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Introduction

16.1 This chapter of the Environmental Impact Assessment Report (EIAR) provides a summary of mitigation and monitoring commitments set out within the technical chapters, as recommended by Section 3.8.4 of the Environmental Protection Agency (2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports.

Mitigation Measures

Inherent and 'Designed-In' Mitigation Measures

16.2 The application site, by its nature, offers a number of advantages in terms of natural mitigation. The proposed development maximises the potential of an existing established sand and gravel pit with existing ancillary site services (office, storage container, portaloo) and infrastructure (wheelwash and fuel storage).

16.3 Within the application site, the topography is gently sloping away from the centre of the site, the highest point being along the centre of the site at c. 81m AOD, and the lowest point being the southern tip of the site at c. 67m AOD. The surrounding landscape is gently undulating at elevations of between 60 and 81m AOD. The existing topography and vegetation will provide screening of the site from public view. The proposed phased extraction and restoration works will ensure that the visible areas of disturbed ground will be minimised at any one time. The proposed extension extraction area layout has been designed to provide a minimum separation of 100 metres to the nearest inhabited dwellings.

16.4 The proposed native screen planting within the Landscaping & Restoration Plan will augment the existing vegetation along the south-western site boundary and in the southern corner of the site, while compensating the loss of a section of a vegetated earth bank / hedgerow and providing additional habitat linkage. This screen planting will be carried out on commencement of the development and will ensure that the landscape and visual effects are kept to a minimum.

Legislation and Best Practice Mitigation Measures

16.5 The operation of the pit is covered by legislation and industry best practice that is followed by ADL in all of its operations.

16.6 Operations at the site will adhere to the Health and Safety Authority Safe Quarry Guidelines in relation to the Safety Health and Welfare at Work (Quarries) Regulations 2025 and this will limit the potential for unplanned events such as instability of pit faces or instability in adjacent lands. Planning legislation enforced through the planning conditions associated with the planning permission P. Ref. 20191259 at the existing site has required implementation of environmental mitigation and monitoring there.

16.7 Current best practice guidance includes, but is not limited to the following:

- EPA Environmental Management Guidelines (2006): Environmental Management in the Extractive Industry (Non-Scheduled Minerals); and
- DoEHLG (Department of the Environment, Heritage and Local Government) April 2004: Quarries and Ancillary Activities Guidelines for Planning Authorities.

Specific Mitigation Measures

16.8 **Table 16-1** below sets out the specific mitigation measures that are proposed to be implemented through the proposed development.

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Table 16-1: Schedule of Site-Specific Mitigation Measures to be Implemented

Mitigation Measure Proposed		Timeframe
Population and Human Health – **General**	The main potential for disturbance to the local population and human health is through the potential for environmental emissions associated with the topic areas that are assessed within other chapters of the EIAR, therefore the mitigation measures proposed in relation to those topics are considered appropriate to address population and human health issues.	Throughout the development
Biodiversity – **Hedgerows**	• The Landscape and Restoration Plan includes c. 1,460 m2 of screen planting to compensate for the removal of the section of hedgerow.	Commencement of Development
Biodiversity – **Breeding Birds**	• Clearance of vegetation should be done outside the bird nesting season of 1st March to 31st August. If this is unavoidable during the bird nesting season, then there will be requirement for nest checks to be carried out by a suitably qualified ecologist immediately prior to any habitat destruction. If any nests are found to be present, then the removal of the vegetation would not be permitted until such time as all young have fledged, and all nests identified within the proposed works area are confirmed to be inactive. This work will be carried out and overseen	Construction Stage
Land, Soils and Geology – **Soil Management**	• Soils will be managed on site in line with best practice guidance as set out in The Institute of Quarrying Good Practice Guide for Handling Soils in Mineral Workings, 2021. • Good practice measures will be implemented at the site in order to preserve the structure and integrity of the soils and limit the effects of erosion on the stored soil during excavation and storage. • The soil stripping and storage operations will be undertaken in such a manner so as to minimise soil compaction. • In order to limit the effects of erosion and deterioration on the soil, material will not be removed during either periods of prolonged dry weather or excessively wet weather; this is to avoid the higher potential for dust generation during extended periods of dry weather, and conversely the greater potential for soil erosion during extended periods of wet weather. • During soil stripping, dump trucks will draw alongside the exposed soil profile, standing and travelling only on the basal layer. • Topsoil storage will not exceed 3m in height in order to protect the structure of the soils for use in restoration. Any subsoils, if present, will be stored at a maximum height of 5m. • Stripped soils will be re-vegetated where they are in place for a sufficient length of time to justify such a measure. The re-handling of soil material will be minimised as much as possible in order to preserve the integrity of the topsoil material.	Construction Stage

