

NATURA IMPACT STATEMENT

Application for Substitute Consent under Section 177E of the Planning and Development Act 2000

PROPOSED DEVELOPMENT AT REDROCK QUARRY, CO. CARLOW

in support of the Appropriate Assessment Process

Prepared for:

Tom Phillips and Associates

Prepared by:

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December 2025



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Executive Summary

This report presents the results of a Natura Impact Statement (NIS), which is part of the appropriate assessment process to identify whether significant impacts on a Natura 2000 site are likely to have arisen from the development of Redrock Quarry, Clogrennane, Co. Carlow.

The current planning application seeks Planning Permission to regularise the historic sandstone extraction and processing at the currently inactive Redrock Quarry site, Clogrenanne, Co. Carlow, comprising an area of 41.86ha. The applicant is applying for Substitute Consent for this proposed development, under Section 177E of the Planning and Development Act 2000, as amended. The Substitute Consent site encompasses an existing (inactive) quarry facility and adjacent predominantly agricultural lands, with the area of historic excavation measuring approximately 8.66ha. The former quarry was used to extract sandstone bedrock with quarrying activity ceasing in 2014. There is limited vegetative cover present within the worked area of the former quarry with areas of spoil and bare ground, recolonising bare ground, some artificial lakes and ponds, and boundary scrub. The remainder of the application site is predominantly comprised of improved agricultural grassland, hedgerows, treelines and scrub. The overall landholding has a total area of 45.68ha. The proposed development will be accompanied by a phased restoration plan.

It is objectively concluded that no significant adverse impacts are likely to have arisen from the development, in combination with other developments, in relation to the Natura 2000 site; River Barrow and River Nore SAC or any other European designated site in the wider receiving environment.

1 Introduction

Ecology Ireland Ltd. were commissioned by Tom Phillips & Associates to undertake a Natura Impact Statement (NIS) in support of the Appropriate Assessment process in relation to a Substitute Consent application by Milford Quarries Limited to regularise the historic sandstone extraction and processing at the currently inactive Redrock Quarry site at Clogrennane, Co. Carlow.

The proposed development site consists of an area of c. 41.86ha with the area of historic excavation measuring approximately 8.66ha. The former quarry was used to extract sandstone bedrock with commercial quarrying activity ceasing in 2014 with some minor extraction activity taking place following this. There is limited vegetative cover present within the worked areas of the existing quarry with areas of spoil and bare ground, recolonising bare ground, and some artificial lakes and ponds. The remainder of the proposed application site is predominantly comprised of improved agricultural grassland, hedgerows, treelines and scrub. The overall landholding has a total area of 45.68ha.

The development consisted of quarrying including rock extraction by mechanical means including extraction areas, stockpiling areas, surface water management and ancillary works. The quarry included an extraction area of c. 8.66 hectares within a wider landholding of c. 45.68 ha and involved extraction of up to 650,000 m³ of material.

It should be noted that no significant extraction activities began at the site until the period between 2000 and 2005, as evidenced by historic aerial imagery and based on discussions between the applicants and the previous operators of the site. Further assessment of historic aerial imagery of the site, confirms that the bulk of extraction at the site took place between 2005 and 2010-2012 timeframe. This is consistent with economic activity at the time.

The Aerial imagery further suggests that there was a small level of extraction from the lands following the S261A proceedings. Information on this is limited but we understand that relatively modest quantities of material were removed in both 2018 and 2021. This material would most likely have been used locally for agricultural purposes, given the nature of the material removed and the quantities removed.

The Substitute Consent application includes a restoration plan to return worked areas to agricultural grassland using excavated materials from an existing infill area at the western portion of the site.

1.1 Statement of Competence

This report has been prepared by Dr. Gavin Fennessy with input from Dr Karen Mullen.

Dr Gavin Fennessy

Dr Gavin Fennessy (BSc PhD MCIEEM) is the Director & Principal Ecologist of Ecology Ireland Wildlife Consultants, a consultant ecologist with over 25 years of experience in environmental consultancy. Dr

Fennessy has contributed to and Project Managed numerous ecological impact assessment projects including EclA, EIA, AA, SEA *etc.* Gavin is also an experienced Expert Witness having presented expert testimony at several planning authority Oral Hearings. He is also an experienced lecturer and has regularly contributed to B.Sc. Env. Sc. courses at UCC. Dr Gavin Fennessy led the ecological impact assessment and associated ecology team regarding terrestrial biodiversity at the proposed development. Dr. Fennessy is a member of the Irish Policy Group of the Chartered Institute of Ecology and Environmental Management. He also sits on the national Bird and Wildlife Hazard Committee and is the retained ecological advisor to Dublin Airport Authority.

Karen Mullen

Dr Karen Mullen has over 12 years of professional experience in focused wildlife surveys and habitat assessments, bat surveys and analysis, and habitat mapping. She has worked on numerous projects related to renewable energy, infrastructure, housing, and various other development projects. She is an experienced field ecologist with extensive ecological survey experience, including habitats, terrestrial mammals, and birds.

1.2 Background: Appropriate Assessment

A screening assessment is part of an appropriate assessment process that consists of up to four stages, where each stage follows on from the preceding one. In Stage 1, a screening process is undertaken to identify whether significant impacts on a Natura 2000 site are likely to arise from the project or plan in question. If significant impacts are likely to occur, then the process moves on to Stage 2 where an appropriate assessment (AA) considers potential mitigation measures for adverse impacts. If it is considered that mitigation measures will not be able to adequately minimise potential adverse impact on a Natura 2000 site, then an assessment of alternative solutions is considered in Stage 3. This may then be followed by Stage 4 of the process in the event that adverse impacts remain, and the proposed activity or development is deemed to be of Imperative Reasons of Overriding Public Interest (IROPI), allowing an assessment of compensatory measures to be considered. The outcome of a Stage 2 and higher assessment is presented in a report known as a Natura Impact Statement (NIS).

The first part of the assessment is a screening process to identify whether significant¹ effects on a Natura 2000 site are likely to arise from the project or plan in question, in view of best scientific knowledge and in light of the conservation objectives of any relevant European sites, when considered as an individual project or in combination with other plans and projects. If significant effects are likely to occur or if it is unclear whether significant effects are likely to occur, then the process moves onto the next phase where the project is subject to an appropriate assessment (AA) to determine whether the plan or project would directly affect the integrity of a European site. At this stage, potential mitigation measures for adverse impacts identified in Screening are considered. Typically, a Natura Impact Statement (NIS) is prepared by consultants on behalf of the promoter/developer of a plan or project and this is part of the information

¹ A European Court of Justice ruling in 2013 (Case C-258/11) has stated the following regarding significant effect: "Where a plan or project not directly connected with or necessary to the management of a site is likely to undermine the site's conservation objectives, it must be considered likely to have a significant effect on that site."

used by the competent authority in carrying out an Appropriate Assessment of the proposed plan or project. If the competent authority is satisfied that the plan or project will not adversely affect the integrity of the site concerned, it may approve the project. If it is considered that mitigation measures will not be able to satisfactorily reduce potential adverse impact on a Natura 2000 site then an assessment of alternative solutions is considered in third phase of the assessment process. If adverse impacts remain and the proposed activity or development is deemed to be of Imperative Reasons of Overriding Public Interest (IROPI), the final assessment step permits consideration of permission for development with consideration of compensatory measures.

European (Natura 2000) sites include Special Areas of Conservation (SAC's) and Special Protection Areas (SPA's) for birds. Designated nature conservation sites in the vicinity of the proposed development site were considered in detail as part of the ecological assessment. Geographical Information Systems (GIS) software was used to map and measure the distance from the site boundary to nationally and European designated conservation sites. The boundary shapefiles were downloaded from NPWS in November 2025.

The potential for likely significant effects on European designated Natura 2000 sites arising from the proposed development is considered as part of a Screening for Appropriate Assessment and consequently the potential for adverse effects of the proposed project (in combination with other plans or projects) on Special Areas of Conservation and Special Protection Areas is assessed in this report. A nominal 15km hinterland area has been used in this assessment with reference, where appropriate, to more distant sites which may be ecologically linked with the development area. In keeping with current guidance, we consider the likely Zone of Influence (or Impact) for a proposed development and do not only consider sites out to this nominal distance of 15km. Where consideration of the Source-Pathway-Receptor (S-P-R) model indicates that there are likely significant effects which in the absence of mitigation will occur in relation to more distant sites, these are considered as part of the screening process.

While a screening assessment appraisal or NIS may be provided by the advocate of the plan or project in question, the AA itself is undertaken by the competent authority (*e.g.* the planning authority and An Bord Pleanála). So, in this case, the Appropriate Assessment for the project, described herein, is undertaken by Carlow County Council; informed by this NIS and any other relevant information provided to the statutory body.

2 Methodology

This report presents in brief the outcome of a Screening for Appropriate Assessment. The subsequent Natura Impact Statement (NIS) is prepared to identify whether the proposed development, in view of best scientific knowledge and in light of the conservation objectives of any relevant European sites, when considered as an individual project or in combination with other plans and projects, will have an adverse effect on the integrity of any European Site. It is important to emphasise that a screening assessment does not have to ascertain the existence of a significant effect or impact on a Natura 2000 site as such; it only has to establish whether a significant effect or impact is possible or may occur (as per judgement by Ms. Justice Finlay Geoghegan; see guidelines below). At the NIS stage, all mitigation measures necessary to avoid, reduce or offset negative effects are considered.

The conservation objectives of Natura 2000 sites have been compiled by the National Parks & Wildlife Service (NPWS) in relation to the habitats and species (*i.e.* qualifying interests) for which the sites are selected. These conservation objectives are referred to when carrying out appropriate assessments for plans and projects that might impact on these sites.

Documents associated with the development and relevant ecology databases were consulted as part of this assessment (as referenced in this report). Field assessments were also undertaken between 2023 and 2025 to inform the Biodiversity Chapter of the EIAR (Chapter 6) and also the NIS. The following guidelines and legal judgements were used in the completion of this assessment;

- Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites – European Commission Methodical Guidance on the provisions of Article 6(3) and 6(4) of the ‘Habitats’ Directive 92/43/EEC (European Commission 2001)
- Office of the Planning Regulator (OPR) Practice Note PN01, Appropriate Assessment Screening for Development Management (2021).
- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DoEHLG 2009)
- Integrated Biodiversity Impact Assessment – Streamlining AA, SEA and EIA Processes: Practitioner’s Manual (EPA 2013)
- European Court of Justice Ruling 11th April 2013 Case C-258/11 Peter Sweetman and Others v An Bord Pleanála - Criteria to be applied when assessing the likelihood that N6 Galway City Outer Bypass Road scheme will adversely affect the integrity of Lough Corrib SAC
- High Court Ruling 25th July 2014 by Ms. Justice Finlay Geoghegan; Neutral Citation [2014] IEHC 400; High Court Record No. 2013 802 JR; Kelly -v- An Bord Pleanála – Judicial review of grant of planning by An Bord Pleanála for two wind farm phases in County Roscommon
- High Court Ruling 24th November 2014 by Mr. Justice Hedigan; Neutral Citation [2014] IEHC 557; High Court Record No. 2014 320 JR; Rossmore Properties Limited & Anor -v- An Bord Pleanála
- High Court Ruling 25th February 2016 by Mr. Justice Barton. Neutral Citation [2016] IEHC 134; High Court Record No. 2013 450 JR; Balz & Anor -v- An Bord Pleanála.

- European Court of Justice ruling 12th April 2018 in respect of Case C-323/17 (People Over Wind & Sweetman) - it is not appropriate for the purposes of Appropriate Assessment (AA), at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of a plan or project.
- European Court of Justice ruling 19th April 2018 in respect of Case C-164/17, Compensation vs Mitigation, Grace & Sweetman Vs ABP.
- High Court Ruling 8th February 2019 by Justice Barniville in respect of Kelly -v- An Bord Pleanála & anor. The Court concludes *“as a matter of fact and law, that SUDS are not mitigation measures which a competent authority is precluded from considering at the stage 1 screening stage”*. The Irish High Court ([2019] IEHC 84)
- Heather Hill Management Company CLG v An Bord Pleanála (Burkeway Homes Limited as Notice Party) [2019] IEHC 450. Mr. Justice Garrett Simons granted an order of certiorari setting aside the decision of the Board to grant permission for a residential development of 197 units at Bearna Co. Galway, on the basis that it was a material contravention of the Galway County Development Plan (the CDP), it failed to carry out a 'justification test' as required and failed to carry out proper Appropriate Assessment screening.
- An Taisce – The National Trust for Ireland v An Bord Pleanála & ors (“Kilkenny Cheese”) [2022] IESC 8; [2022] 1 I.L.R.M. 281; [2022] 2 I.R. 173 (Supreme Court, Hogan J; O’Donnell CJ, Dunne, Charleton & Woulfe JJ concurring), 16 February 2022. Re-affirmed the Sweetman test: the AA must contain “complete, precise and definitive” findings that dispel all reasonable scientific doubt. The legal burden in Judicial Review remains on the applicant, but the evidential burden lies with the competent authority to show a compliant AA.
- European Commission. *Managing Natura 2000 Sites: The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC*, (21-11-18) C (2018) 7261 Final. Commission Notice Brussels.

