hz	9.3	

Waveform Analysis / Frequency Plot

USBM Limits (RI 8507, 1980)

Seismic Scale: 16.26 mm/s/div Air Scale: .03176 kPa/div



APPENDIX D

Certificate of Analysis

Independent Analytical Supplies

Test Report

Lab Report Number:	**7615M01**	**Analysis Number:**	**99A/129117**

Customer ID:	KILK.L1	**Analysis Type:**	Misc. Tests (99A)
Contact Name:	PAKIE NOLAN	**Delivery By:**	Customer
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	56294/1
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY	**Sample Condition:**	Acceptable
	Jan 2021		
Sample Type:	Discharge water	**Date Sample Received:**	27/01/2021
Sample Reference:	OLD LEIGHLIN QUARRY	**Date Analysis Commenced:**	27/01/2021
Sample Description:	DISCHARGE WATER	**Date Certificate Issued:**	05/02/2021

Parameter	Method	Result	Unit
Total Suspended Solids	Gravimetric/Dry @ 105°C SOP 2016	26	mg/l
Calcium	ICP-MS	73.9	mg/l

Signed: WD McCall Date: 05/02/2021

Wendy McCall - Laboratory Manager

* = not INAB Accredited ^ = Subcontracted

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IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number:	8565M01	**Analysis Number:**	99A/128508

Customer ID:	KILK.L1	**Analysis Type:**	Misc. Tests (99A)
Contact Name:	PAKIE NOLAN	**Delivery By:**	Customer
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	56835/1
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY	**Sample Condition:**	Acceptable
Sample Type:	Discharge water	**Date Sample Received:**	24/02/2021
Sample Reference:	OLD LEIGHLIN QUARRY	**Date Analysis Commenced:**	24/02/2021
Sample Description:	DISCHARGE WATER	**Date Certificate Issued:**	11/03/2021

Parameter	Method	Result	Unit
Calcium	ICP-MS	68.0	mg/l
Total Suspended Solids	Gravimetric/Dry @ 105°C SOP 2016	72	mg/l

Signed: W McCall

Wendy McCall - Laboratory Manager

Date: 11/03/2021

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IAS LABORATORIES, Unit 4 Sagenalstown Bus. Park, Sagenalstown, Co. Carlow,

Independent Analytical Supplies

Test Report

Lab Report Number:	**9720M01**	**Analysis Number:**	**99A/1.29895**

Customer ID:	KILK.L1	**Analysis Type:**	Misc. Tests (99A)
Contact Name:	PAKIE NOLAN	**Delivery By:**	Customer
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	56939/1
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY R95 KP84	**Sample Condition:**	Acceptable
Sample Type:	Discharge water	**Date Sample Received:**	30/03/2021
Sample Reference:	OLD LEIGHLIN QUARRY	**Date Analysis Commenced:**	30/03/2021
Sample Description:	DISCHARE WATER	**Date Certificate Issued:**	13/04/2021

Parameter	Method	Result	Unit
Total Suspended Solids	Gravimetric/Dry @ 105°C SOP 2016	78	mg/l
Calcium	ICP-MS	120.9	mg/l
pH	Electrometry SOP 2004	8.0	pH units
Biochemical Oxygen Demand	Oxygen Meter SOP 2006	62	mg/l
Chemical Oxygen Demand	Microdigestion and Colourimetry SOP 2005	216	mg/l
Nitrate	Konelab Aquakem SOP 2060	<2.2	mg/l NO3
Ammonia*	Konelab Aquakem SOP 2057	142.83	mg/l NH3
P Orthophosphate*	Konelab Aquakem SOP 2061	15.61	mg/l P
Total Petroleum Hydrocarbons*^	Subcontracted	918	ug/l

Signed: W McCall Date: 13/04/2021

Wendy McCall - Laboratory Manager

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Independent Analytical Supplies

