

**NATURA IMPACT STATEMENT
MOYGARA, GURTEEN, CO. SLIGO.**

JULY 2026

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PROPOSED SAND & GRAVEL EXTRACTION FACILITY

Report by



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TABLE OF CONTENTS

1. INTRODUCTION	7
1.1. BACKGROUND TO THE COMMISSION.....	7
1.2. AIM OF THE REPORT.....	8
1.3. OBJECTIVES OF APPROPRIATE ASSESSMENT	9
1.4. STAGES OF THE APPROPRIATE ASSESSMENT	9
1.4.1 Screening for Appropriate Assessment (Stage 1).....	10
1.4.2 Appropriate Assessment (Natura Impact Statement) (Stage 2)	10
1.4.3 Assessment of Alternative Solutions (Stage 3)	11
1.4.4 Assessments where Adverse Effects remain (Stage 4).....	11
1.5. STATEMENT OF AUTHORITY	11
2. PROPOSED PROJECT DESCRIPTION	12
2.1. CHARACTERISTICS OF THE PROJECT.....	12
2.2. SITE DESCRIPTION.....	13
3. ECOLOGICAL AND HYDROLOGICAL CHARACTERISTICS OF THE RECEIVING ENVIRONMENT AND NATURA 2000 SITES	21
3.1. DESKTOP STUDY	21
3.2. ECOLOGICAL CHARACTERISTICS & RECEIVING ENVIRONMENT	21
3.2.1 Geology.....	21
3.2.2 Habitats as per Fossitt (2000).....	22
3.2.3 Flora recorded during the Field Survey	23
3.2.4 Fauna recorded during the Field Survey	25
3.2.5 Receiving Environment at Moygara	26
3.3. HYDROLOGICAL CONNECTIVITY WITH EUROPEAN SITES	26
3.3.1 Assessment of Hydrological Connectivity – Templehouse and Cloonacleigha Loughs SAC and Unshin River SAC 27	
3.3.2 Assessment of Hydrological Connectivity - Lough Gara SPA.....	30
3.3.3 Assessment of Hydrological Connectivity - Lough Forbes Complex SAC	32
3.3.4 Assessment of Hydrological Connectivity – Ballykenny-Fisherstown Bog SPA	33
3.3.5 Summary of Hydrological Connectivity Assessment	34
3.4. NATURA 2000 SITES WITHIN THE 15KM ZONE OF INFLUENCE	36
3.4.1 Background to Natura 2000 Sites.....	36
3.4.2 Identification of Natura 2000 Sites within the Likely Zone of Impact.....	37
3.5. TEMPLEHOUSE AND CLOONACLEIGHA LOUGHS SAC QUALIFYING INTEREST SPECIES & HABITATS	35
3.5.1 Templehouse and Cloonacleigha Loughs SAC Qualifying Interest Species and Habitats.....	35