2.1.1 Information Consulted for this Report

This assessment has been informed by the following sources of data:

- Desk based surveys and detailed site surveys of the proposed development site;
- The EIAR completed for the proposed development;
- Information on the location, nature and design of the proposed project as provided by the client;
- Department of Housing, Planning, Community and Local Government (DHPCLG) online land-use mapping (www.myplan.ie/en/index.html);
- Office of Public Works (OPW) National Flood Hazard Mapping website (www.floodmaps.ie)
- Environmental Protection Agency (EPA) geoportal mapping tool (<https://gis.epa.ie/EPAMaps/>);
- National Parks and Wildlife Service protected site and species information and data (<https://www.npws.ie/protected-sites>);
- National Biodiversity Data Centre (www.biodiversityireland.ie); and
- Ordnance Survey of Ireland mapping and aerial photography (<https://osi.maps.arcgis.com/apps/mapviewer/index.html>).

3 Brief Description of the Site & Project

3.1 Study Site: Location

The Substitute Consent application area is located in the townland of Clogrennane, Co. Carlow and is located approximately 6km southwest of Carlow town and approximately 3km north-west of Ballinabranna, Co. Carlow and lies immediately south of the County Laois border (Figure 3.1). The Substitute Consent site encompasses an existing (inactive) quarry, with the area of historic excavation measuring approximately 8.66ha and adjacent predominantly agricultural lands. The total area of the site is 41.86ha. The former quarry was used to extract sandstone bedrock with quarrying activity ceasing in 2014. There is limited vegetative cover present within the existing quarry with areas of spoil and bare ground, recolonising bareground, some artificial lakes and ponds and boundary scrub. The remainder of the development site is predominantly comprised of improved agricultural grassland, hedgerows, treelines and scrub. The overall landholding has a total area of 45.68ha.

The site is surrounded by agricultural lands and one-off rural housing to the north, south, east and west. There is an area of forestry immediately adjacent to the west of proposed development site, with forest areas are also located to the northwest and south of the proposed development site. Clogrennane Woods, a Coillte property with a long-established woodland (circa 1800's) is located 0.5km to the east. The proposed development site is accessed from the L7130 and L7134 public road to the east. An access road to the quarry branches off this local road and runs along the northern boundary of the existing quarry void.

This general area has a long association with extraction activities. The proposed development site is 1.5km east of the Bilboa, Co. Laois which is historically a coal-mining settlement while an active quarry, Clogrennane Lime Ltd. is located approximately 1.5km to the southeast of the proposed development site.

The majority of the proposed development site is located within the River Barrow surface water catchment and Hydrometric Area 14 of the Southeastern River Basin District. Part of the southwest of the proposed development site is located within the River Nore surface water catchment and Hydrometric Area 15 of the Southeastern River Basin District. EPA mapping indicates a stream (identified as Raheendoran Stream) flowing through the site before ultimately discharging into the River Barrow. However, walkover surveys and drainage mapping indicate that the course of this stream has been altered by the historic quarrying activities and no watercourses cross the existing quarry void. Water gathers in the floor of the existing quarry and drains out from an existing pond in the north of the quarry. From here the stream/quarry discharge flows to the southeast along the existing quarry access road. The drain is culverted under the access road and flows to the east where it joins the Mortarstown Stream to the east. This stream flows east and discharges into the Fushoge River just upstream of its confluence with the River Barrow. There is no existing discharge from the quarry within the River Nore catchment. However, there is an unnamed stream c. 1.3km west of the site which connects to the Dinin River that ultimately discharges into the River Nore.

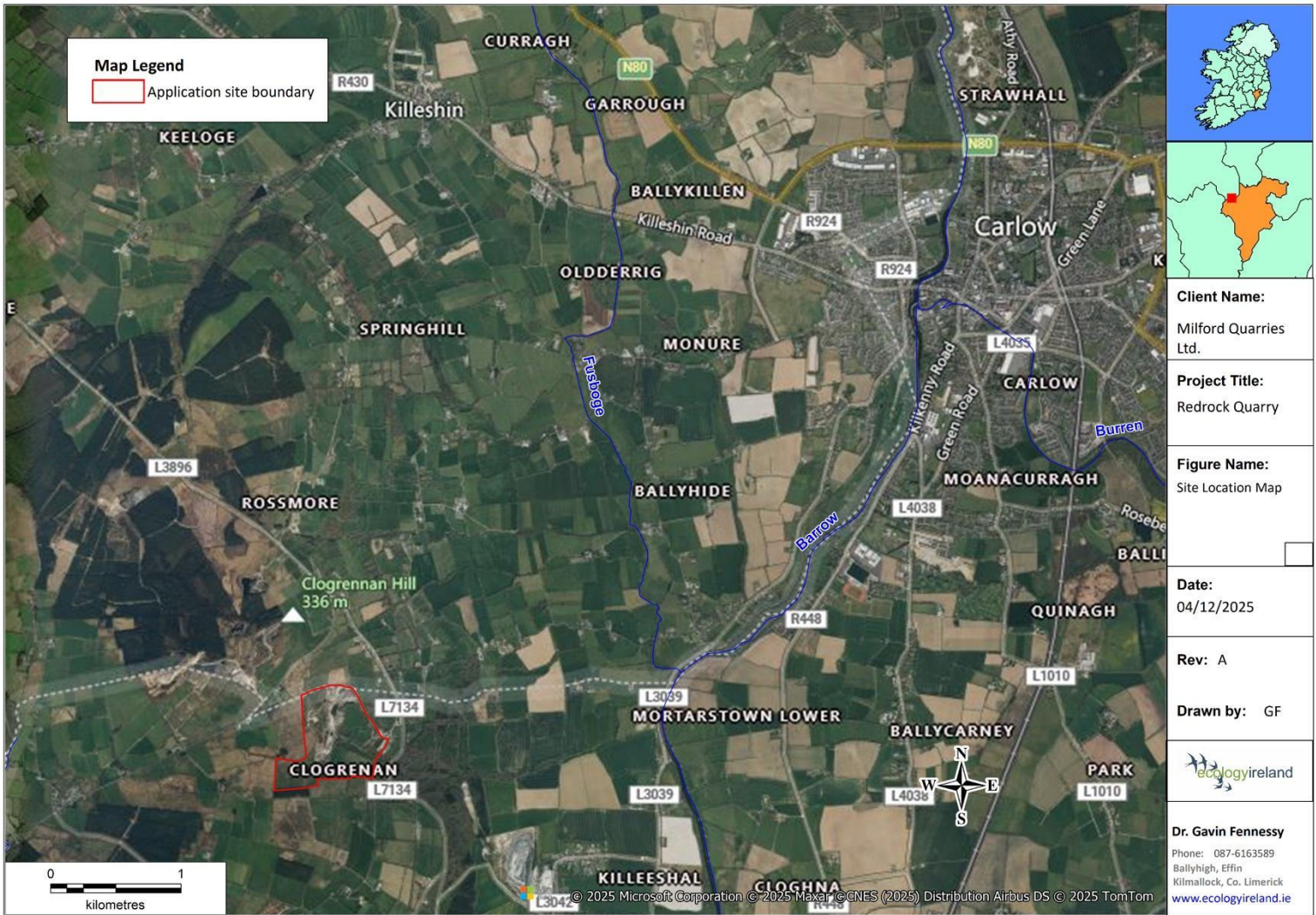


Figure 3.1 Location of proposed development.

3.2 Study Site: Walkover

The field assessments were undertaken in July and August 2025 according to the survey schedule shown in Table 3.1. An objective of the field assessments was to gain an overview of the site, as well as to note ecological points of interest such as the presence of invasive plant species and species that are protected or are part of the qualifying interests of the Natura 2000 sites relevant here.

No habitats listed on Annex I of the EU Habitats Directive (92/43/EEC) were recorded within the Substitute Consent site boundary. Botanical species protected under the Flora (Protection) Order 2022, listed in Annex II or IV of the EU Habitats Directive (92/43/EEC), or Red listed in Ireland (Wyse-Jackson *et al.*, 2016) were not recorded during the site visits. The interior of the worked quarry area is dominated by areas of spoil and bare ground habitats; areas of recolonising bare ground with very limited vegetative cover; areas of scrub and improved grassland; a small stream; hedgerow sections; treelines, and artificial waterbodies/drainage features occur within the quarry floor and at the application site boundary.

No species listed on the Third Schedule of the 2011 European Communities (Birds and Natural Habitats) Regulations (*i.e.* species of which it is an offense to disperse, spread or otherwise cause to grow in any place) were found within the site boundary.

The diversity and abundance of terrestrial fauna present at the site is limited by the lack of vegetative cover present at the site. The quarry floor is largely devoid of woody vegetation and patches of grassland, scrub and fringing hedgerow and treelines make up the remainder of the Substitute Consent site. The recolonising bare ground and the rock faces of the existing inactive quarry provide attractive habitat to species such as Irish Hare, *Lepus timidus hibernicus*, Meadow Pipit, *Anthus pratensis* and Peregrine Falcon, *Falco peregrinus*.

Walkovers and trail cameras recorded a number of non-volant mammal species present within the site including Irish Hare, Fox, *Vulpes vulpes* (regular) and Brown Rat, *Rattus norvegicus*. No breeding or resting places of protected non-volant mammals were recorded within the site. No evidence of Otter was found, and the Substitute Consent site is generally unsuitable for Otter. Although no evidence of Badger (*Meles meles*) was recorded in the site during the suite of surveys conducted for this assessment, surveys conducted previously within the proposed development site in 2023 and 2024, recorded Badger signs. Badger tracks and scat were recorded at the site, along with well-developed trails. No sett was identified within the Substitute Consent site (Donovan 2024).

Five species of bat were confirmed to be present at the site: Common Pipistrelle, *Pipistrellus pipistrellus*, Soprano Pipistrelle, *Pipistrellus pygmaeus*, Leisler's Bat, *Nyctalus leisleri*, Daubenton's Bat, *Myotis daubentonii* and Brown Long-eared Bat, *Plecotus auritus*. Activity levels were typical of commuting and opportunistic foraging rather than concentrated roost activity. No suitable roost structures or trees were identified within the Site.

The Substitute Consent site supports a modest bird community typical of farmland and disturbed ground. The lack of vegetative cover at the existing quarry minimizes the potential for the site for breeding, foraging or nesting birds. Ten Sand Martin, *Riparia riparia* burrows were noted in spoil heaps with high vulnerability to predation and collapse. Peregrine Falcon, *Falco peregrinus*, an Annex 1 listed species, was recorded on several occasions during ecological surveys of the Substitute Consent site. Peregrine Falcon is a species

that frequently nests and roosts at quarry sites as the steep rock-faces mimic natural sea-cliffs which are a preferred habitat. The Peregrine Falcon recorded during surveys appeared to be an adult male. The presence of whitewash on the cliff within the development site indicates a roost might be present that is used regularly by this bird. However, there is no evidence of current or recent historical nesting.

Common Frog, *Rana temporaria* and Smooth Newt, *Lissotriton vulgaris*, were recorded at artificial ponds within the Substitute Consent site by means of eDNA sampling. Common Frog was also observed during walkover surveys. Butterflies and dragonflies were recorded in small numbers; no rare or protected invertebrates were found on site, though some threatened species are recorded at a wider 10 km-grid scale.

Table 3.1 Details of field surveys carried out to inform this assessment.