Test Report

Lab Report Number:	**1420N01**	**Analysis Number:**	**99A/130176**

Customer ID:	KILK.L1	**Analysis Type:**	Misc. Tests (99A)
Contact Name:	PAKIE NOLAN	**Delivery By:**	Customer
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	56940/1
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY R95 KP84	**Sample Condition:**	Acceptable
Sample Type:	Discharge water	**Date Sample Received:**	23/04/2021
Sample Reference:	OLD LEIGHLIN QUARRY	**Date Analysis Commenced:**	23/04/2021
Sample Description:	DISCHARGE WATER	**Date Certificate Issued:**	29/04/2021

Parameter	Method	Result	Unit
Total Suspended Solids	Gravimetric/Dry @ 105°C SOP 2016	64	mg/l
Calcium	ICP-MS	78.3	mg/l

Signed: WO McCall Date: 29/04/2021

Wendy McCall - Laboratory Manager

* = not INAB Accredited ^ = Subcontracted

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IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number:	**1792N01**	**Analysis Number:**	**99A/130343**

Customer ID:	KILK.L1	**Analysis Type:**	Misc. Tests (99A)
Contact Name:	PATRICK CARROLL	**Delivery By:**	Customer
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	56299/1
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY R95 KP84	**Sample Condition:**	Acceptable
Sample Type:	Drinking Water	**Date Sample Received:**	11/05/2021
Sample Reference:	OLD LEIGHLIN	**Date Analysis Commenced:**	11/05/2021
Sample Description:	T:11.30AM 11.05.21	**Date Certificate Issued:**	25/05/2021

Parameter	Method	Result	Unit
Total Suspended Solids	Gravimetric/Dry @ 105°C SOP 2016	28	mg/l
Calcium	ICP-MS	78.6	mg/l
pH	Electrometry SOP 2004	8.0	pH units
Biochemical Oxygen Demand	Oxygen Meter SOP 2006	<1	mg/l
Chemical Oxygen Demand	Microdigestion and Colourimetry SOP 2005	2	mg/l
Nitrate	Konelab Aquakem SOP 2060	4.62	mg/l NO3
Ammonia	Konelab Aquakem SOP 2057	59.86	mg/l NH3
Orthophosphate	Konelab Aquakem SOP 2061	20.31	mg/l PO4
Total Petroleum Hydrocarbons*^	Subcontracted	412	ug/l

Signed: WO McCall Date: 25/05/2021

Wendy McCall - Laboratory Manager

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Independent Analytical Supplies

Test Report

Lab Report Number:	**2511N01**	**Analysis Number:**	**99A/130738**

Customer ID:	KILK.L1	**Analysis Type:**	Misc. Tests (99A)
Contact Name:	PATRICK CARROLL	**Delivery By:**	Customer
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	60754/1
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY R95 KP84	**Sample Condition:**	Acceptable
Sample Type:	Discharge water	**Date Sample Received:**	08/06/2021
Sample Reference:	OLD LEIGHLIN	**Date Analysis Commenced:**	08/06/2021
Sample Description:	OLD LEIGHLIN QUARRY	**Date Certificate Issued:**	17/06/2021

Parameter	Method	Result	Unit
Total Suspended Solids	Gravimetric/Dry @ 105°C SOP 2016	35	mg/l
Calcium	ICP-MS	79.5	mg/l
pH	Electrometry SOP 2004	8.1	pH units
Biochemical Oxygen Demand	Oxygen Meter SOP 2006	6	mg/l
Chemical Oxygen Demand	Microdigestion and Colourimetry SOP 2005	36	mg/l
Nitrate	Konelab Aquakem SOP 2060	6.47	mg/l NO3
Ammonia	Konelab Aquakem SOP 2057	25.64	mg/l NH3
P Orthophosphate	Konelab Aquakem SOP 2061	8.14	mg/l P
Total Petroleum Hydrocarbons*^	Subcontracted	126	ug/l

Signed: WO McCall Date: 17/06/2021

Wendy McCall - Laboratory Manager

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Independent Analytical Supplies