3.5.2	Hard Oligo-mesotrophic Waters with Benthic Vegetation of Chara spp. [3140] and Water courses of plain to montane levels with the Ranunculus fluitantis and Callitriche-Batrachion vegetation [3260].....	36
3.5.3	Key Site Pressures (Applicable to Templehouse and Cloonacleigha Loughs SAC QI's 3140 and 3260)	36
3.6.	UNSHIN RIVER SAC QUALIFYING INTEREST SPECIES & HABITATS	39
3.6.1	Water courses of plain to montane levels with the Ranunculus fluitantis and Callitriche-Batrachion vegetation [3260]	40
3.6.2	Semi-natural Dry Grasslands and Scrubland Facies on Calcareous Substrates (Festuco-Brometalia) (Important Orchid Sites) [6210].....	40
3.6.3	Molinia Meadows on Calcareous, Peaty or Clayey-silt-laden Soils (Molinia caerulea) [6410]	40
3.6.4	Alluvial Forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnus incanae, Salix alba) [91E0]	40
3.6.5	Atlantic Salmon (Salmo salar) [1106]	41
3.6.6	Otter (Lutra lutra) [1355].....	41
3.6.7	Key Site Pressures (Applicable to Unshin River SAC QI's 3260, 6210, 6410, 91E0, 1106 and 1355) ...	41
3.7.	LOUGH GARA SPA QUALIFYING INTEREST SPECIES & HABITATS.....	44
3.7.1	Whooper Swan (Cygnus cygnus) [A038].....	45
3.7.2	Greenland White-fronted Goose (Anser albifrons flavirostris) [A395].....	45
3.7.3	Key Site Pressures (Applicable to Lough Gara SPA QI's A038 and A395).....	45
3.8.	LOUGH FORBES COMPLEX SAC QUALIFYING INTERESTS AND HABITATS	47
3.8.1	Natural Eutrophic Lakes with Magnopotamion or Hydrocharition-Type Vegetation [3150]	48
3.8.2	Active Raised Bogs (Priority Habitat) [7110]	48
3.8.3	Degraded Raised Bogs Still Capable of Natural Regeneration [7120]	49
3.8.4	Depressions on Peat Substrates of the Rhynchosporion [7150]	49
3.8.5	Alluvial Forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnus incanae, Salix alba) [91E0]	49
3.8.6	Key Site Pressures (Applicable to Lough Forbes Complex SAC QIs 3150, 7110, 7120, 7150 and 91E0)	50
3.9.	BALLYKENNY FISHERSTOWN BOG SPA QUALIFYING INTEREST SPECIES AND HABITATS.....	52
3.9.1	Greenland White-fronted Goose (Anser albifrons flavirostris) [A395].....	52
3.9.2	Key Site Pressures (Applicable to Ballykenney-Fisherstown Bog SPA QI A395)	53
4.	ASSESSMENT OF POTENTIAL ADVERSE EFFECTS	55
4.1.	POTENTIAL FOR DIRECT EFFECTS ON NATURA 2000 SITES	55
4.2.	POTENTIAL FOR INDIRECT EFFECTS ON ANY NATURA 2000 SITES	55
4.2.1	Deterioration of Water Quality.....	55
4.2.2	Wastewater and Surface Water Treatment at the Site	55
4.3.	SITE ESTABLISHMENT PHASE CONTROL MEASURES AND ASSESSMENT.....	55

4.4.	MEASURES TO MITIGATE POTENTIAL ADVERSE IMPACTS	56
4.4.1	<i>Introduction to Mitigation for the Development Site at Moygara</i>	56
4.4.2	<i>Earth Works and Excavation Controls</i>	57
4.4.3	<i>Hydrocarbon usage</i>	57
4.4.4	<i>Pollution prevention from Fuel and Oil, Site Management</i>	58
4.4.5	<i>Surface Water Mitigation and Drainage</i>	59
4.4.6	<i>Waste Management</i>	60
4.4.7	<i>Disturbance Limitation Measures</i>	60
4.4.8	<i>Species-Specific Measures for Otter</i>	61
4.4.9	<i>Species-Specific Measures for Atlantic Salmon</i>	61
4.4.10	<i>Lighting Measures</i>	61
4.4.11	<i>Site Biosecurity Management Protocols</i>	62
4.4.12	<i>Visual Impact and Species</i>	62
4.4.13	<i>Site Decommissioning</i>	62
4.5.	OPERATION PHASE CONTROL MEASURES AND ASSESSMENT	62
5.	RESIDUAL IMPACT ASSESSMENT – NATURA 2000 SITES WITH POTENTIAL HYDROLOGICAL CONNECTIVITY TO THE PROPOSED SITE	64
5.1.	TEMPLEHOUSE AND CLOONACLEIGHA LOUGHS SAC	64
5.2.	UNSHIN RIVER SAC	64
5.3.	LOUGH GARA SPA.....	65
5.4.	LOUGH FORBES COMPLEX SAC	66
5.5.	BALLYKENNY FISHERSTOWN BOG SPA	66
5.6.	OVERALL CONCLUSION – RESIDUAL EFFECTS.....	67
6.	CUMULATIVE EFFECTS.....	68
6.1.	LIKELY CUMULATIVE IMPACT OF THE PROPOSED PROJECT ON NATURA 2000 SITES IN COMBINATION WITH OTHER PLANS AND PROJECTS	68
7.	CONCLUDING STATEMENT	70
8.	REFERENCES.....	71
9.	APPENDICES.....	73