Date	Weather	Ecologist	Survey
07/07/2025	Sunny spells, Dry, becoming more overcast Cloud 3-6/8, Wind F2, Good visibility	Gavin Fennessy	Transect bird surveys, VP surveys, trail cameras and passive bat detector deployment, general walkover survey
07/08/2025	Dry, sunny, Cloud 2/8, Wind F2-3, Good visibility	Gavin Fennessy	Transect bird surveys, VP surveys, general walkover
09/08/2025	Dry, overcast, Temp 16°C	Shane Somers	General walkover, habitat mapping, mammal survey, bat roost survey
10/08/2025	Mostly dry, overcast, Temp 17°C	Shane Somers/Gavin Fennessy	General walkover, habitat mapping, mammal survey, bat roost survey, eDNA sampling
11/08/2025	Mostly dry, brief shower, Cloud 4- 7/8, Wind F1-2	John Conaghan	Habitat and botanical survey
14/08/2025	Dry and sunny spells, Cloud 2/8, Wind F1, Good visibility	Gavin Fennessy	Retrieve trail cameras and passive bat detectors, general walkover survey

3.3 Project Details

3.3.1 Proposed Development

For detailed illustrated reference for the proposed development, please refer to the Site Layout Plan (Figure 3.2) prepared by Milford Quarries Limited and included as part of the Subject Planning Application.

Milford Quarries Ltd. intend to apply for Substitute Consent to regularise the historic sandstone extraction and processing at the currently inactive quarry site. The development consisted of quarrying including rock extraction by mechanical means including extraction areas, stockpiling areas, surface water management and ancillary works. The quarry included an extraction area of c. 8.66ha within a c. 41.86ha development site. The overall landholding has a total area of c. 45.68ha. The development activities involved extraction of between c. 62,000 m³ and c. 650,000 m³ of material over a c. 14-year period between 2000 and 2014. The quarry's commercial extraction appears to have ceased by 2014. The Substitute Consent will also include for a restoration plan to agricultural grassland using excavated materials from an existing infill area at the western portion of the site. The location of the site is shown in Figure 3.1.

Ordnance Survey Ireland (OSi) maps for the Substitute Consent site were reviewed to establish the primary habitat types prior to quarrying activities. A small gravel pit is indicated on historic maps dated 1913, and evidence of a quarry is shown on a map dated 1906 which accompanied the registration application. Prior to 2000, the Substitute Consent area was primarily a mosaic of improved grassland bounded by hedgerows, characteristic of the area that currently surrounds the Substitute Consent site. Significant changes to the site took place from 2005 onwards with the intensification and expansion of quarrying activities.

The quarry was registered by the previous owner in 2005 over an area of 25.7 hectares. In 2012, Carlow County Council measured the current extraction area as 15.52 hectares and reasoned that the pit appeared to have been abandoned from 1913 (0.16 hectares) until 2000, when works recommenced and intensified in the period 2005-2010. In August 2012, Carlow County Council determined under section 261A(2)(a)(i) that quarry development was carried out after 1st February 1990, which development would have required, having regard to the EIA Directive, an environmental impact assessment but that such an assessment was not carried out. The reason given was that the site exceeded the mandatory threshold of 5 hectares for an EIA. The Planning Authority also determined under section 261A(2)(a)(ii) that development was carried out after 26th February 1997, which development would have required, having regard to the Habitats Directive, an Appropriate Assessment but that such an assessment was not carried out.

Milford Quarries Ltd. acquired the abandoned quarry in 2023 and applied for leave to seek Substitute Consent in May 2023 (ABP Ref: LS01.317194). Following the enactment of the Planned and Development Amendment Act 2023, the need to apply for Leave for Substitute Consent was removed from the legislation with effect from 16th December 2023. This application was therefore considered withdrawn by An Bord Pleanála.

Milford Quarries Ltd. are submitting a planning application under Section 37L of the Planning and Development Act 2000, as amended, for the proposed development of a 41.86ha portion of the 45.68ha landholding. This proposed project will consist of further quarry extraction over an area of 16.17ha and will overlap the site that is the subject of this Substitute Consent planning application. The projected lifespan of this proposed development is c. 20 years.

There are five broad stages in the Quarrying Process. They are listed below:

- Blasting of rock faces
- Transport to crusher
- Crushing
- Stockpiling
- Conveying to Cement plant.

Each of these steps is outlined below.

Blasting of Rock Faces

In order to extract the sandstone, the active rock face must be blasted using explosives. All blasting at the site was subject to a specific design, which was carried out in accordance with the relevant standards, which establishes best practice and safety. Each blast was specifically designed to release a quantum of rock from the working quarry face. In this regard, a pre-determined grid of vertical holes were drilled on top of the quarry face to a required depth. The intervals between the drill holes were specifically designed having regard to the explosives to be placed within each of the holes and the depth of the rock, which is sought to be released. There were pre-determined intervals or delays in the detonation of explosives in the drilled holes. This process minimised vibration arising from the blasting and increases the efficiency with which the rock can be removed. The short firing of the blasts and the explosives used were monitored by the Quarry Manager.

Transport to Crusher

Once blasting had occurred, the rock is loaded into mobile dump-trucks, which then transported the blasted rock to the primary crusher, which was located on the quarry floor.

Crushing of Rock

There were two crushing stages, primary crushing and secondary crushing. Each crusher consisted of a set of electrically operating rotating drums, which functioned to reduce the particle size of the rock to a scale that could have been easily transported using belt conveyors. The primary crusher reduced the rock size to a maximum diameter of 100mm and the rock was then conveyed out of the quarry to the secondary crusher by an elevated conveyor. The secondary crusher reduced the rock size to a maximum diameter of 50mm.

Stockpiling of Crushed Rock

The crushed rock was conveyed to temporary stockpiles located adjacent to all sides of the quarry void within the development site. The stockpiles also acted as reserves in the event of a crusher or mobile equipment failure. All production benches were subject to ongoing geo-technical monitoring on a regular basis in keeping with the highest industry standards, best industry practices, and current health and safety regulations and guidelines.

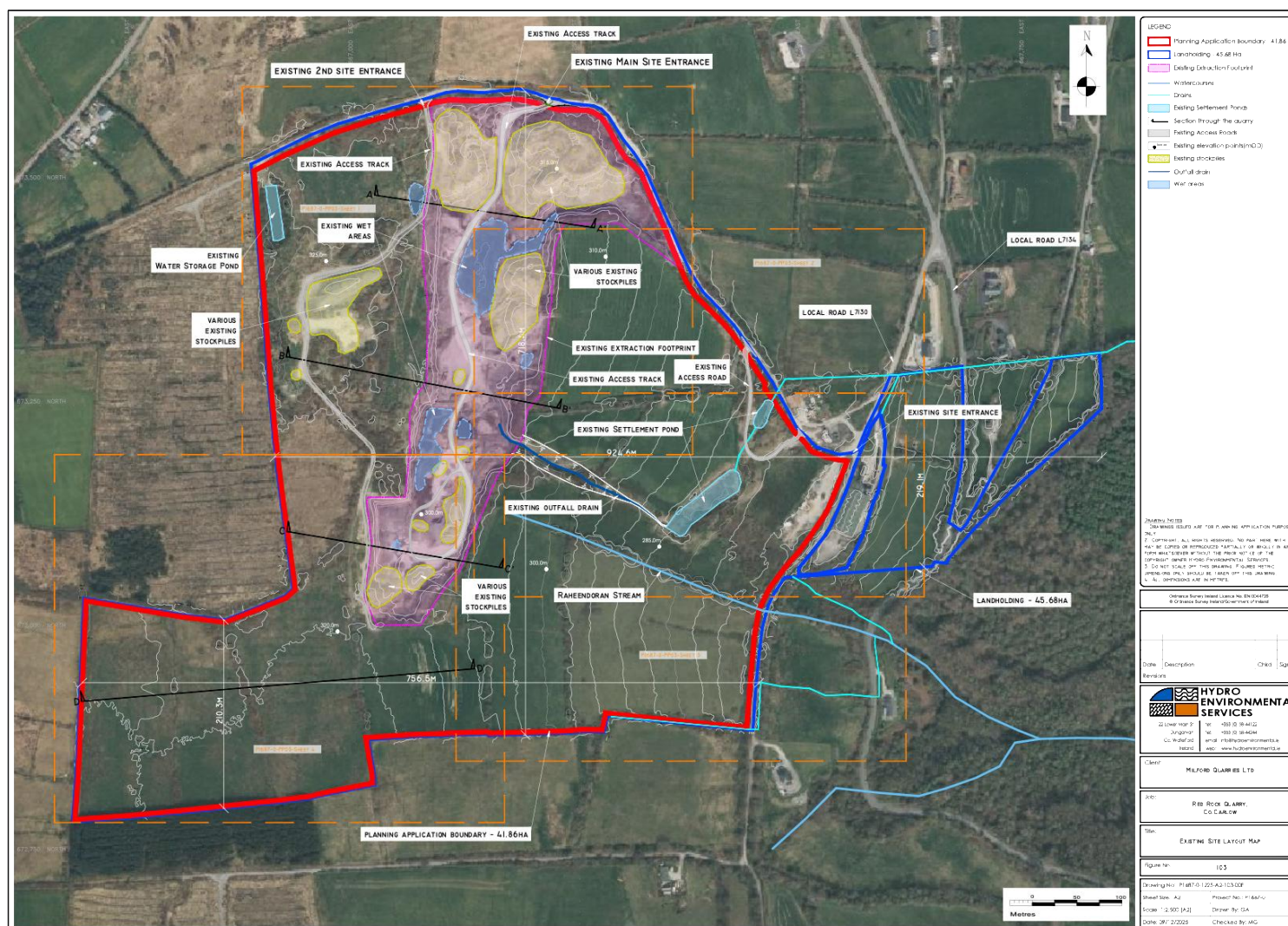


Figure 3.2 Existing site layout plan map.

3.3.2 Phasing

Figure 3.3 below illustrates the phasing of the development from 2000 to until the quarry became inactive. No extraction activities have occurred at the development site since 2014. The completion of all phases involved the extraction of sandstone rock to a final depth of 300 metres above Ordnance Datum (aOD). The restoration of the quarry including the current subject site is illustrated in the Restoration Plan produced by Macroworks (see Figure 5.1 below) and referenced in Chapter 3 of the associated EIAR.

It should be noted that the phases are indicative in illustrating the direction of works within the proposed development. All production benches were subject to ongoing geo-technical monitoring on a regular basis in keeping with the highest industry standards, best industry practices, and current health and safety regulations and guidelines.

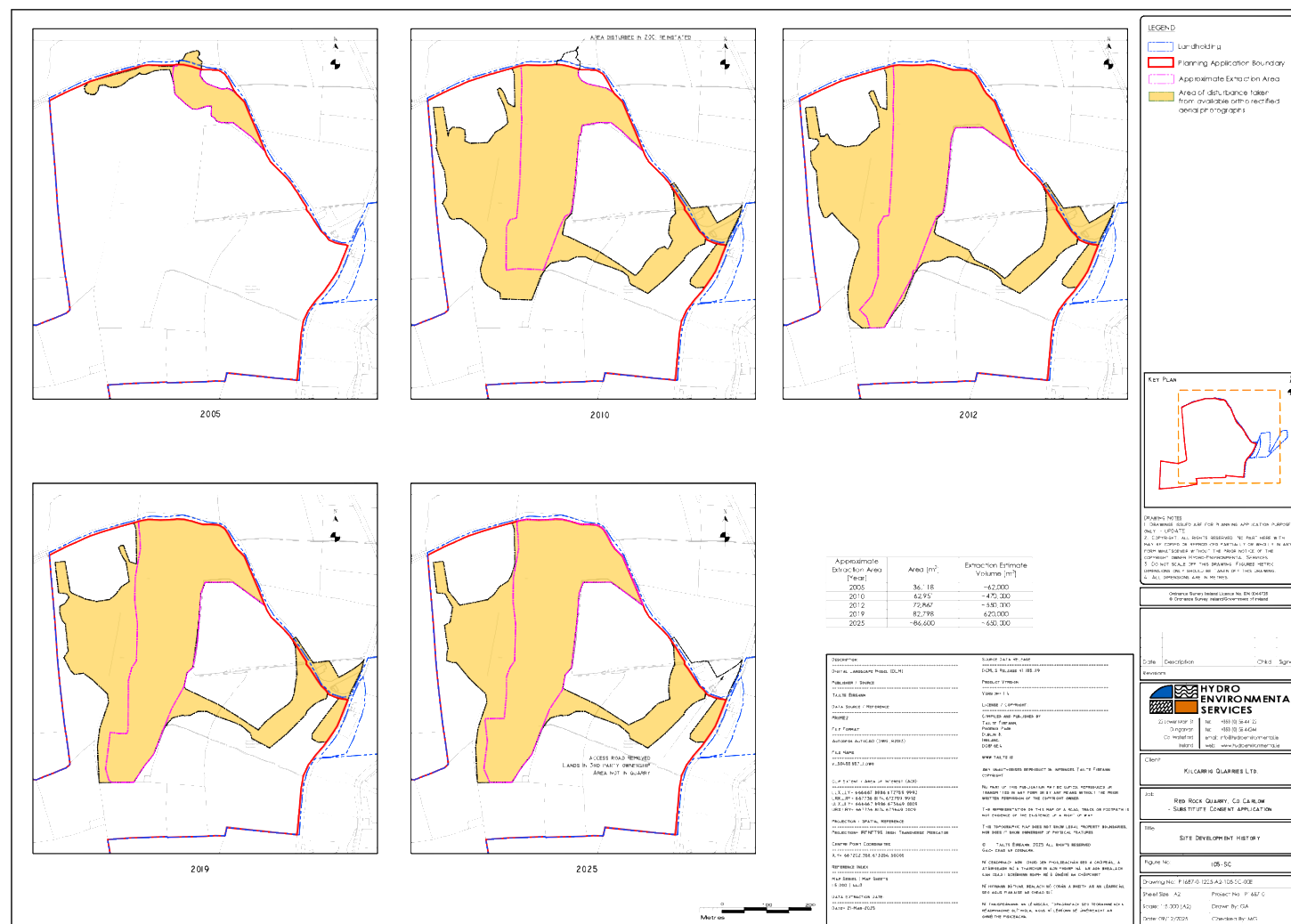


Figure 3.3. Phased development of the proposed development site.