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Mitigation Measure Proposed		Timeframe
	Land will be restored to its original agricultural use with soils which will have been retained on site.	Restoration / Post-Operational Stage
Land, Soils and Geology – **Land Stability**	• The pit design has been undertaken to ensure stability for the pit sides. Pit side slopes will generally be graded at an angle no steeper than 35° (approximately 1v:1.5h) which will be sufficient to ensure no large-scale instability arises. Ongoing assessment of slope stability will be undertaken at the application site as extraction progresses and where necessary, slopes will be graded having due regard to safe systems of work. • The risk of localised erosion within the site (and potential dust emissions) during operations will be limited through phased extraction and progressive restoration.	Operational Stage
	• Land to be restored to beneficial agricultural landuse. Pit side slopes will be graded to 1.5 H : 1 V or less to ensure long term stability.	Restoration / Post-Operational Stage
Land, Soils and Geology –**Geological Heritage**	• To facilitate further development of geological knowledge and understanding, during the operational stage the Applicant will facilitate access to any exposed pit faces by GSI staff for inspection, educational and scientific purposes, subject to advance notice and compliance with health & safety regulations.	Operational Stage
Hydrology and Hydrogeology	In order to mitigate against the risk of pollution to groundwater and surface water occurring at the site the following management measures will be implemented: • Rain falling across the site will percolate downwards and recharge to the underlying sand and gravel. There will be no surface water run-off or overground flow across the site; • There will be no off-site discharge from the proposed development to any surface watercourse; • No fuel or oils will be stored within the proposed extension area. Small volume of fuel is stored within the existing pit under planning permission ref. 20191259. • Final floor levels at the proposed pit excavations will be maintained dry a minimum of 2 m above the groundwater table; • An emergency spill kit is and will be available on-site to stop the migration of any minor accidental leakages or spillages should they arise.	Construction and Operational Stages
	As part of the restoration works, all plant, machinery and ancillary facilities associated with the pit operations will be removed from site. The remaining pit slopes and screening berms will also be regraded. A layer of soil and overburden material will be spread over the worked-out pit floor as a sub-base in the progressive restoration area. On completion of the extraction works the sand and gravel pit will be restored to an agricultural use.	Restoration / Post-Operational Stage

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Mitigation Measure Proposed		Timeframe
Air – **Dust Management**	The following dust mitigation and management measures will continue to be implemented. These measures are in accordance with the DoEHLG (2004) and EPA (2006) guidelines for the sector • Location of the mobile screening plant on the floor of the pit; • Water will be sprayed from a tractor-drawn bowser on dry exposed surfaces and stockpiles (paved roads, unsealed haul roads and hardstand areas), as required; • Areas of bare or exposed soils will, insofar as practicable, be kept to a minimum through the phased/ gradual topsoil stripping and extraction proposals; • All HGV loads of fine materials leaving the site will be covered / sheeted; • The existing wheelwash will remain in place; • The amount of dust or fines carried onto the public road network will be further minimised by periodic maintenance of the internal paved site roads and use of a road sweeper on the adjacent section of regional road, if required.	Construction / Operational & Restoration – Post Operational Stages
Climate Change - **Resilience**	Based on a development vulnerability assessment, measures to improve the resilience of the project to extreme rainfall, flash flood, storms, and winds are considered: **Extreme Rainfall, Flash Flood** • Development scheme layout avoids mapped flood hazard areas. • Designed to provide adequate resilience for the water management system. **Storms and Winds** • Implement procedures to facilitate operational shutdown where required during extreme weather conditions. • Ensure the selection, design, operation, and maintenance of plant and equipment meets required standards. **Risk Reduction** • Secure and maintain insurance for site assets and operations.	Throughout the development
Climate Change – **Greenhouse gas (GHG) Reduction**	**Direct GHG Emissions** • Continue the practice of using energy efficient machinery, including use of biodiesel. • Consider future use of electric plant & machinery, where practical. **GHG Emissions Related to Transport** • Unnecessary equipment / transport journeys should be avoided by management of transport and travel demands.	Construction and Operational Stages