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1. Introduction

1.1. Background to the Commission

Kelly Environmental Consulting & Advisory Services were commissioned by Simon Beale & Associates, acting on behalf of Trueforce Limited, to prepare this Natura Impact Statement (NIS) in support of a revised planning application for the proposed Sand and Gravel Extraction Facility at Moygara, Gurteen, Co. Sligo. The proposal comprises the continuation and management of sand and gravel extraction within a previously disturbed extraction area together with the continued use of existing settlement ponds and wash plant infrastructure, the provision of a new site office and welfare facilities, wheelwash, weighbridge and all associated ancillary site works.

The current planning application follows an earlier application submitted to Sligo County Council under Planning Reference PL25/60474. During the validation process, the Planning Authority determined that a Natura Impact Statement should accompany any subsequent planning application in order to enable the competent authority to undertake an Appropriate Assessment under Article 6(3) of the Habitats Directive.

Accordingly, this Natura Impact Statement has been prepared to provide the competent authority with a robust scientific assessment of the potential implications of the proposed development for European Sites, both individually and in combination with other plans or projects. The assessment considers the potential source-pathway-receptor relationships between the proposed development and Natura 2000 sites, having regard to their Qualifying Interests, Conservation Objectives and the precautionary principle.

Although the proposed development is located within a former extraction area that has been subject to significant historical disturbance, this assessment has been undertaken on a precautionary basis using the best available scientific information. The report also considers the comprehensive package of embedded environmental protection measures incorporated into the project design together with additional mitigation measures where required to ensure that the integrity of European Sites will not be adversely affected.

These measures include the establishment of approximately 2.43 hectares (6 acres) of proposed native broadleaved woodland within the applicant's wider ownership lands, outside the red-line application boundary, the planting of approximately 706.5 metres of new native Irish hedgerow and treeline, replacement planting where ash dieback has affected existing trees, together with the installation of bird nesting boxes and other habitat-enhancement measures specified in the accompanying Biodiversity Enhancement and Management Plan. Collectively, these measures will strengthen ecological connectivity throughout the site and provide a long-term enhancement of habitat connectivity and biodiversity within the wider landscape. This Natura Impact Statement has been prepared in accordance with Article 6(3) of Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, the Planning and Development Act 2000 (as amended), the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended), together with current European Commission and Irish guidance relating to Appropriate Assessment.

Key Guidance Documents

1. Department of the Environment, Heritage and Local Government (DoEHLG) (2009). *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. Department of the Environment, Heritage and Local Government, Dublin.
2. European Commission (2021). *Assessment of Plans and Projects in Relation to Natura 2000 Sites – Methodological Guidance on Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC*. Commission Notice 2021/C 437/01. Publications Office of the European Union, Luxembourg.
3. European Commission (2019). *Managing Natura 2000 Sites – The Provisions of Article 6 of the Habitats Directive 92/43/EEC*. C(2018) 7621 final. Publications Office of the European Union, Luxembourg.
4. Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive), as amended.
5. Directive 2009/147/EC of the European Parliament and of the Council on the Conservation of Wild Birds (Birds Directive), as amended.
6. European Commission (2007). *Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC – Clarification of the Concepts of Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures and Overall Coherence*.
7. European Commission (2013). *Interpretation Manual of European Union Habitats. Version EUR 28*.
8. European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended.
9. Planning and Development Act 2000 (as amended).
10. Planning and Development Regulations 2001 (as amended).

Collectively, these measures form an integral component of the overall project design and have been incorporated to protect, strengthen and enhance ecological connectivity within the wider landholding, while complementing the environmental protection measures embedded within the operational design of the proposed facility.