4 Brief Description of the Natura 2000 Sites

The proposed development site does not lie within any EU Natura 2000 site or nationally designated site (Table 4.1). The closest of the European designated sites is River Barrow & River Nore SAC (002162) located a minimum of 2.1km from the application site and is the only SAC located within 15km of the application site boundary (Figure 4.1).

The closest of the nationally designated sites is Cloghrystick Wood pNHA (000806) located 3.4km distant from the application site. There is a total of 7 pNHAs and one NHA located within 15km of the site boundary (Figure 4.2).

The River Nore SPA (004233) is located 22km southwest of the proposed development site. The River Nore SPA is located downgradient of the proposed development site via the Dinin River within the River Nore catchment, with only a very small area of the Substitute Consent site located in this catchment. The length of any potential hydrological flowpath would be in excess of 30km. Additionally, there is no surface water discharge from the site to any tributary of the Dinin River. Furthermore, the Substitute Consent site is not connected hydrogeologically with this SPA as the ground water is expected to flow to the east of the proposed development site.

All potential pathways for impact on designated sites have been evaluated in the impact assessment both within and outside of the nominal 15km buffer area around the site. This buffer area is an arbitrary distance used to display the sites most proximate to the Substitute Consent site. However, all sites within and outside of this 15km area are considered when assessing the potential for ecological impacts arising from the development at this site. The potential for ecological effects on sites at all distances from Substitute Consent site are evaluated using the Source-Pathway-Receptor (S-P-R) model.

A summary of the qualifying and special conservation interests of the Natura 2000 sites located in the wider hinterland is provided in Table 4.2.

Table 4.1 Minimum distance from the application site to European and nationally designated sites.

Site Name	Site Code	Minimum Distance (km)
<i>European sites</i>		
River Barrow & River Nore SAC	002162	2.1
<i>Nationally designated sites</i>		
Cloghrystick Wood pNHA	000806	3.4
Coan Bogs NHA	002382	5.0
Mothel Church, Coolcullen pNHA	000408	8.0
Oakpark pNHA	000810	8.8

Site Name	Side Code	Minimum Distance (km)
Whitehall Quarries pNHA	000855	10.8
Ballymoon Esker pNHA	000797	11.0
Ballylynan pNHA	000857	13.9
River Barrow Valley at Tankardstown Bridge pNHA	000858	14.1

Table 4.2 Summary of the qualifying and special conservation interests of the European designated sites located in the wider hinterland of the Substitute Consent site.

Site Name	Site Code	Qualifying/Special Conservation Interests	Minimum Distance to Site (km)
River Barrow & River Nore SAC	002162	Habitats	2.1
		Estuaries [1130]	
		Mudflats and sandflats not covered by seawater at low tide [1140]	
		Reefs [1170]	
		<i>Salicornia</i> and other annuals colonising mud and sand [1310]	
		Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]	
		Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]	
		Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]	
		European dry heaths [4030]	
		Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	
		Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]	
		Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	
		Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0]	
		Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	
		Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]	

Site Name	Site Code	Qualifying/Special Conservation Interests	Minimum Distance to Site (km)
		Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	
		Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	
		Species	
		<i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016]	
		<i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	
		<i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]	
		<i>Petromyzon marinus</i> (Sea Lamprey) [1095]	
		<i>Lampetra planeri</i> (Brook Lamprey) [1096]	
		<i>Lampetra fluviatilis</i> (River Lamprey) [1099]	
		<i>Alosa fallax fallax</i> (Twaiite Shad) [1103]	
		<i>Salmo salar</i> (Salmon) [1106]	
		<i>Lutra lutra</i> (Otter) [1355]	
		<i>Vandenboschia speciosa</i> (Killarney Fern) [6985]	



Figure 4.1 European designated sites located within wider hinterland area.

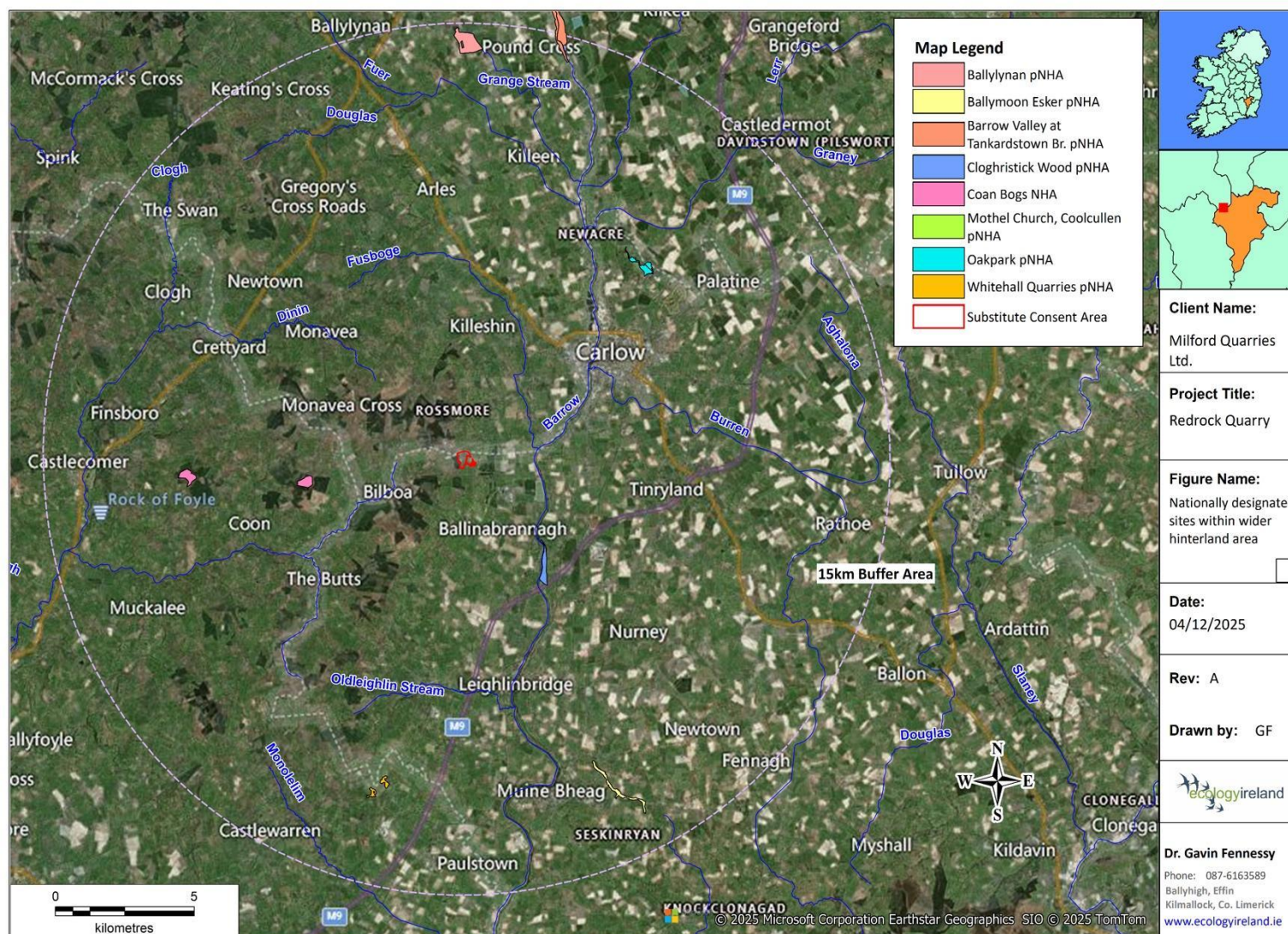


Figure 4.2 Nationally designated sites located within wider hinterland area.

4.1 Potential Impact-receptor Pathways: Overview

The Source-Pathway-Receptor model is used to evaluate the potential for effects to be conveyed to sites in the wider hinterland area. The closest European designated sites is the River Barrow and River Nore SAC (002162; 2.1km overland and c. 2.5km downstream) and is the only Natura 2000 site hydrologically connected to the proposed development area. The only nationally designated site located downstream and hydrologically connected to the Site is Cloghrick Wood pNHA (000806; 3.4km overland and c. 6.0km downstream), located on the eastern banks of the River Barrow, downstream of the Substitute Consent site. This pNHA includes some wet woodland adjacent to the River Barrow.

The Screening stage assessment is summarised in Table 4.3. There is no likelihood of disturbance effects on the European sites given the distances involved. Similarly, emissions of dust, noise and light are not likely to result in any significant effects on these distant European designated sites. The only pathway identified with any potential to result in likely significant effects is via hydrological links to the River Barrow and River Nore SAC.

The River Barrow and River Nore SAC is designated for the protection of a range of habitats and species. The site consists of freshwater stretches of the River Barrow and River Nore catchments as far upstream as the Slieve Bloom Mountains, and it also includes the tidal elements and estuary as far downstream as Creadun Head in Waterford. Conservation objectives for this site seek to maintain or restore the favourable conservation condition of the qualifying interests. A credible hydrological pathway exists from the quarry lands to the River Barrow. Noise or visual disturbance originating from the quarry is not a pathway to this SAC due to the distances involved and intervening topography/land use.

The relevant threats and pressures that have been identified in relation to this SAC site are summarised in Table 4.4. The distances downstream of the site combined with the settlement, dilution and dispersion effects makes the potential of significant hydrological mediated effects on this designated site relatively unlikely. However, the potential for adverse impacts on this site and its conservation objectives are considered on a precautionary basis with a focus on hydrological effects on groundwater and/or contaminated surface water run-off and the potential for hydrologically mediated pollution to negatively affect the availability and/or abundance of prey species.

Targeted field surveys did not record regular usage of the project lands by SAC species from the screened-in SAC.

The River Nore SPA (004233) is located 22km southwest of the Substitute Consent site. The River Nore SPA is located downgradient of the site via the Dinin River within the River Nore catchment, with only a very small area of the proposed development site located in this catchment. The length of any potential hydrological flowpath would be in excess of 30km. Additionally, there is no surface water discharge from the site to any tributary of the Dinin River. Furthermore, the Substitute Consent site is not connected hydrogeologically with this SPA as the ground water is expected to flow to the east of the quarry site. There is no likelihood of significant effects having arisen on the River Nore SPA as a result of the quarry development at this location.

4.1.1 Water quality mediated effects

There is a potential impact-receptor pathway via hydrological links between the Substitute Consent site and one designated site, the River Barrow and River Nore SAC. The pathway of discharge of water from the Site is via the Mortarstown Stream which receives the discharge from the Substitute Consent site. The lower reaches of this stream and the Fushoge River form part of the SAC.

As identified in Chapter 8 (Hydrology and Hydrogeology) of the EIAR, in the absence of appropriate environmental controls, any of the works related to the quarry (construction, operational or restoration phase) with the potential to result in a significant release of pollutants which negatively affects water quality downstream of the site could potentially have resulted in a reduction in prey availability and/or abundance and water quality within the downstream European sites.