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Mitigation Measure Proposed		Timeframe
	• Equipment should not be left in unnecessary idling mode. • Consider future use of electric vehicles.	
Noise – **Management Measures**	General best practice guidance on several aspects of construction site mitigation measures, including, but not limited to will be implemented: • Selection of quiet and / or low vibration emitting plant; • Control of noise sources; • Screening; • Hours of work; • Liaison with the public; and • Monitoring. **Mechanical Plant** • All plant items will be properly and regularly maintained and operated according to the manufacturers' recommendations, in such a manner as to avoid causing excessive noise. • All plant will be fitted with effective exhaust silencers which are maintained in good working order to meet manufacturers' noise rating levels. Any defective silencers will be replaced immediately. **Vehicle Movement within Site Boundary** • Access / internal haul roads will be kept clean and maintained in a good state of repair, i.e., any potholes are filled, and large bumps removed, to avoid unwanted rattle and "body-slap" from heavy goods vehicles. • Vehicles waiting within the site will be prohibited from leaving their engines running and there will be no unnecessary revving of engines. • Care will be taken when unloading vehicles to reduce or minimise potential noise disturbance to residents.	Throughout the development
Material Assets - **ESB**	Works in the vicinity of the overhead medium voltage line route inside the southeast boundary of the application area will be carried out in accordance with ESB Networks guidelines.	Construction and Operational Stages
Material Assets - **Waste**	All waste generated at the site will be appropriately stored and removed by licensed contractors	Construction and Operational Stages

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Mitigation Measure Proposed		Timeframe
Archaeology and Cultural Heritage – **Archaeological Resources**	The archaeological heritage identified in Areas 2 (Kiln (C8) and pit (C9)) and 4 (Kilns C10–C12) will be preserved by record under license from the national Monuments Service. The archaeological heritage identified in Areas 1 (Plectrum enclosure (C5), linear (C4), pit (C6)) and 3 (Circular enclosure (C14)) will be preserved in situ within 10m buffer zones.	Construction and Operational Stages
Traffic	A number of traffic management and mitigation measures in place at the existing pit will continue to be implemented for the proposed development. These include: • HGV traffic will continue to use established haulage routes on the regional / national road network, except for local deliveries. • Warning signs will continue to be provided on the R744 regional road either side of the access (as per condition 10 attached to planning permission ref. 20191259). The signage will continue to be maintained in a satisfactory condition throughout the life of the proposed development. • Haulage vehicles will be regularly maintained, serviced and replaced at intervals. • The internal access road will continue to be maintained to prevent transport of soil and dirt out of the site onto the public road. • The existing wheelwash will be maintained in place (as per condition 9 attached to planning permission ref. 20191259).	Operational Stage

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Monitoring Measures

16.9 A number of environmental monitoring activities are to be continued during all stages of the proposed development to confirm the effectiveness of the mitigation measures described above, to establish if there are any trends in environmental parameters and to highlight the need for remedial action if necessary.

16.10 Environmental monitoring requirements have been identified in the specific chapters of the EIAR. The frequency of the monitoring requirements identified below have been collated and provided in a schedule displayed in **Table 16-2**. **Figure 16-1** indicates the monitoring locations across the application site. Additional monitoring locations can be provided if deemed necessary by Wexford County Council should planning permission be granted.

Population and Human Health

16.11 Monitoring for the protection of population and human health during the proposed development will be carried out in accordance with the wider environmental monitoring programme for the protection of water, air quality and noise.