1.2. Aim of the Report

The aim of this NIS is to provide Sligo County Council, as the competent authority, with the scientific information necessary to undertake an Appropriate Assessment and determine whether the proposed development, individually or in combination with other plans or projects, would adversely affect the integrity of any European Site in view of its conservation objectives.

1.3. Objectives of Appropriate Assessment

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures to be addressed in the AA process. Firstly, a plan/project should aim to avoid any negative impacts on Natura 2000 sites by identifying possible impacts early and designing the plan/project to avoid such impacts. Mitigation measures should be applied during the appropriate assessment Stage 2 process to the point where no adverse impacts on the site/sites are remaining. A plan or project may have to undergo an assessment of alternative solutions. Under this stage of the assessment, compensatory measures are required for any remaining adverse effects, but they are permitted only if there are no alternative solutions and if the plan or project is required for imperative reasons of overriding public interest (IROPI). European case law highlights that consideration must be given to alternatives outside the plan or project boundary area in carrying out the IROPI test. These stages are described in more detail in Section 1.4.

1.4. Stages of the Appropriate Assessment

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) and the Birds Directive (Directive 2009/147/EC, as amended, on the Conservation of Wild Birds) forms the basis for the selection of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) respectively. SACs and SPAs are referred to as Natura 2000 sites and are considered to be of exceptional importance in terms of rare, endangered or vulnerable habitats and species within the European Community. Under Article 2 (2) of the Habitats Directive, a network of sites of nature conservation importance have been identified by each member state of the EU for containing specified habitats or species that require specific management objectives that assist to maintain or return sites to favourable conservation status.

Under Article 6 (3) of the Habitats Directive an Appropriate Assessment must be undertaken for any plan or program that is likely to have a significant effect on the conservation objectives of a Natura 2000 site. An Appropriate Assessment is an evaluation of the potential impacts of a plan on the conservation objectives of a Natura 2000 site, and the development, where necessary, of mitigation or avoidance measures to prevent adverse impacts.

Appropriate Assessment is the assessment undertaken by the competent authority under Article 6(3) of the Habitats Directive. Where Stage 1 Screening for Appropriate Assessment identifies the possibility of likely significant effects, either individually or in combination with other plans or projects, a Stage 2 Appropriate Assessment is required. A Natura Impact Statement provides the scientific information required to inform the competent authority's Stage 2 assessment. The requirement for Habitats assessment is set out in the EU Habitats Directive (92/43 EEC) in Article 6 (3) and 6 (4) which states:

6 (3) "Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives".

6 (4) 'If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding

public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest".

Guidance on the Appropriate Assessment process was published by the European Commission in 2002, this was later developed into guidance with reference to Ireland by the Department of Environment, Heritage and Local Government (DoEHLG, 2009). The guidance document references an approach from Stage 1 to Stage 4 employed when undertaking an Appropriate Assessment and is shown in Figure 1.1 below.

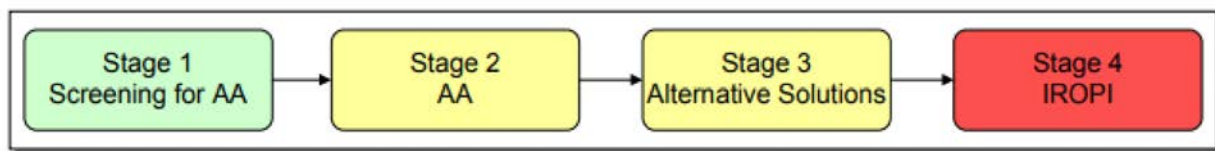


Figure 1.1 Appropriate Assessment Process (DoEHLG, 2009).

There are four stages involved in the Appropriate Assessment process. Screening for Appropriate Assessment (Stage 1) is undertaken in order to ascertain whether or not there is a requirement to proceed with a more detailed assessment and undertake an Appropriate Assessment (Natura Impact Statement) (Stage 2). These stages as outlined by the DoEHLG (2009) guidance document titled 'Appropriate Assessment of Plans and Projects in Ireland' are summarised in Sections 1.4.1, 1.4.2, 1.4.3 and 1.4.4 below.