4.1.1.1 Requirement for NIS

Across enabling, operational and restoration stages, the only credible pathway to the screened-in European sites is hydrological. Potential effects are limited to suspended solids, turbidity and trace contaminants, including hydrocarbons and alkaline residues associated with construction, quarry operations, washing and the decommissioning of the separately permitted concrete recovery area. There is no credible noise or visual disturbance pathway to the SAC and field surveys indicate that the quarry lands are not regularly used by SAC species. On a precautionary basis, the River Barrow and River Nore SAC remains screened-in for further appraisal in the Natura Impact Statement.

Table 4.3 Screening assessment summary.

European Site	Site Code	Qualifying / Special Conservation Interests	Min. Distance (km)	Pathway (at screening)	Screening Conclusion
River Barrow and Nore SAC	002162	• Habitats: - Estuaries (1130) • Mudflats and sandflats not covered by seawater at low tide (1140) • Reefs (1170) • Salicornia and other annuals colonising mud and sand (1310) • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) (1330) • Mediterranean salt meadows (<i>Juncetalia maritimi</i>) (1410) • Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation (3260) • European dry heaths (4030) • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430) • Petrifying springs with tufa formation (Cratoneurion) (7220) • Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles (91A0) • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) (91E0) • Species: • <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail)	Overland - 2.1. Hydrological flowpath - >2.5	Yes – hydrological pathway	Screen-in

European Site	Site Code	Qualifying / Special Conservation Interests	Min. Distance (km)	Pathway (at screening)	Screening Conclusion
		(1016) • <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) (1029) • <i>Austropotamobius pallipes</i> (White-clawed Crayfish) (1092) • <i>Petromyzon marinus</i> (Sea Lamprey) (1095) • <i>Lampetra planeri</i> (Brook Lamprey) (1096) • <i>Lampetra fluviatilis</i> (River Lamprey) (1099) • <i>Alosa fallax fallax</i> (Twaite Shad) (1103) • <i>Salmo salar</i> (Salmon) (1106) • <i>Lutra lutra</i> (Otter) (1355) <i>Vandenboschia speciosa</i> (Killarney Fern) (6985) - <i>Salmo salar</i> (Salmon) [1106] - <i>Lutra lutra</i> (Otter) [1355]			
River Nore SPA	004233	• Kingfisher (<i>Alcedo atthis</i>) [A229]	Overland- 22 Hydrological flowpath - > 30	No	Screen-out

Table 4.4 Summary of known threats and pressures of relevance to the hydrologically connected SPA sites.

SAC	Site code	Main qualifying interests (habitats)	Main qualifying interests (species)	Key threats & pressures to consider
River Barrow and Nore SAC	002162	Estuaries (1130) Mudflats and sandflats not covered by seawater at low tide (1140) Reefs (1170) Salicornia and other annuals colonising mud and sand (1310) Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) (1330) Mediterranean salt meadows (<i>Juncetalia maritimi</i>) (1410) Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation (3260) European dry heaths (4030) Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430) Petrifying springs with tufa formation (<i>Cratoneurion</i>) (7220) Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles (91A0) Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, <i>Salicion albae</i>) (91E0)	<i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) (1016) <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) (1029) <i>Austropotamobius pallipes</i> (White-clawed Crayfish) (1092) <i>Petromyzon marinus</i> (Sea Lamprey) (1095) <i>Lampetra planeri</i> (Brook Lamprey) (1096) <i>Lampetra fluviatilis</i> (River Lamprey) (1099) <i>Alosa fallax fallax</i> (Twaite Shad) (1103) <i>Salmo salar</i> (Salmon) (1106) <i>Lutra lutra</i> (Otter) (1355) <i>Vandenbergia speciosa</i> (Killarney Fern) (6985)	• High inputs of nutrients into the river system from agricultural run-off and several sewage plants • Over-grazing within the woodland areas • Invasion of non-native species including Cherry Laurel (<i>Prunus laurocerasus</i>) and Rhododendron (<i>Rhododendron ponticum</i>) • Dredging within the lower reaches of the system • Land reclamations are a threat to salt meadows and associated protected species

5 Assessment: Natura Impact Statement

As described in Section 4, significant effects arising from water quality mediated effects cannot be discounted without the implementation of appropriate mitigation measures.

The elements of the proposed project that may have potentially impacted on the special conservation interests and associated conservation objectives for the River Barrow and River Nore SAC are further considered in Section 5.1 below. Table 5.1 summarises the conservation objectives of the special conservation interests (SCIs) of the River Barrow and River Nore SAC.

Table 5.1 Conservation objectives summary for the hydrologically connected European designated site.

Qualifying Interest	Objective	Attribute	Target
Estuaries [1130]	Habitat area	Hectares	Permanent habitat is stable or increasing, subject to natural processes.
	Community distribution	Hectares	Conserve the following community types in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex; Fine sand with <i>Fabulina fabula</i> community; Sheltered to moderately exposed intertidal reef community complex.
	Community structure: extent	Hectares and distribution	Conserve the extent of <i>Sabellaria alveolata</i> reef community, subject to natural processes.
	Community structure: quality	Honeycomb reef structure	Conserve the high quality of the <i>Sabellaria alveolata</i> reef community, subject to natural processes.
Mudflats and sandflats not covered by seawater at low tide [1140]	Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.
	Community distribution	Hectares	Conserve the following community types in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex.
Reefs [1170]	Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.

Qualifying Interest	Objective	Attribute	Target
	Distribution	Occurrence	The distribution of reefs is stable or increasing, subject to natural processes.
	Community Extent	Hectares	Conserve the following community type in a natural condition: Sheltered to moderately exposed intertidal reef community complex in a natural condition, subject to natural processes.
	Community Structure: extent	Hectares and distribution	Conserve the extent of <i>Sabellaria alveolata</i> reef community, subject to natural processes.
	Community Structure: quality	Honeycomb reef structure	Conserve the high quality of the <i>Sabellaria alveolata</i> reef community, subject to natural processes.
<i>Salicornia</i> and other annuals colonising mud and sand [1310]	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For the one sub-site mapped: Ringville - 0.03ha.
	Habitat distribution	Occurrence	No decline, subject to natural processes.
	Physical structure: sediment supply	Presence/absence of physical barriers	Maintain or where necessary restore natural circulation of sediments and organic matter, without any physical obstructions.
	Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime.

Qualifying Interest	Objective	Attribute	Target
	Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession.
	Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession.
	Vegetation structure: vegetation height	Centimeters	Maintain structural variation within sward.
	Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated.
	Vegetation composition: typical species and sub- communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub-communities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009).
	Vegetation structure: negative indicator species: <i>Spartina anglica</i>	Hectares	No significant expansion of <i>Spartina</i> . No new sites for this species and an annual spread of less than 1% where it is already known to occur.

Qualifying Interest	Objective	Attribute	Target
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330]	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Dunbrody Abbey - 1.25ha, Killowen - 2.59ha, Rochestown - 17.50ha, Ringville - 6.70ha.
	Habitat distribution	Occurrence	No decline, subject to natural processes.
	Physical structure: sediment supply	Presence/absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions.
	Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime.
	Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession.
	Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession.
	Vegetation structure: vegetation height	Centimeters	Maintain structural variation within sward.

Qualifying Interest	Objective	Attribute	Target
	Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated.
	Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009).
	Vegetation structure: negative indicator species: <i>Spartina anglica</i>	Hectares	No significant expansion of <i>Spartina</i> . No new sites for this species and an annual spread of less than 1% where it is already known to occur.
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Dunbrody Abbey – 10.08ha, Killowen – 0.04ha, Rochestown - 17.50ha, Ringville - 6.70ha.
	Habitat distribution	Occurrence	No decline, subject to natural processes.
	Physical structure: sediment supply	Presence/absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions.
	Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime.
	Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession.

Qualifying Interest	Objective	Attribute	Target
	Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession.
	Vegetation structure: vegetation height	Centimeters	Maintain structural variation within sward.
	Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated.
	Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub-communities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009).
	Vegetation structure: negative indicator species: <i>Spartina anglica</i>	Hectares	No significant expansion of <i>Spartina</i> . No new sites for this species and an annual spread of less than 1% where it is already known to occur.
Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]	Habitat distribution	Occurrence	No decline, subject to natural processes.
	Habitat area	Kilometers	Area stable or increasing, subject to natural processes.
	Hydrological regime: river flow	Meters per second	Maintain appropriate hydrological regimes.
	Hydrological regime: groundwater discharge	Meters per second	The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation.
	Substratum composition: particle size range	Millimeters	The substratum should be dominated by large particles and free from fine sediments.

Qualifying Interest	Objective	Attribute	Target
	Water chemistry: minerals	Milligrammes per litre	The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits.
	Water quality: suspended sediment	Milligrammes per litre	The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments.
	Water quality: nutrients	Milligrammes per litre	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition.
	Vegetation composition: typical species	Occurrence	Typical species of the relevant habitat sub-type should be present and in good condition.
	Floodplain connectivity	Area	The area of active floodplain at and upstream of the habitat should be maintained.
European dry heaths [4030]	Habitat distribution	Occurrence	No decline from current habitat distribution, subject to natural processes.
	Habitat area	Hectares	Area stable or increasing, subject to natural processes. Habitat area is not known but estimated as less than 400ha of the area of the SAC, occurring in dispersed locations.
	Physical structure: free-draining, acid, low nutrient soil; rock outcrops	Occurrence	No significant change in soil nutrient status, subject to natural processes. No increase or decrease in area of natural rock outcrop.

Qualifying Interest	Objective	Attribute	Target
	Vegetation structure: sub-shrub indicator species	Percentage cover	Cover of characteristic sub- shrub indicator species at least 25%: gorse (<i>Ulex europaeus</i>) and where rocky outcrops occur bilberry (<i>Vaccinium myrtillus</i>) and woodrush (<i>Luzula sylvatica</i> . Some rock outcrops support English stonecrop (<i>Sedum anglicum</i>), sheep's bit (<i>Jasione montana</i>) and wild madder (<i>Rubia peregrina</i>) as well as important moss and lichen assemblages.
	Vegetation structure: senescent gorse	Percentage cover	Cover of senescent gorse less than 50%.
	Vegetation structure: browsing	Percentage cover	Long shoots of bilberry with signs of browsing collectively less than 33%.
	Vegetation structure: native trees and shrubs	Percentage cover	Cover of scattered native trees and shrub less than 20%.
	Vegetation composition: positive indicator species	Number	Number of positive indicator species at least 2 e.g. gorse and associated dry heath/ acid grassland flora.
	Vegetation structure: positive indicator species	Percentage cover	Cover of positive indicator species at least 60%. This should include plant species characteristic of dry heath in this SAC including gorse, bilberry and associated acid grassland flora.
	Vegetation composition: bryophyte and non-crustose lichen species	Number	Number of bryophyte or non-crustose lichen species present at least 2.

Qualifying Interest	Objective	Attribute	Target
	Vegetation composition: bracken (<i>Pteridium aquilinum</i>)	Percentage cover	Cover of bracken less than 10%.
	Vegetation structure: weedy negative indicator species	Percentage cover	Cover of agricultural weed species (negative indicator species) less than 1%.
	Vegetation composition: non-native species	Percentage cover	Cover of non-native species less than 1%.
	Vegetation composition: rare/scarce heath species	Location, area and number	No decline in distribution or population sizes of rare, threatened or scarce species, including Greater Broomrape (<i>Orobancha rapum-genistae</i>) and the legally protected clustered clover (<i>Trifolium glomeratum</i>)
	Vegetation structure: disturbed bare ground	Percentage cover	Cover of disturbed bare ground less than 10% (but if peat soil less than 5%)
	Vegetation structure: burning	Occurrence	No signs of burning within sensitive areas
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	Habitat distribution	Occurrence	No decline, subject to natural processes.
	Habitat area	Hectares	Area stable or increasing, subject to natural processes.

Qualifying Interest	Objective	Attribute	Target
[6430]	Hydrological regime: flooding depth/height of water table	Metres	Maintain appropriate hydrological regimes.
	Vegetation structure: sward height	Centimetres	30-70% of sward is between 40 and 150cm in height.
	Vegetation composition: broadleaf herb: grass ratio	Percentage	Broadleaf herb component of vegetation between 40 and 90%.
	Vegetation composition: typical species	Number	At least 5 positive indicator species present.
	Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control- NB Indian balsam (<i>Impatiens glandulifera</i>), monkeyflower (<i>Mimulus guttatus</i>), Japanese knotweed (<i>Fallopia japonica</i>) and giant hogweed (<i>Heracleum mantegazzianum</i>).
Petrifying springs with tufa formation (Cratoneurion) [7220]	Habitat area	Square metres	Area stable or increasing, subject to natural processes.
	Habitat distribution	Occurrence	No decline.
	Hydrological regime: height of water table; water flow	Metres; metres per second	Maintain appropriate hydrological regimes.