Land, Soils and Geology

16.12 The restoration works will be managed and monitored to ensure that the restored soils and land use is successful.

16.13 The site will be monitored during the two year final restoration period to ensure that there is no soil loss or erosion, that restored pit faces remain stable and that the intended agricultural use (grassland) is established.

Hydrology and Hydrogeology

16.14 Environmental groundwater monitoring will be carried out on a regular basis at the site to demonstrate that the sand and gravel pit is not having a significant adverse effect on the environment.

16.15 A network of three groundwater monitoring boreholes has been installed across the site.

16.16 The following monitoring activities will be carried out to demonstrate that the development is not having an adverse impact on the surrounding groundwater:

- groundwater levels in all boreholes will be monitored on a quarterly basis for the duration of the proposed development; and
- groundwater quality monitoring to be undertaken on an annual basis for the duration of the proposed development.

16.17 There is and will be no discharge of water off-site to any surface water course. The nearest watercourse is located c. 400 metres south of the site. Accordingly there is no requirement for any surface water monitoring to be undertaken for the proposed development.

Air Quality

16.18 Dust deposition monitoring will continue to be carried out at the site for the duration of extraction activities at the proposed development (in accordance with EPA and DoEHLG guidelines). Dust monitoring will be undertaken at the monitoring locations D1 – D2, refer to **Figure 16-1**. An additional monitoring location D3 will be located on the southern boundary.

16.19 The dust deposition monitoring will continue to be carried out using the Bergerhoff Method that monitors dust deposition continuously over a 30 day period. The frequency of monitoring shall be at least twice per year during the months April to September (i.e. the driest period of the year).

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Climate

16.20 A framework and set of indicators shall be developed to assess project preparedness for adaptation against climate change. Provision shall be made for a periodic review of plans and the allocation of reporting responsibilities for a regime to measure and evaluate progress on adaptation.

16.21 The proposed GHG reduction measures and GHG emissions will be monitored and reviewed on an annual basis.

Noise

16.22 Noise monitoring surveys will be carried twice per year to establish operational noise emissions from activities within the site. Noise monitoring shall be carried out at the three locations shown on **Figure 16-1**.

16.23 The surveys shall be completed by a Competent Person in accordance with the EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4). The surveys shall be completed using a Class 1 Sound Level meter.

Landscape

16.24 Apart from the proposed 2-year aftercare period, as part of the Landscaping & Restoration Proposals (refer to **EIAR Figure 2-4**), to ensure the successful establishment of the native screen planting (to be carried out on commencement of the development), there are no monitoring requirements, arising from this landscape and visual assessment.