1.4.1 Screening for Appropriate Assessment (Stage 1)

This process determines whether or not an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority to assess, in view of best scientific knowledge, if a land-use plan or proposed project, individually or in combination with another plan or project, is likely to have a significant effect on a European site (Natura 2000 site). The Competent Authority must decide whether or not an Appropriate Assessment is required on the basis of objective information.

1.4.2 Appropriate Assessment (Natura Impact Statement) (Stage 2)

Where required, the Appropriate Assessment (NIS) should present the data, information and analysis necessary to reach a definitive decision on the implications of the plan or project, alone or in combination with other plans and projects for a Natura 2000 site with regard to its conservation objectives and whether or not there will be any adverse effects on the integrity of the Natura 2000 site. The NIS should be backed up by objective information, the best scientific knowledge and the precautionary principle. This should provide information to enable the competent authority to carry out the appropriate assessment. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process

must proceed to Stage 4, or the plan or project should be abandoned. The Appropriate Assessment is carried out by the competent authority and is supported by the NIS.

1.4.3 Assessment of Alternative Solutions (Stage 3)

As part of this process, an alternative method of achieving the objectives of the plan or project is sought that avoids adverse effects on the integrity of the Natura 2000 site. The process must return to Stage 2 as alternatives will require appropriate assessment in order to proceed.

1.4.4 Assessments where Adverse Effects remain (Stage 4)

An assessment of compensatory measures where, in light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed. Each stage determines whether a further stage in the process is required. If, for example, the conclusions at the end of Stage One are that there will be no significant impacts on the Natura 2000 (European Site) site, there is no requirement to proceed further with the next stage. It is best practice however, to complete a 'finding of no significant effects' report. The relationship of the 4 stages of this assessment is illustrated in the NPWS guidance document.

1.5. Statement of Authority

Senior Scientist: Noel Kelly (BSc. Environmental Science and Technology) MIEI has over 24 years of experience in the field of Environmental Consultancy. He held a number of positions as Environmental Manager at various organisations throughout Ireland before going on to establish Kelly Environmental Consulting and Advisory Services in 2006 and has provided expertise on projects such as The Shell Corrib Gas on-shore terminal and pipeline, North Mayo; M17-M18 Gort-Tuam motorway; North Runway project at Dublin Airport; Dublin Port new Terminal project; the 4 Dublin Authorities Green Bin project and Red Bull World Series Cliff Diving Event, Downpatrick Head among others.

Senior Ecologist: Ray Tighe (MPhil Dune System Morphology, BSc. Environmental Management both TUD) is an appropriately qualified ecologist with 8 years of experience in vegetation analysis, habitat assessment and mapping. He has previously undertaken a broad spectrum of consultancy related ecological work across the country for MKO. This work comprised of several bat (for Heritage Council farm grants, domestic and large scale housing developments), bird and otter survey work for large scale wind farms and large-scale construction works.

Ray has experience undertaking Appropriate Assessment Screening Reports (Stage 1 and 2) for various projects coupled with extensive site ecological surveying, mapping and Ecological Clerk of Work site supervision over construction projects. He has undertaken ecological research with the ESHI group at the Technical University of Dublin, Grangegorman pertaining to sand dune stability, soil and vegetation analysis. Prior to this, Ray worked in the Environmental Department of South Dublin County Council for a time.

2. Proposed Project Description

2.1. Characteristics of the Project

The proposed development comprises a low-scale sand and gravel extraction facility located within a previously disturbed extraction area at Moygara, Gurteen, Co. Sligo. The proposal seeks permission to recommence the extraction of sand and gravel from lands that have historically been utilised for mineral extraction, while making continued use of existing site infrastructure including settlement ponds and the wash plant area.

The proposed facility has been designed to operate on a modest scale in order to supply local demand for construction aggregates. Extraction will be undertaken within the areas expressly identified on the accompanying Site Layout Plan, comprising an existing extraction area of approximately 3.25 hectares and a proposed extraction area of approximately 2.82 hectares. No extraction will take place outside the defined extraction areas or beyond the red-line application boundary. The development also includes the provision of a new site office, welfare facilities, wheelwash, weighbridge and associated ancillary works necessary for the safe and efficient operation of the facility.