Qualifying Interest	Objective	Attribute	Target
	Water quality	Water chemistry measures	Maintain oligotrophic and calcareous conditions.
	Vegetation composition: typical species	Occurrence	Maintain typical species.
Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	Habitat area	Hectares	Area stable or increasing, subject to natural processes, at least 85.08ha for sub-sites surveyed.
	Habitat distribution	Occurrence	No decline.
	Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size.
	Woodland structure: cover and height	Percentage and metres	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi-mature trees and shrubs; and well-developed herb layer.
	Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types.
	Woodland structure: natural regeneration	Seedling:sapling:pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.
	Woodland structure: dead wood	m ³ per hectare; number per hectare	At least 30m ³ /ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter.

Qualifying Interest	Objective	Attribute	Target
	Woodland structure: veteran trees	Number per hectare	No decline.
	Woodland structure: indicators of local distinctiveness	Occurrence	No decline.
	Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%.
	Vegetation composition: typical species	Occurrence	A variety of typical native species present, depending on woodland type, including oak (<i>Quercus petraea</i>) and birch (<i>Betula pubescens</i>).
	Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control.
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	Habitat area	Hectares	Area stable or increasing, subject to natural processes, at least 181.54ha for sites surveyed.
	Habitat distribution	Occurrence	No decline.
	Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size.
	Woodland structure: cover and height	Percentage and metres	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi-mature trees and shrubs; and well-developed herb layer.

Qualifying Interest	Objective	Attribute	Target
	Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types.
	Woodland structure: natural regeneration	Seedling:sapling:pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.
	Hydrological regime: flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation.
	Woodland structure: dead wood	m ³ per hectare; number per hectare	At least 30m ³ /ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder).
	Woodland structure: veteran trees	Number per hectare	No decline.
	Woodland structure: indicators of local distinctiveness	Occurrence	No decline.
	Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%
	Vegetation composition: typical species	Occurrence	A variety of typical native species present, depending on woodland type, including ash (<i>Fraxinus excelsior</i>) alder (<i>Alnus glutinosa</i>), willows (<i>Salix</i> spp) and locally, oak (<i>Quercus robur</i>)

Qualifying Interest	Objective	Attribute	Target
	Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control.
Desmoulin's Whorl Snail <i>Vertigo moulinsiana</i> [1016]	Distribution: occupied sites	Number	No decline. Two known sites: Borris Bridge, Co. Carlow S711503; Boston Bridge, Kilnaseer S338774, Co. Laois.
	Population size: adults	Number per positive sample	At least 5 adults snails in at least 50% of samples
	Population density	Percentage positive samples	Adult snails present in at least 60% of samples per site.
	Area of occupancy	Hectares	Minimum of 1ha of suitable habitat per site.
	Habitat quality: vegetation	Percentage of samples with suitable vegetation	90% of samples in habitat classes I and II as defined in Moorkens & Killeen (2011).
	Habitat quality: soil moisture levels	Percentage of samples with appropriate soil moisture levels	90% of samples in moisture class 3-4 as defined in Moorkens & Killeen (2011).
Freshwater Pearl Mussel <i>Margaritifera margaritifera</i> [1029]	Distribution: Ballymurphy	Kilometres	Restore distribution at 3.91km.
	Distribution: Mountain	Kilometres	Restore distribution at 9.45km.
	Distribution: Nore	Kilometres	Restore distribution at 21.13km.
	Population size: Ballymurphy	Number of adult mussels	Restore Ballymurphy population to at least 1,000 adult mussels.
	Population size: Mountain	Number of adult mussels	Restore Mountain population to at least 4,000 adult mussels.

Qualifying Interest	Objective	Attribute	Target
	Population size: Nore	Number of adult mussels	Restore Nore population to at least 5,000 adult mussels.
	Population structure: recruitment	Percentage per size class	Restore to at least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length.
	Population structure: adult mortality. Ballymurphy	Percentage	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution.
	Population structure: adult mortality. Mountain	Percentage	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution.
	Population structure: adult mortality. Nore	Percentage	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution.
	Suitable habitat: extent	Kilometres	Restore suitable habitat in more than 3.91km in the Ballymurphy, 5.3km in the Mountain and 16.72km in the Nore system (see map 8) and any additional stretches necessary for salmonid spawning.
	Suitable habitat: condition	Kilometres	Restore condition of suitable habitat.
	Water quality: macroinvertebrates and phytobenthos (diatoms)	Ecological quality ratio (EQR)	Restore water quality- macroinvertebrates: EQR greater than 0.90 (Q4-5 or Q5); phytobenthos: EQR. greater than 0.93.

Qualifying Interest	Objective	Attribute	Target
	Substratum quality: filamentous algae (macroalgae); macrophytes (rooted higher plants)	Percentage	Restore substratum quality- filamentous algae: absent or trace (less than 5%); macrophytes: absent or trace (less than 5%).
	Substratum quality: sediment	Occurrence	Restore substratum quality- stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment.
	Substratum quality: oxygen availability	Redox potential	Restore to no more than 20% decline from water column to 5cm depth in substrate.
	Hydrological regime: flow variability	Metres per second	Restore appropriate hydrological regime.
	Host fish	Number	Maintain sufficient juvenile salmonids to host glochidial larvae.
	Fringing habitat: area and condition	Hectares	Restore the area and condition of fringing habitats necessary to support the population.
White-clawed Crayfish <i>Austropotamobius pallipes</i> [1092]	Distribution	Occurrence	No reduction from baseline.
	Population structure: recruitment	Percentage occurrence of juveniles and females with eggs	Juveniles and/or females with eggs in at least 50% of positive samples.
	Negative indicator species	Occurrence	No alien crayfish species .

Qualifying Interest	Objective	Attribute	Target
	Disease	Occurrence	No instances of disease .
	Water quality	EPA Q value	At least Q3-4 at all sites sampled by EPA
	Habitat quality: heterogeneity	Occurrence of positive habitat features	No decline in heterogeneity or habitat quality..
Sea Lamprey <i>Petromyzon marinus</i> [1095]	Distribution: extent of anadromy	% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary.
	Population structure of juveniles	Number of age/size groups	At least three age/size groups present.
	Juvenile density in fine sediment	Juveniles/m ²	Juvenile density at least 1/m ² .
	Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning beds.
	Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive.
Brook Lamprey <i>Lampetra planeri</i> [1096]	Distribution	% of river accessible	Access to all watercourses down to first order streams.
	Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present.

Qualifying Interest	Objective	Attribute	Target
	Juvenile density in fine sediment	Juveniles/m ²	Mean catchment juvenile density of brook/river lamprey at least 2/m ² .
	Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning beds.
	Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive.
River Lamprey <i>Lampetra fluviatilis</i> [1099]	Distribution	% of river accessible	Greater than 75% of main stem and main tributaries down to second order accessible from estuary.
	Population structure of juveniles	Number of age/size groups	At least three age/size groups of river/brook lamprey present.
	Juvenile density in fine sediment	Juveniles/m ²	Mean catchment juvenile density of brook/river lamprey at least 2/m ² .
	Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning beds.
	Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive.
Twaite Shad <i>Alosa fallax fallax</i> [1103]	Distribution: extent of anadromy	% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary.
	Population structure: age classes	Number of age classes	More than one age class present.

Qualifying Interest	Objective	Attribute	Target
	Extent and distribution of spawning habitat	m ² and occurrence	No decline in extent and distribution of spawning beds.
	Water quality: oxygen levels	Milligrammes per litre	No lower than 5mg/l .
	Spawning habitat quality: Filamentous algae; macrophytes; sediment	Occurrence	Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth.
Salmon <i>Salmo salar</i> [1106]	Distribution: extent of anadromy	% of river accessible	100% of river channels down to second order accessible from estuary.
	Adult spawning fish	Number	Conservation limit (CL) for each system consistently exceeded.
	Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling.
	Out-migrating smolt abundance	Number	No significant decline.
	Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes.
	Water quality	EPA Q value	At least Q4 at all sites sampled by EPA.
Otter <i>Lutra lutra</i> [1355]	Distribution	Percentage positive survey sites	No significant decline.
	Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 122.8ha above high water mark (HWM); 1136.0ha along river banks / around ponds.

Qualifying Interest	Objective	Attribute	Target
	Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 857.7ha.
	Extent of Freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 616.6km.
	Extent of Freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 2.6ha.
	Couching sites and holts	Number	No significant decline.
	Fish biomass available	Kilograms	No significant decline.
Killarney Fern <i>Trichomanes speciosum</i> [1421]	Distribution	Location	No decline. Three locations known, with three colonies of gametophyte and one sporophyte colony.
	Population size	Number	Maintain at least three colonies of gametophyte, and at least one sporophyte colony of over 35 fronds.
	Population structure: juvenile fronds	Occurrence	At least one of the locations to have a population structure comprising sporophyte, unfurling fronds, 'juvenile' sporophyte and gametophyte generations.
	Habitat extent	m ²	No loss of suitable habitat, such as shaded rock crevices, caves or gullies in or near to, known colonies. No loss of woodland canopy at or near to known locations.
	Hydrological conditions: visible water	Occurrence	Maintain hydrological conditions at the locations so that all colonies are in dripping or damp seeping habitats, and water is visible at all locations.

Qualifying Interest	Objective	Attribute	Target
	Hydrological conditions: humidity	Number of dessicated fronds	No increase. Presence of dessicated sporophyte fronds or gametophyte mats indicates conditions are unsuitable.
	Light levels: shading	Percentage	No changes due to anthropogenic impacts.
	Invasive species	Occurrence	Absent or under control.

5.1 Elements of the Project that may Potentially Impact on Qualifying Interests of the Natura 2000 Site

5.1.1 Indirect Habitat Loss or Deterioration

Indirect habitat loss or deterioration of designated sites can occur from the effects of run-off or discharge into the aquatic environment through impacts such as increased siltation, nutrient release and/or contamination. This requires connectivity between the site and the designated site in question e.g. through watercourses and/or drainage ditches. In this case, there are potential hydrological links between the proposed development site and one downstream designated sites; River Barrow and River Nore SAC. Therefore, an impact-receptor pathway exists between the proposed development site and this European designated site.

It should be noted that the relevant designated site is located relatively distant downstream from the proposed development site and this serves to lessen the probability and magnitude of any water quality mediated effects.

5.1.1.1 Construction Enabling Works

Enabling works involved vegetation and soil stripping, temporary haul routes and stockpiles, building of offices, weighbridges and welfare buildings, installation of the surface-water management and treatment system, and installation of the washing plant. In the absence of adequate environmental controls, these activities had potential to mobilise suspended solids and fines during rainfall. Run-off had the potential to generate short-lived turbidity and to introduce small amounts of hydrocarbons associated with plant and refuelling. Handling of concrete during removal of the separately permitted recovery facility could also, if unmanaged, have released alkaline residues. The hydrological pathway forms a potential connection from on-site drainage to local watercourses and then onwards to the River Barrow. The concern at screening stage is a temporary reduction in water clarity and quality. The effects could have reduced habitat suitability for species listed as protected under the River Barrow and Nore SAC. At these distances there is no credible disturbance or displacement pathway to SAC species from construction noise or visual activity at the quarry.

5.1.1.2 Quarry operation

During operation, the quarry performed extraction within the permitted depth, with drilling, periodic blasting, crushing and screening, washing, vehicle movements and stockpiling. Offices and weighbridges were in daily use, and the discharge and treatment system were in operation. In the absence of controls, the principal risks were chronic suspended-solid and turbidity loading in process and yard run-off, intermittent hydrocarbon inputs from plant and storage areas, and potential alkaline particulates from handling of concrete where any residual recovery operations overlap with the Substitute Consent. The pathway remains the potential hydrological connectivity with River Barrow. The mechanism of effect is a sustained or repeated deterioration in water quality that could influence negatively SAC habitats and species.

For instance, in the absence of appropriate controls, rain-driven pulses of silt could have slightly depressed prey availability for Otters occurring downstream, if significant volumes of washings discharged to the local watercourses, causing an elevation in pH that could affect fish and invertebrate prey. Any such effects were likely to be local and short-lived. The predicted impact magnitude is low-to-medium in extent, localised to watercourses downstream and proximate to the Substitute Consent and likely to be short-term/temporary, minor adverse (Local).