Test Report

Lab Report Number:	**3264N01**	**Analysis Number:**	**99A/131050**

Customer ID:	KILK.L1	**Analysis Type:**	Misc. Tests (99A)
Contact Name:	PATRICK CARROLL	**Delivery By:**	Customer
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	60759/1
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY R95 KP84	**Sample Condition:**	Acceptable
Sample Type:	Discharge water	**Date Sample Received:**	07/07/2021
Sample Reference:	OLD LEIGHLIN QUARRY	**Date Analysis Commenced:**	07/07/2021
Sample Description:	OLD LEIGHLIN QUARRY	**Date Certificate Issued:**	15/07/2021

Parameter	Method	Result	Unit
Total Suspended Solids	Gravimetric/Dry @ 105°C SOP 2016	71	mg/l
Calcium	ICP-MS	90.4	mg/l

Signed: WD McCall Date: 15/07/2021

Wendy McCall - Laboratory Manager

* = not INAB Accredited ^ = Subcontracted

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IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number: 1248S001

Customer ID:	KILK.L1	**Analysis Type:**	KK LIMESTONE DIS WATER 2 (KK
Contact Name:	PATRICK CAROLL	**Delivery By:**	CUSTOMER
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	60764
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY	**Condition on Receipt:**	Acceptable
Sample Type:	DISCHARGE WATER	**Date Sample Received:**	13/08/2021
Sample Reference:	DISCHARGE WATER	**Date Analysis Commenced:**	13/08/2021
Sample Description:	OLD LEIGHLIN QUARRY	**Date Certificate Issued:**	20/08/2021

Parameter	Method	Result	Unit
Total Suspended Solids	SOP 2016	37	mg/l
Calcium*	SOP 2125	108.4	mg/l

Signed: WD McCall Date: 20/08/2021

Wendy McCall - Laboratory Manager

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IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number: 2475S001

Customer ID:	KILK.L1	**Analysis Type:**	KK LIMESTONE DIS WATER 1 (KI
Contact Name:	PATRICK CAROLL	**Delivery By:**	CUSTOMER
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	60768
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY	**Condition on Receipt:**	Acceptable
Sample Type:	DISCHARGE WATER	**Date Sample Received:**	27/09/2021
Sample Reference:	OLD LEIGHLIN QUARRY	**Date Analysis Commenced:**	27/09/2021
Sample Description:	OLD LEIGHLIN QUARRY	**Date Certificate Issued:**	14/10/2021

Parameter	Method	Result	Unit
Biochemical Oxygen Demand	SOP 2006	3	mg/l
Chemical Oxygen Demand	SOP 2005	20	mg/l
Orthophosphate P	SOP 2061	1.59	mg/l P
pH	SOP 2004	8.1	pH units
Total Suspended Solids	SOP 2016	46	mg/l
Calcium*	SOP 2125	86.3	mg/l
Nitrate	SOP 2060	4.00	mg/l NO_3
Ammonia	SOP 2057	11.04	mg/l NH_3
Total Petroleum Hydrocarbons**	Subcontracted	105	µg/l

Signed: W McCall

Date: 14/10/2021

Wendy McCall - Laboratory Manager

* = not INAB Accredited ^ = Subcontracted

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IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number: 2957S001

Customer ID:	KILK.L1	**Analysis Type:**	99A (99A)
Contact Name:	PATRICK CAROLL	**Delivery By:**	CUSTOMER
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	80770
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY	**Condition on Receipt:**	Acceptable
Sample Type:	DISCHARGE WATER	**Date Sample Received:**	12/10/2021
Sample Reference:	OLD LEIGHLIN QUARRY	**Date Analysis Commenced:**	12/10/2021
Sample Description:	OLD LEIGHLIN QUARRY	**Date Certificate Issued:**	15/10/2021

Parameter	Method	Result	Unit
Total Suspended Solids	SOP 2016	45	mg/l
Calcium	SOP 2125	73.1	mg/l

Signed: WD McCall Date: 15/10/2021

Wendy McCall - Laboratory Manager

* = not INAB Accredited ^ = Subcontracted

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Phone: 059 9721022 Email: reception@iaslabs.ie Web: www.iaslabs.ie

IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number: 39378001

Customer ID:	KILK.L1	**Analysis Type:**	KK LIMESTONE DIS WATER 1 (K
Contact Name:	PATRICK CAROLL	**Delivery By:**	CUSTOMER
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	60774
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY	**Condition on Receipt:**	Acceptable
Sample Type:	DISCHARGE WATER	**Date Sample Received:**	17/11/2021
Sample Reference:	OLD LEIGHLIN QUARRY	**Date Analysis Commenced:**	17/11/2021
Sample Description:	OLD LE'GHLIN QUARRY	**Date Certificate Issued:**	07/12/2021

Parameter	Method	Result	Unit
Biochemical Oxygen Demand	SOP 2006	17	mg/l
Chemical Oxygen Demand	SOP 2005	69	mg/l
Orthophosphate P*	SOP 2061	6.35	mg/l P
pH	SOP 2004	8.0	pH units
Total Suspended Solids	SOP 2016	28	mg/l
Calcium*	SOP 2125	89.2	mg/l
Nitrate	SOP 2060	5.37	mg/l NO_3
Ammonia*	SOP 2057	67.89	mg/l NH_3
Total Petroleum Hydrocarbons*^	Subcontracted	216	µg/l
Copper*	SOP 2125	11	µg/l
Zinc*	SOP 2125	148	µg/l
Cadmium*	SOP 2125	<0.5	µg/l
Chromium*	SOP 2125	<5	µg/l
Nickel*	SOP 2125	5.4	µg/l
Mercury*^	Subcontracted	<0.01	µg/l
Lead*	SOP 2125	<1	µg/l

Signed: WD McCall Date: 07/12/2021

Wendy McCall - Laboratory Manager

* = not INAB Accredited ^ = Subcontracted

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IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number: 5068S001

Customer ID:	KILK.L1	**Analysis Type:**	KK LIMESTONE DIS WATER 2 (KK
Contact Name:	PATRICK CAROLL	**Delivery By:**	CUSTOMER
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	60782
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY	**Condition on Receipt:**	Acceptable
Sample Type:	DISCHARGE WATER	**Date Sample Received:**	21/12/2021
Sample Reference:	OLD LEIGHLIN QUARRY	**Date Analysis Commenced:**	21/12/2021
Sample Description:	OLD LEIGHLIN QUARRY	**Date Certificate Issued:**	23/12/2021

Parameter	Method	Result	Unit
Total Suspended Solids	SOP 2016	13	mg/l
Calcium*	SOP 2125	73.5	mg/l

Signed: WD McCall

Wendy McCall - Laboratory Manager

Date: 23/12/2021

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IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number:	**2904N01**	**Analysis Number:**	**CHECK/4794**

Customer ID:	KILK.L1	**Analysis Type:**	CHECK (CHECK)
Contact Name:	PATRICK CARROLL	**Delivery By:**	Customer
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	60757/1
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY R95 KP84	**Sample Condition:**	Acceptable
Sample Type:	Drinking Water	**Date Sample Received:**	22/06/2021
Sample Reference:	OLD LEIGHLIN QUARRY	**Date Analysis Commenced:**	22/06/2021
Sample Description:	CANTEEN SINK T:1.25PM	**Date Certificate Issued:**	28/06/2021

Parameter	Method	Result	Unit
Aluminium	ICP-MS	72	ug/l
Total Coliforms	Quanti-tray SOP 2090	1.0	MPN/100ml
E. Coli	Quanti-tray SOP 2090	0	MPN/100ml
Ammonium	Konelab Aquakem SOP 2057	0.04	mg/l NH4
Colour	Konelab Aquakem SOP 2063	4.3	Pt Co
Nitrite	Konelab Aquakem SOP 2059	<0.03	mg/l NO2
Nitrate	Konelab Aquakem SOP 2060	9.64	mg/l NO3
Sulphate	Konelab Aquakem SOP 2062	33.20	mg/l SO4
Conductivity	Electrometry SOP 2076	593	µS/cm 20°C
Total Hardness	Ca & Mg Hardness SOP 2024	340.1	mg/l CaCO3
Iron	ICP-MS	52	ug/l
Manganese	ICPMS	8	ug/l
pH	Electrometry SOP 2004	7.2	pH units
Turbidity	Turbidimetric SOP 2022	1.64	NTU