Operational activity will remain relatively low, with anticipated traffic movements typically limited to approximately four to six heavy goods vehicle movements per day during normal operations. The facility will operate on an as-required basis, reflecting local market demand rather than continuous large-scale production.

A fundamental objective of the project is to maximise the use of existing site infrastructure while minimising the extent of new disturbance. Existing settlement ponds, internal haul routes and operational areas will continue to form part of the overall site layout, thereby reducing the need for additional land take or unnecessary engineering works.

Environmental protection has been incorporated into the design of the project from the outset. The operational layout has been developed alongside a comprehensive surface water management strategy prepared by Simon Beale & Associates, incorporating existing settlement ponds, attenuation measures and pollution prevention controls designed to protect downstream water quality.

In addition to the operational components of the proposal, the project includes a comprehensive programme of biodiversity enhancement, some elements of which are located outside the red-line application boundary but within the applicant's wider ownership lands. This includes the establishment of **approximately 2.43 hectares of proposed native broadleaved woodland within the applicant's wider ownership lands, outside the red-line application boundary**, approximately **706.5 metres of new native Irish hedgerow and treeline planting, replacement planting where appropriate following ash dieback**, together with the installation of **bird nesting boxes** and sand pit locations for **Bumblebee and Solitary Bee Species**. Collectively, these measures will strengthen habitat connectivity, improve ecological resilience and deliver long-term biodiversity enhancement across the wider site.

For clarity, the 7.25-hectare red-line application site defines the development subject to the present planning application. The proposed 2.43-hectare native broadleaved woodland is located outside the red-line application boundary but within the applicant's wider ownership lands and forms part of the biodiversity commitments associated with the application. No extraction is proposed within the woodland area.

2.2. Site Description

The proposed small-scale sand and gravel extraction facility is located within the townland of Moygara, Gurteen, Co. Sligo, approximately 3.2 km south of Gurteen and is accessed from an existing local road connecting with the R294 regional road. The red-line application site extends to approximately 7.25 hectares. Within the application site, the existing extraction area extends to approximately 3.25 hectares, while the proposed extraction area comprises approximately 2.82 hectares. A compound area of approximately 0.825 hectares accommodates associated operational infrastructure. The overall facility also includes the existing wash plant area, settlement and sump ponds, internal access road, wheelwash, weighbridge, proposed prefabricated building and associated ancillary works.