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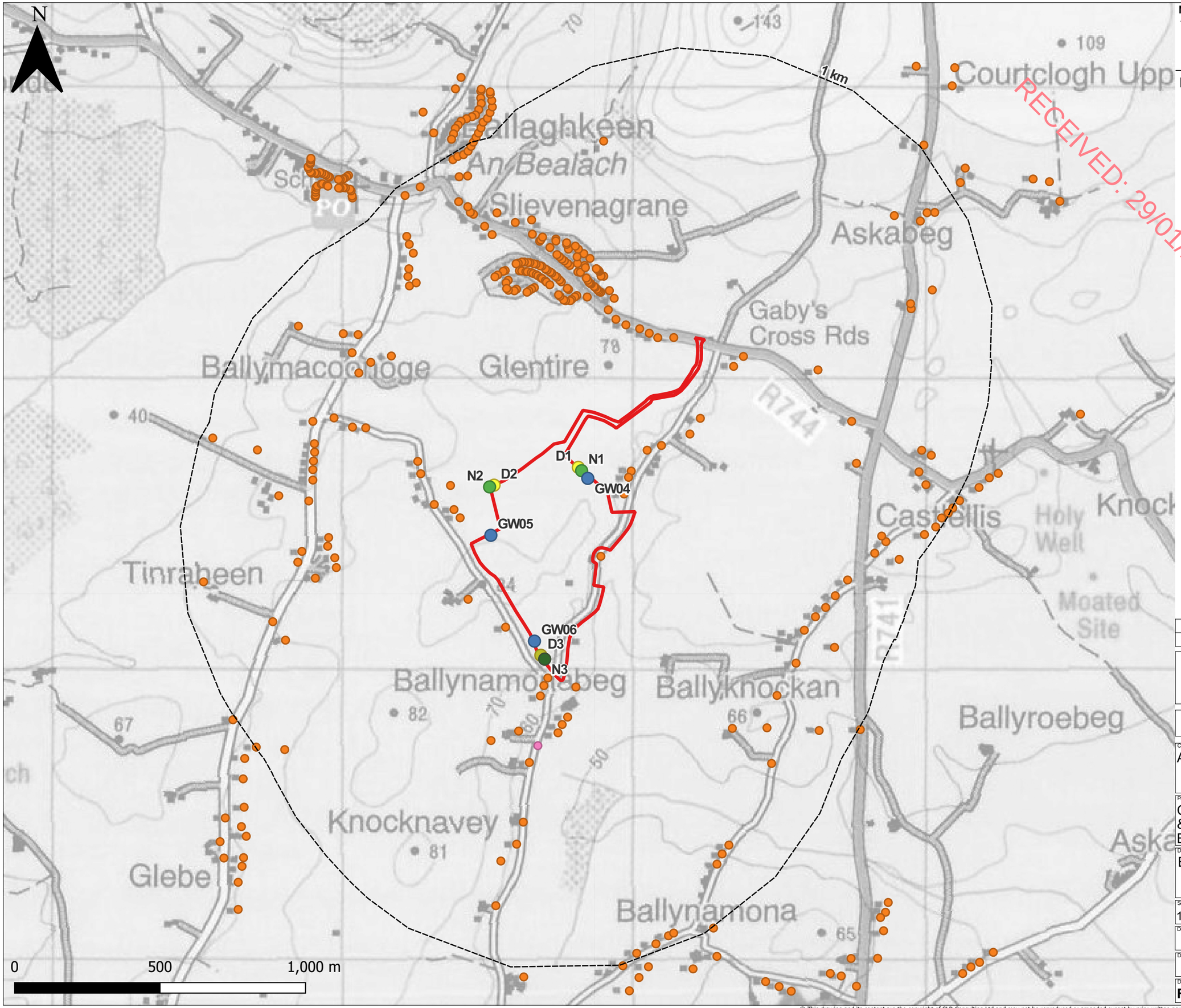
Table 16-2 Indicative Schedule of Environmental Monitoring

Activity (Responsibility)	Q1			Q2			Q3			Q4		
	J	F	M	A	M	J	J	A	S	O	N	D
Land, Soils and Geology - Continual monitoring during 2-years of final restoration works (Applicant)												
Quarterly Groundwater Level in 3 boreholes												
Annual Groundwater Quality in 3 boreholes												
Dust Monitoring at 3 locations (SLR Consulting), supplemented by visual checks												
Annual GHG Monitoring reporting and review (Applicant)	*In line with wider ADL Reporting*											
Noise Monitoring at 3 locations (SLR Consulting)												
Landscape Maintenance – Regular during 2-year period after completion of operational landscaping screen planting (SLR Consulting)												

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Figures

Figure 16-1: Environmental Monitoring Locations



Notes:
1. Base Mapping OSi Discovery Series Sheet 69

LEGEND:

- Planning Application Area (c. 23.2 Hectares)
- Residential Receptor
- Planning Permission Granted But Not Yet Built
- Groundwater Monitoring Location
- Noise Monitoring Location
- Proposed Additional Noise Monitoring Location
- Dust Monitoring Location
- Proposed Additional Dust Monitoring Location

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Rev	Amendments	Date	By	Chk	Auth
1		01/2026	ND	TP	TP

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Project: Continued Use & Extension of Existing Sand & Gravel Pit at Ballymacoonoge, Glentire & Ballynamonabeg Tds., Co. Wexford

Drawing Title: Environmental Monitoring Locations

Scale	SLR Project No.
1:12,000 @A3	501.065860.00001

Designed	Drawn	Checked	Authorised
ND	ND	TP	TP
Date 01/2026	Date 01/2026	Date 01/2026	Date 01/2026

Drawing Number: **FIGURE 16-1** Rev. **1**

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Contains ESRI open mapping