Signed: WO McCall Date: 28/06/2021

Wendy McCall - Laboratory Manager

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IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number:	**3376N01**	**Analysis Number:**	**CHECK/4849**

Customer ID:	KILK.L1	**Analysis Type:**	CHECK (CHECK)
Contact Name:	PATRICK CARROLL	**Delivery By:**	Customer
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	60760/1
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY R95 KP84	**Sample Condition:**	Acceptable
Sample Type:	Drinking Water	**Date Sample Received:**	13/07/2021
Sample Reference:	WELL WATER	**Date Analysis Commenced:**	13/07/2021
Sample Description:	T:12.30PM 13.07.21	**Date Certificate Issued:**	19/07/2021

Parameter	Method	Result	Unit
Aluminium	ICP-MS	52	ug/l
Total Coliforms	Quanti-tray SOP 2090	0	MPN/100ml
E. Coli	Quanti-tray SOP 2090	0	MPN/100ml
Ammonium	Konelab Aquakem SOP 2057	0.03	mg/l NH4
Colour	Konelab Aquakem SOP 2063	8.6	Pt Co
Nitrite	Konelab Aquakem SOP 2059	<0.03	mg/l NO2
Nitrate	Konelab Aquakem SOP 2060	<2.2	mg/l NO3
Sulphate	Konelab Aquakem SOP 2062	16.46	mg/l SO4
Conductivity	Electrometry SOP 2076	548	µS/cm 20°C
Total Hardness	Ca & Mg Hardness SOP 2024	349.0	mg/l CaCO3
Iron*	ICP-MS	583	ug/l
Manganese	ICPMS	17	ug/l
pH	Electrometry SOP 2004	7.3	pH units
Turbidity	Turbidimetric SOP 2022	18.97	NTU

Signed: WO McCall

Wendy McCall - Laboratory Manager

Date: 19/07/2021

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IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number:	**3376N01**	**Analysis Number:**	**CHECK/4849**

Customer ID:	KILK.L1	**Analysis Type:**	CHECK (CHECK)
Contact Name:	PATRICK CARROLL	**Delivery By:**	Customer
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	60760/1
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY R95 KP84	**Sample Condition:**	Acceptable
Sample Type:	Drinking Water	**Date Sample Received:**	13/07/2021
Sample Reference:	WELL WATER	**Date Analysis Commenced:**	13/07/2021
Sample Description:	T:12.30PM 13.07.21	**Date Certificate Issued:**	19/07/2021

Parameter	Method	Result	Unit
Aluminium	ICP-MS	52	ug/l
Total Coliforms	Quanti-tray SOP 2090	0	MPN/100ml
E. Coli	Quanti-tray SOP 2090	0	MPN/100ml
Ammonium	Konelab Aquakem SOP 2057	0.03	mg/l NH4
Colour	Konelab Aquakem SOP 2063	8.6	Pt Co
Nitrite	Konelab Aquakem SOP 2059	<0.03	mg/l NO2
Nitrate	Konelab Aquakem SOP 2060	<2.2	mg/l NO3
Sulphate	Konelab Aquakem SOP 2062	16.46	mg/l SO4
Conductivity	Electrometry SOP 2076	548	uS/cm 20°C
Total Hardness	Ca & Mg Hardness SOP 2024	349.0	mg/l CaCO3
Iron*	ICP-MS	583	ug/l
Manganese	ICPMS	17	ug/l
pH	Electrometry SOP 2004	7.3	pH units
Turbidity	Turbidimetric SOP 2022	18.97	NTU

Signed: WO McCall Date: 19/07/2021

Wendy McCall - Laboratory Manager

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IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number: 4187S001