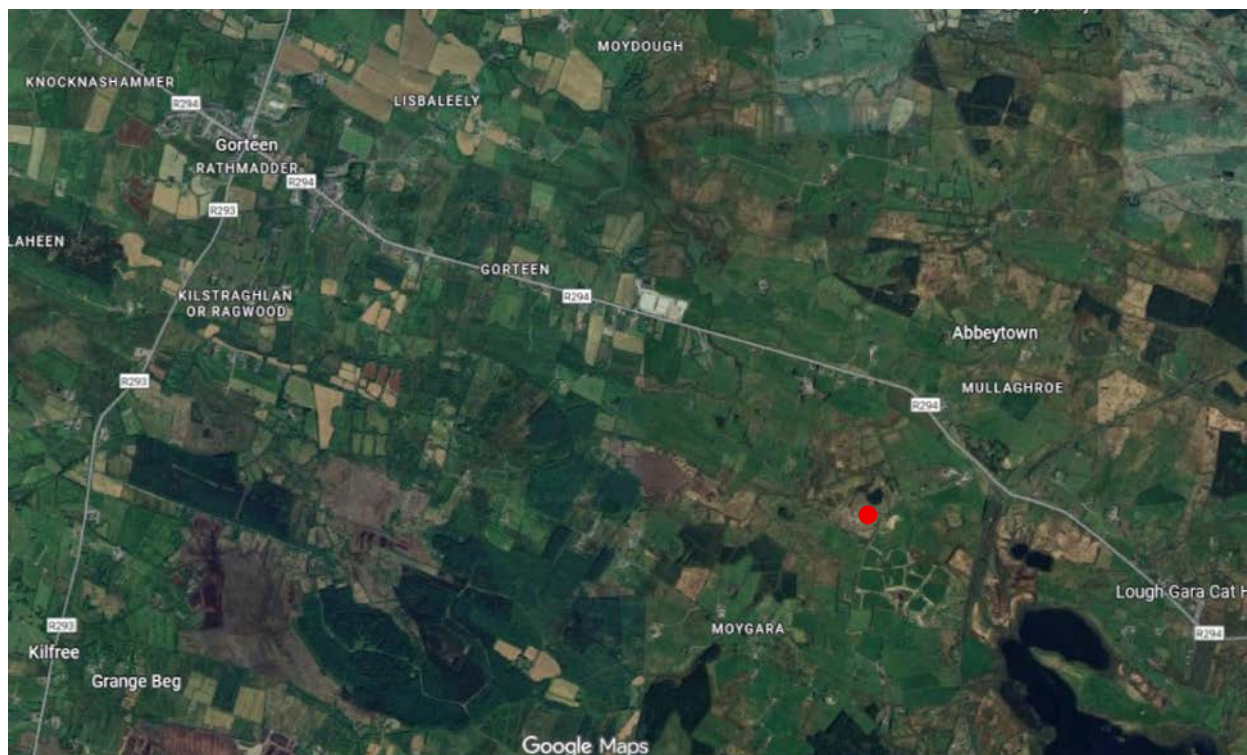


Figure 2.1 Site location of the proposed Sand and Gravel Extraction Facility at Moygara, Gurteen, Co. Sligo (red marker).

Planning Permission for development is sought for:

- Sand and gravel extraction facility
- Re-use of existing settlement ponds
- Wash plant area
- Provision of new site office
- Welfare facilities
- Wheelwash Bay
- Weighbridge
- All other ancillary site works

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The proposal utilises an existing site that has historically been used for the extraction of sand and gravel and which already contains a number of established operational features including settlement ponds, a wash plant area, internal haul roads and associated extraction infrastructure. Consequently, the development represents the continued use of an existing extractive landscape rather than the introduction of extraction into an undisturbed greenfield site.

The site is characterised by a diverse mosaic of habitats that have naturally developed following the cessation of previous extraction activities. Habitats recorded within the application site include Active Quarries and Mines (ER4), Recolonising Bare Ground (ED3), Wet Grassland (GS4), Other Artificial Lakes and Ponds (FL8), Hedgerow (WL1) and Treeline (WL2), as classified in *A Guide to Habitats in Ireland* (Fossitt, 2000). Collectively, these habitats contribute to the ecological diversity of the site and provide opportunities for natural ecological succession, habitat connectivity and local biodiversity.