5.1.1.3 Restoration and post-restoration

The development also includes a restoration plan (Figure 5.1). Restoration will include a thin layer of crushed rock being spread over the floor of the extraction area followed by the spoil material stored in the spoil storage area and in the boundary berm. Planting of the soil storage areas in the northwest and northeast of the site with native woodland mosaics is proposed, to promote and enhance ecological corridors and increase habitat biodiversity. This proposed woodland will include high and low canopy trees in addition to understory and shrub species. The existing boundary vegetation will be retained and protected. Riparian planting along the watercourse exiting the site is proposed. The quarry floor will be allowed to naturally regenerate.

Following the cessation of quarrying operations in c. 2014, all site infrastructure and plant were disassembled and removed off-site for disposal/recycling and/or resale.

No negative effects on designated sites in Zone of Influence are expected during the restoration phase or post-restoration. The local drainage controls are in place during the restoration phase and minimise the risk of significant mobilisation of pollutants to watercourses downstream of the site. As the landscaped features mature they had a positive effect on local biodiversity in medium to longer term.



Figure 5.1. Site restoration plan.

5.1.2 Cumulative or In-combination Effects

In order to fully assess the potential impact of the development of the quarry at this location on Natura 2000 sites, the project must be assessed alone or in-combination with existing activities and proposed plans for the region. In general, if individual projects and plans adequately address the potential risks to the receiving environment there is significantly less risk of cumulative and in combination effects.

Plans and Projects in the wider hinterland were identified using various online resources including:

- MyPlan.ie²
- Carlow County Council planning viewer³;
- Laois County Council planning viewer⁴;
- An Bord Pleanála planning viewer⁵;
- Carlow County Development Plan (2022-2028)⁶;
- Laois County Development Plan (2021-2027)⁷.

The application site comprises an existing inactive quarry site and adjacent predominantly agricultural lands. The former quarry was used to extract sandstone bedrock with quarrying activity ceasing in 2014. The Substitute Consent site consists of an area of 41.86ha within a total landholding of 45.68ha. This same site is subject to a concurrent S37L Application for a proposed extension of the quarry.

Milford Quarries Ltd. are also submitting a planning application under Section 37L of the Planning and Development Act 2000, as amended, for the proposed development of a 41.86ha portion of the 45.68ha landholding. This proposed project will consist of further quarry extraction over an area of 16.17ha and will overlap the site that is the subject of this Substitute Consent planning application. The projected lifespan of this proposed development is c. 20 years. This proposed development has also been subject to EIAR and a Natura Impact Assessment has been prepared by Ecology Ireland.

Outside of Redrock Quarry, there are a number of additional quarries active in the lands surrounding the application site, namely:

- Clonmelsh Quarry, Powerstown, Nurney, Co Carlow, c. 4.9km to the southeast

² <https://www.myplan.ie/>

³ <https://carlow.maps.arcgis.com/>

⁴ <https://laoiscoco.maps.arcgis.com/>

⁴⁵ <https://www.pleanala.ie/en-ie/map-search>

⁵⁶ <https://consult.carlow.ie/en/consultation/carlow-county-development-plan-2022-20>

⁶ <https://consult.carlow.ie/en/consultation/carlow-county-development-plan-2022-2028>

⁷ <https://consult.laois.ie/en/consultation/laois-county-development-plan-2021-2027>

- Milford Quarries Limited, Bannagagole Quarry c. 12.1km to the southwest;
- Clongrennane Lime Quarry, Raheendoran, Clongrennane, Co. Carlow, c. 1.1km to the southeast

In order to be compliant with the relevant licencing, these quarries are subject to strict environmental and emissions limits. There are several recently permitted planning developments associated with these quarries which are discussed further below.

Clonmelsh Quarry has been subject to a number of permitted developments in recent years. In April 2017, Paul McCann and Stephen Tennant were granted leave to apply for Substitute Consent for two elements within the Clonmelsh Quarry site; 81ha quarry site and associated plant located within the 81ha quarry site occupying 3.1ha (ABP-300034-17 & ABP-300037-17) and were granted planning permission in December 2018 for expansion of quarrying activities to 21.9ha (ABP-300425-17) under Section 37L of the Planning and Development Act, 2000, as amended.

Other recent permitted developments in the vicinity of Redrock Quarry include the change of use from a quarry to recovery activities at Mary Kelly's Pit, Powerstown, Co. Carlow for Milford Quarries Limited which was recently granted permission in May 2025 (Planning Ref. No. 2360263, ABP Ref. No. 320180-24). This project site is located 5.1km from the proposed development site. The accompanying Natura Impact Statement for this permitted development has concluded that, with the implementation of the recommended mitigation measures, the development will not adversely affect the integrity of any European sites, either alone or in combination with any other plans or projects.

In November 2024, planning permission was granted for the development of a c. 25.2ha Bilboa Wind Farm, Bilboa Co. Carlow, c. 2.7km to the southwest of Redrock Quarry. The Natura Impact Statement submitted with the planning application for this development concluded that *"Taking cognisance of measures incorporated into the project design and mitigation measures to avoid effects which are considered in the preceding section, the proposed project will not have any adverse effect on the integrity of the River Barrow and River Nore SAC and River Nore SPA in light of the site's conservation objectives and status."* (Fehily Timoney, 2022).

In November 2025, planning permission was granted for the Seskin Wind Farm in Ridge, Agharue, Coolnakisha and Seskinrea, Co. Carlow which is located about 3.8km southwest of the development site. This permitted development has been subject to the Appropriate Assessment process, with a separate Natura Impact Assessment report prepared for the project. The accompanying Natura Impact Statement for this permitted development has concluded that, with the implementation of the recommended mitigation measures the development will not adversely affect the integrity of any European sites, either alone or in combination with any other plans or projects.

In November 2023, planning permission was granted for White Hill Wind Farm, located 6.3km southwest of the proposed project site. The accompanying Natura Impact Statement for this permitted development has concluded that, with the implementation of the recommended mitigation measures the development will not adversely affect the integrity of any European sites, either alone or in combination with any other plans or projects.

The majority of the permitted and proposed planning applications local to Redrock Quarry are related to developments within or in proximity to local towns, such as residential housing developments, commercial and manufacturing development, along with the development of healthcare, education and community facilities. All of these recent developments were subject to ecological assessments and AA and each of these projects considered the potential for cumulative and in-combination effects arising in relation to other such developments in the wider area.

In addition, relevant policies such as the National Biodiversity Plan (2023-2030) were considered when evaluating the potential for significant cumulative or in-combination effects arising in relation to the proposed development. The project is consistent with local and national planning policy as set out in the accompanying planning report. Cognisance has been taken in relation to European legislation such as the Water Framework Directive.

No potential for significant cumulative or in-combination effects in relation to the screened-in designated sites have been identified.

5.2 Mitigation Measures Relevant to the Protection of the Natura 2000 Site

The mitigation measures, environmental controls and monitoring commitments described in the EIAR and herein describe measures that were in place or will be implemented during the proposed restoration works. The mitigation measures as set out in the individual chapters of the EIAR serve to minimise the potential negative effects of the development on the receiving environment. The measures related to control of emissions (dust, sediment and other water-borne pollutants, noise and light) and traffic are especially relevant to the minimising of risk to biodiversity. Where such measures are reiterated or restated here it is to further highlight the importance of implementing this mitigation.

A discharge licence was granted by Carlow County Council in November 2011 (DL/S4/2011/2) with the purpose of licensing discharges to waters as defined in the Local Government (Water Pollution) Acts, 1977-2007. The quarry was registered by the previous owner in 2005 over an area of 25.7 hectares and had 18 conditions imposed in 2007 by Carlow County Council under Section 261(6)(a)(i), (Carlow County Council reg. ref.: QY14) which sought assurance in relation to limiting noise levels, prohibiting surface water runoff to discharge to the public road, requiring any necessary environmental licencing is obtained, prohibiting wastewater discharge, restricting the construction of ancillary buildings, requiring the public road is kept clean, requiring unsoiled surface water run-off collection and disposal, and requiring a restoration plan be submitted to the Planning Authority. These commitments were effective in addressing potential negative effects on sensitive downstream habitats and species.

Measures to ensure that the risk of discharge of pollutants (including silt, cementitious run-off etc.) from the site, in particular to avoid significant contamination of watercourse downstream of the site are summarised in the following sections.

5.2.1 Construction Phase

- No demolition works were required and no imported fill material was needed. Excavation material was reused on site in the form of screening berms and/or the new water settlement pond and did not generate off-site traffic.
- Wheel-wash facilities were used where necessary to prevent deposition of mud or debris on public roads. All construction vehicles were required to comply with safety standards, including visible identification, reversing alarms, and, where relevant, banksmen assistance for manoeuvres.

5.2.2 Operating Phase

Rock extraction was completed by rock breaking, and no blasting was completed at the site. All rock was crushed and processed with mobile plant on-site and spoil was stored in large spoil heaps within and surrounding the quarry void. The hours of operation were as follows: between 0700 hours and 1900 hours from Monday to Friday and 0700 to 1300 on Saturday. The quarry did not operate on Sundays, Bank Holidays or Public Holidays.

5.2.2.1 Noise Management

The effective management of noise was strictly as outlined below:

- During the construction/operational phase of the proposed development, the noise level from within the boundaries of the site measured at noise sensitive locations in the vicinity, did not exceed:
 - an Leq,1h value of 55 dB(A) between 0800 to 1800 Monday through Friday and between 0900 and 1300 on Saturday
 - an Leq, 1hr value of 35dB(A) at any other time. Nighttime emissions shall have no tonal component.

5.2.2.2 Dust Management Measures

Construction activities have the potential to generate some dust emissions. The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with ambient conditions including rainfall, wind speed and wind direction.

The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. Most of the dust would be deposited close to the potential source area.

In order to minimise dust nuisance, a series of measures, based on the Dust Impact Assessment were implemented as follows:

Roads

- Mandatory use of the wheel wash for all construction related traffic leaving the site.

- Site roads and the entrance onto the public road was regularly cleaned and maintained as appropriate. And a daily inspection of the approach road to the site entrance for cleanliness.

Vehicles

- Speed limits were applied to internal areas of the site to minimise dust generation from mobile haulage vehicles.

5.2.3 Additional Measures to Ensure Protection of Receiving Environment

The measures outlined below were implemented during the construction and operational phases to ensure the protection of the receiving environment. These are standard environmental management commitments designed to minimise the risk of impacts upon the immediate receiving environment and general nuisance associated with the construction and operational phase of the proposed development.

The following measures were implemented in relation to land, soils and geology:

- All plant and machinery were serviced before being mobilised to site.
- Regular leak inspections were completed on all plant on-site.
- No plant maintenance was completed on-site, any broken-down plant was removed from the site to be repaired.
- Refuelling was completed in a controlled manner using drip trays (bundled container trays) at all times. The drip trays had a holding capacity of 110% of the volume contained within the machine.
- Only designated trained operators were authorised to refuel plant on site.
- Procedures and contingency plans were set up to deal with emergency accidents or spills.
- There was no discharge of wastewater at the Development Site. All wastewater was removed from the site by a licenced contractor.
- The commitments provided in the EIAR in relation to normal working hours, traffic and parking controls to reduce noise/lighting disturbance will be applied.

The potential pollution of groundwater during the construction and operational phases were mitigated by the provision of appropriate controls and working methods. These include best practice methods for storage and handling of fuels. These mitigation measures are outlined above. Proposed mitigation measures relating to wastewater are outlined as follows:

- No wastewater was discharged on-site during the construction stage. Portable toilets (porta-loos) were used during the construction period.

Mitigation measures to protect both groundwater and surface water quality during the Operational Phase are detailed in here and in Chapter 8 of the EIAR, and will include any conditions imposed by

the Planning Authority. The following commitments were effective in addressing potential negative effects on sensitive downstream habitats and species.

- Utilised a water management system designed to prevent contamination of local surface waters with elevated concentrations of suspended solids which included the following:
 - Water entering the quarry void largely comprises of rainfall or runoff from the lands immediately upgradient of the quarry. There is no significant inflow of groundwater which reduces the volume of water to be attenuated and subsequently discharged.
 - Due to the low permeability of the underlying bedrock aquifer, this water gathers on the floor of the quarry.
 - There are 2 main flooded areas (one in the north and one in the south) on the quarry floor which provide significant attenuation of water.
 - A suitably sized settlement pond was also constructed downgradient of the quarry and provides additional attenuation of water from the southern section of the quarry.