Customer ID:	KILK.L1	**Analysis Type:**	99A (99A)
Contact Name:	PATRICK CAROLL	**Delivery By:**	CUSTOMER
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	60777
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY	**Condition on Receipt:**	Acceptable
Sample Type:	GROUND WATER	**Date Sample Received:**	24/11/2021
Sample Reference:	OLD LEIGHLIN	**Date Analysis Commenced:**	24/11/2021
Sample Description:	CANTEEN SINK T:2.00PM	**Date Certificate Issued:**	14/12/2021

Parameter	Method	Result	Unit
Conductivity*	SOP 2076	655	µS/cm 20°C
pH	SOP 2004	7.2	pH units
Total coliforms*	SOP 2090	3.1	MPN/100ml
Ammonia	SOP 2057	0.01	mg/l NH_3
Nitrite	SOP 2059	<0.03	mg/l NO_2
Nitrate	SOP 2060	11.97	mg/l NO_3
Orthophosphate	SOP 2061	<0.01	mg/l PO_4
Total Petroleum Hydrocarbons*^	Subcontracted	<10	µg/l
Diesel Range Organics*^	Subcontracted	<10	µg/l
Petrol Range Organics*^	Subcontracted	<10	µg/l

Signed: WD McCall

Wendy McCall - Laboratory Manager

Date: 14/12/2021

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IAS LABORATORIES

Independent Analytical Supplies

Test Report

Lab Report Number: 4187S002

Customer ID:	KILK.L1	**Analysis Type:**	99A (99A)
Contact Name:	PATRICK CAROLL	**Delivery By:**	CUSTOMER
Company Name:	KILKENNY LIMESTONE QUARRIES LTD	**Sample Card Number:**	60777
Address:	KELLYMOUNT PAULSTOWN CO KILKENNY	**Condition on Receipt:**	Acceptable
Sample Type:	GROUND WATER	**Date Sample Received:**	24/11/2021
Sample Reference:	OLD LEIGHLIN	**Date Analysis Commenced:**	24/11/2021
Sample Description:	BUNGALOW WELL T:1.30PM	**Date Certificate Issued:**	14/12/2021

Parameter	Method	Result	Unit
Conductivity*	SOP 2078	612	µS/cm 20°C
pH	SOP 2004	7.5	pH units
Total coliforms*	SOP 2090	4.1	MPN/100ml
Ammonia	SOP 2057	0.01	mg/l NH_3
Nitrite	SOP 2059	0.03	mg/l NO_2
Nitrate	SOP 2060	<2.2	mg/l NO_3
Orthophosphate	SOP 2061	<0.01	mg/l PO_4
Total Petroleum Hydrocarbons*^	Subcontracted	<10	µg/l
Diesel Range Organics*^	Subcontracted	<10	µg/l
Petrol Range Organics*^	Subcontracted	<10	µg/l

Signed: WD McCall Date: 14/12/2021

Wendy McCall - Laboratory Manager

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APPENDIX E
Action Plan 2022

2022 ACTION PLAN FOR FINDINGS OF ENVIRONMENTAL AUDIT

Old Leighlin Quarry Ltd., Bannagagole, Old Leighlin, Co. Carlow.

Aspect	Area of Concern	Priority	Condition No's P. Reg. Ref. No. 17/64	Recommendation Action
Environmental Management	All	Ongoing	-	The operator shall continue to monitor all environmental emissions to show ongoing compliance.
Water	Groundwater Level	Medium	8 a	Groundwater level monitoring to be implemented during 2022 in accordance with conditions imposed on the operation of the quarry.
Waste	Waste	Ongoing	-	All type of waste to be stored in a designated area prior to collection by an approved contractor.
Water	Discharge Water	Ongoing	-	The ongoing compliance programme should be prioritised to ensure that each of the conditions-imposed Discharge Licence are addressed.

High Priority Issues requiring immediate action to limit or prevent pollution risks.
Medium Priority Issues which should be addressed in the near future.
Low Priority Issues which can be addressed in a phased manner over a period of time.

Signed: Auditor: _____ Date: _____

Auditee: _____ Date: _____

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