The following mitigation measures relevant to habitats and flora were implemented during the construction phase:

- No removal of habitats, or movement of construction machinery occurred outside of the development works area / footprint during the construction phase, where the works area / footprint was clearly marked for associated site staff.
- Excavated soil/subsoil material from the extension area was used for landscaping throughout the proposed development site and in the construction of boundary berms and was re-vegetated with native woodland species.
- All works were carried out applying standard environmental controls (e.g. use of bunded fuel containers, designated refuelling areas, proper waste disposal) throughout the construction phase to prevent any damaging run-off from the site to local watercourses (see CIRIA 2001 & 2015).

5.3 Mitigation overview

The potential for effects on the groundwater dependent-designated site in the lands surrounding and downgradient of the development site were minor due to the increased volume of water in the associated surface water bodies, the low permeability of the underlying bedrock and the separation distances between the Substitute Consent site and the downgradient designated site. In addition, no significant karst features were recorded during the site investigation works at the site which could potentially act as a pathway for contaminants. Due to the hydrogeological setting of the Substitute Consent site, located on a topographic high and underlain by Poor Bedrock Aquifers, there are no significant inflows occurring into the existing quarry void. Most of the water discharged from the quarry comprised of rainfall falling within the quarry void or on the adjacent upgradient lands. There is no significant inflow of groundwater which reduces the volume of water to be attenuated and subsequently discharged.

In terms of potential surface water effects, the development included one settlement pond and two main flooded areas in the quarry basin which treated the quarry discharge and managed suspended sediment loads in the discharge. The settlement pond would have resulted in significant attenuation of water prior to discharge, so there was no intended increase in flows that had the potential to contribute to downstream flooding.

Mitigation measures to protect both groundwater and surface water quality during the Operational Phase are detailed above and in Chapter 8 of the EIAR. The following commitments were effective in addressing potential negative effects on sensitive downstream habitats and species.

- Utilised a water management system designed to prevent contamination of local surface waters with elevated concentrations of suspended solids.
- Excavated soil/subsoil material was used for landscaping throughout the Development Site and in the construction of boundary berms. Berms were sealed with a digger bucket and vegetated as soon as possible to reduce sediment entrainment in drainage water.
- Soil-stripping and earthworks were scheduled for periods of low rainfall.
- The topsoil/overburden was removed incrementally as the quarry expanded. This limited the potential for effects as only small volumes of material were disturbed at any one time.
- On-site plant maintenance was minimised.
- Vehicles only refuelled in a designated refuelling area with available spill kit, drip trays and secondary containment. Refuelling was carried out by trained personnel only.
- Fuels/chemicals were stored in double-skinned or appropriately bunded receptacles.
- All plant and storage receptacles were routinely inspected for leaks. Any leaking or poorly maintained equipment were removed from site for maintenance or replacement.
- The wheel-wash was properly maintained. Bowsers damped down internal roads in dry weather. Access roads (and public road interface as required) to the Site were swept to limit the broadcast of dust to the wider area.

It is considered that with the implementation of the mitigation measures outlined above, the proposed development did not result in any likely, significant effects on groundwater and/or surface water. There was no significant potential to affect the conditions within the designated sites hydrologically linked to the Site: River Barrow and River Nore SAC.

5.4 Likely Success of the Mitigation Measures

The mitigation measures have been developed in accordance with current policy, regulations and best practice guidelines. These measures are detailed and comprehensive and were effective in addressing the identified risks of run-off to watercourses. The planning application also presents a site restoration plan with elements of the landscaping having been carried out progressively during the

development and operation and final restoration yet to being completed. The landscaping and measures described in the accompanying EIAR will in time result in a site with a slight increase in current local biodiversity value.

5.5 Timescale for the Implementation of Mitigation Measures

All environmental controls and mitigation measures detailed herein were implemented as described herein and in the accompanying EIAR.

5.6 NIS Summary and Conclusion

5.6.1 Integrity Of The Site

From the *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (EC, 2002), the meaning of integrity is described as follows:

‘The integrity of a site involves its ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the site’s conservation objectives’.

The concept of the ‘integrity of the site’ is also explained in the EU publication *Managing Natura 2000 sites: The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC* (EC, 2000), as follows:

‘It is clear from the context and from the purpose of the directive that the ‘integrity of the site’ relates to the site’s conservation objectives. For example, it is possible that a plan or project will adversely affect the integrity of a site only in a visual sense or only habitat types or species other than those listed in Annex I or Annex II. In such cases, the effects do not amount to an adverse effect for purposes of Article 6(3), provided that the coherence of the network is not affected. On the other hand, the expression ‘integrity of the site’ shows that focus is here on the specific site. Thus, it is not allowed to destroy a site or part of it on the basis that the conservation status of the habitat types and species it hosts will anyway remain favourable within the European territory of the Member State.

5.6.2 Integrity of the Natura 2000 Sites within the Project Zone of Influence

Potential for any significant adverse effects were effectively resolved through the implementation of the mitigation commitments described herein and throughout the EIAR and as summarised above.

From the information gathered and the predictions made about the changes that were likely to result from the construction, operational and restoration stages of the project and the mitigation that was applied to avoid impacts on the Natura 2000 site within the zone of influence of the project, an Integrity of Site Checklist for the Natura 2000 site considered in this Natura Impact Statement is presented in Table 5.2 below.

Table 5.2 Integrity of Site Checklist for the Natura 2000 Site within the Project Zone of Influence

Conservation Objectives		
Does the project have the potential to:	Yes or No	Comment
Cause delays in progress towards achieving the conservation objectives of the site?	No	There were no significant direct impacts to the qualifying interests of River Barrow and River Nore SAC. Potential indirect effects to this site e.g. via pollution of watercourses hydrologically linked to this SAC have been considered in the above assessment. Works practices and design measures were implemented to address potential impacts which could have been caused by uncontrolled run-off, or discharge of contaminants. The development did not therefore cause delays in achieving the conservation objectives of the Natura 2000 sites within project ZOI.
Interrupt progress towards achieving the conservation objectives of the site?	No	The development did not interrupt the achievement the sites' Conservation Objectives or those factors that help maintain the favourable conditions of these sites or interfere with the distribution and density of key indicator species. There were no significant direct impacts to the Qualifying Interests of the River Barrow and River Nore SAC. Potential indirect effects to this site e.g. via pollution or contamination of watercourses hydrologically linked to this SAC were considered in the above assessment. Work practices and design measures were implemented to address potential impacts which could be caused by uncontrolled run-off, or discharge of contaminants. Mitigation to prevent any broadcast of pollutants to watercourses downstream of the site will also be implemented in line with the measures described herein and in the accompanying EIAR. The proposed development will therefore not interrupt progress towards achieving the conservation objectives of this Natura 2000 site, disrupt (or have disrupted) the factors that maintain favourable conditions within the sites, or interfere (or have interfered) with the balance,
Disrupt those factors that help to maintain the favourable conditions of the site?	No	
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	No	

Conservation Objectives		
Does the project have the potential to:	Yes or No	Comment
		distribution of density of key species that are the indicators of the favourable condition of the Qualifying Interests of the SAC.
Other Objectives: Does the project have the potential to:	Yes or No	Comment
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	No	There were no significant direct impacts to the Qualifying Interests of the River Barrow and River Nore SAC. Potential indirect effects to this site e.g. via pollution of watercourses hydrologically linked to this SAC were considered in the above assessment. Works practices and design measures were implemented to address potential impacts which could be caused by uncontrolled run-off, or discharge of contaminants. The development did not interrupt the achievement the site's Conservation Objectives or those factors that help maintain the favourable conditions of this site or interfere with the distribution and density of key indicator species, or interfere with the balance, distribution of density of key species that are the Qualifying Interests of this SAC.
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	No	The proposed development did not cause changes to the vital defining aspects (that determine how this site's function as a habitat or ecosystem or change the dynamics of the relationships that define the structure and/or function of this site.
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	No	The development did and will not interfere with predicted or expected natural changes to the River Barrow and River Nore SAC.
Reduce the area of key habitats?	No	The development did not result in the loss, reduction or change of key features associated with Natura 2000 sites. The Substitute Consent site is located distant (2.1km overland; c. 2.5km
Reduce the population of key species?	No	

Conservation Objectives		
Does the project have the potential to:	Yes or No	Comment
Change the balance between key species?	No	measured along watercourses from River Barrow and River Nore SAC) from the designated conservation site and it does it require any resources from this site; thereby ruling out any direct habitat loss at the SAC in question. Indirect deterioration of prey abundance or availability (or water quality) could potentially have occurred from the effects of damaging run-off or discharge into the aquatic environment through impacts such as increased siltation, nutrient release and/or contamination. The possibility for such effects to have been significant and to negatively affect the population or distribution of any Qualifying Interest species and the balance between such species, were relatively unlikely given the distant location of this SAC. However, works practices and design measures were implemented to address all potential adverse impacts to these watercourses and by extension water quality mediated effects on the hydrologically connected Natura 2000 site, and the SAC and Conservation Objectives.
Reduce diversity of the site?	No	
Result in disturbance that could affect population size or density or the balance between key species?	No	The development did not and will not result in disturbance that will affect population size or densities of any SAC faunal species.
Result in fragmentation?	No	There was no fragmentation of any Natura 2000 sites, including River Barrow and River Nore SAC as a result of the development.
Result in loss or reduction of key features (e.g., tree cover, tidal exposure, annual flooding, etc.)?	No	The development did not and will not result in the loss or reduction of key features of River Barrow and River Nore SAC.

5.7 Conclusion

The AA Screening found that it could not be excluded, on the basis of objective scientific information that the proposed works, individually or in combination with other plans or projects, would have a significant effect on hydrologically connected sites, River Barrow and River Nore SAC in the absence of adequate environmental mitigation. Therefore, a NIS (presented in **Section 5**) was required to ascertain whether the proposed works would have had an adverse effect on the integrity of the Natura 2000 sites.

Best practice measures and mitigation measures (see also the individual Chapters in the EIAR) were implemented at the site in line with standard environmental controls and were effective in ensuring that the risk of any significant residual effects on the water quality of watercourses hydrologically connected to the River Barrow and River Nore SAC was minimised such that there was no residual risk of adverse effects on the relevant Qualifying Interests of that Natura 2000 site. The proposed restoration phase works will also be carried out with due consideration to the prevention of damaging run-off from the site.

This NIS is intended to provide the competent authority with complete, precise and definitive findings and conclusions capable of removing reasonable scientific doubt as to the effects of the project on the integrity of the European sites within the Zone of Influence in view of their Conservation Objectives. It is objectively concluded that no significant effects arising from the proposed development are likely to occur in relation to the Natura 2000 site (i.e. River Barrow and River Nore SAC) or indeed any other Natura 2000 site in the wider hinterland.

5.8 Appropriate Assessment Report

Assessment of the Effects of the Project or Plan on the Integrity of the Natura 2000 Site	
Describe the elements of the project or plan (alone or in combination with other projects or plans) that are likely to give rise to significant effects on the site (from screening assessment)	The Substitute Consent site has potential remote hydrological connectivity with the River Barrow and River Nore SAC. Therefore, significant effects during the development could not be discounted in the absence of the implementation of best practice design and environmental mitigation measures. Elements of the quarry development works that may have resulted in potential impacts on River Barrow and River Nore SAC in the absence of potentially relevant environmental protection measures are largely water-quality mediated effects.
Set out the Conservation objectives of the site	The conservation objectives and qualifying interests of the relevant Natura 2000 sites are outlined in Table 4.1 and Table 4.2 above.
Describe how the project or plan will affect key species and key habitats. Acknowledge uncertainties and any gaps in information.	Significant effects could not be discounted without the implementation of best practice design and mitigation measures, particularly in relation to the control of run-off of pollutants to watercourses hydrologically connected to the River Barrow and River Nore SAC. With the implementation of the mitigation measures described in Section 5.2, no significant indirect effects on the Natura 2000 site are assessed to have arisen in relation to silt-laden or contaminated surface-water run-off arising from the development.
Describe how the integrity of the site (determined by structure and function and conservation objectives) are likely to be affected by the project and plan (e.g. loss of habitat, disturbance, disruption, chemical changes, hydrological changes and geological changes etc.). Acknowledge uncertainties and any gaps in information.	As above.
Describe what mitigation measures are to be introduced to avoid, reduce or remedy the adverse effects on the integrity of the site. Acknowledge uncertainties and any gaps in information.	Mitigation measures were integrated as part of the development to provide environmental protection to the watercourses in the area including those hydrologically connected to the SAC. Surface-water management and mitigation are described in Section 5.2 above and in the accompanying EIAR.

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