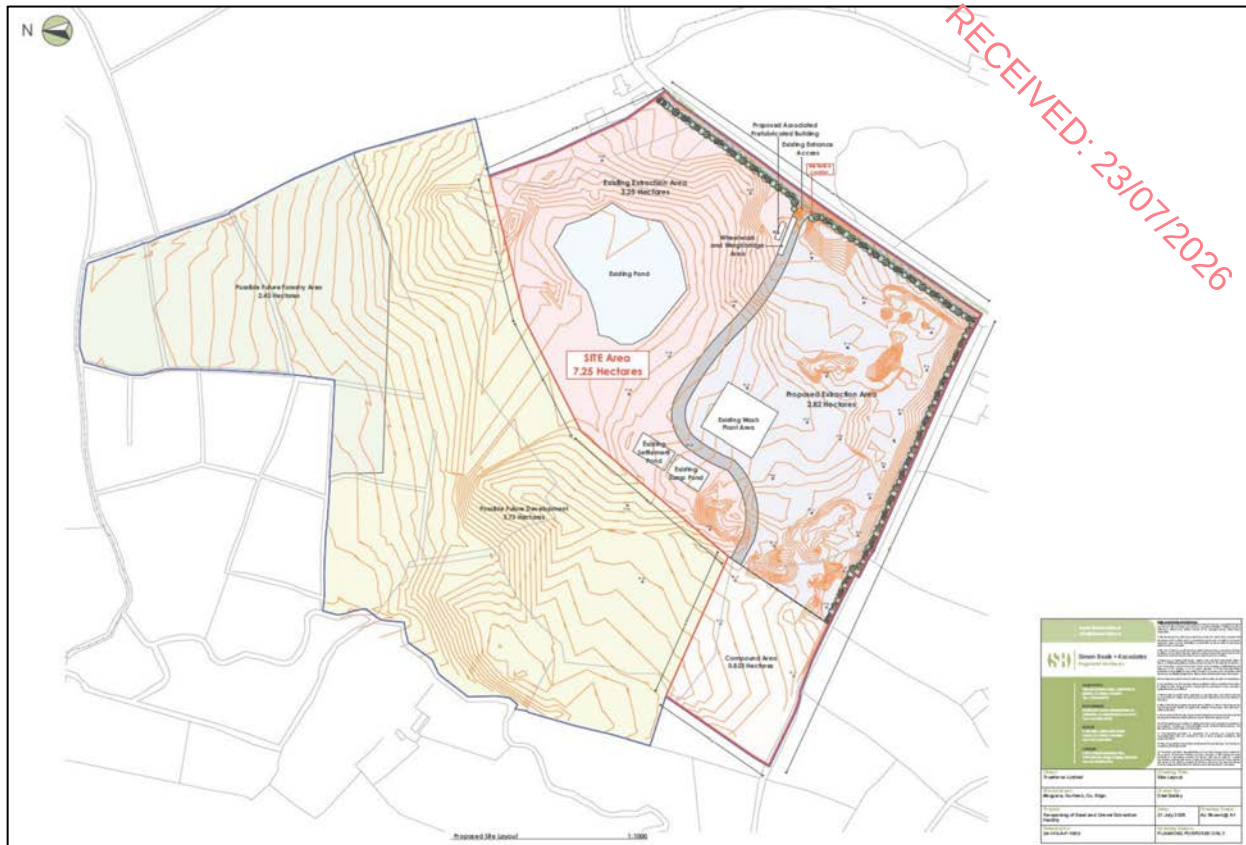


Figure 2.2 Site Layout Plan for the proposed Sand and Gravel Extraction Facility, showing the 7.25-hectare red-line application site, the 3.25-hectare existing extraction area, the 2.82-hectare proposed extraction area, the 0.825-hectare compound area and associated operational infrastructure.

The operational area is well screened by existing landforms, vegetation and boundary features. Established hedgerows, treelines and naturally vegetated sand and gravel faces provide visual screening while also functioning as ecological corridors for birds, mammals, bats and invertebrates moving through the wider landscape. Existing ponds within the site, although originally constructed for operational drainage purposes, now contribute additional habitat diversity and form part of the site's integrated surface water management system.

The proposal also incorporates a substantial programme of long-term biodiversity enhancement. Approximately 2.43 hectares (6 acres) of proposed native broadleaved woodland will be established within the applicant's wider ownership lands, outside the red-line application boundary and immediately adjoining the application site. This woodland will be complemented by approximately **706.5 metres** of new native Irish hedgerow and treeline planting along sections of the site boundaries, strengthening habitat connectivity between the operational area and the wider landscape. Additional enhancement measures include the installation of bird nesting boxes and the progressive replacement of ash trees where affected by ash dieback disease.

The proposed development has therefore been designed to combine the continued operation of a low-scale sand and gravel extraction facility with the long-term enhancement of biodiversity, landscape character and ecological connectivity. These enhancement measures have been incorporated into the

overall project design and form an integral component of the Biodiversity Enhancement and Management Plan accompanying this application.



Figure 2.3 Existing site entrance to the proposed Sand and Gravel Extraction Facility at Moygara, Gurteen, Co. Sligo.

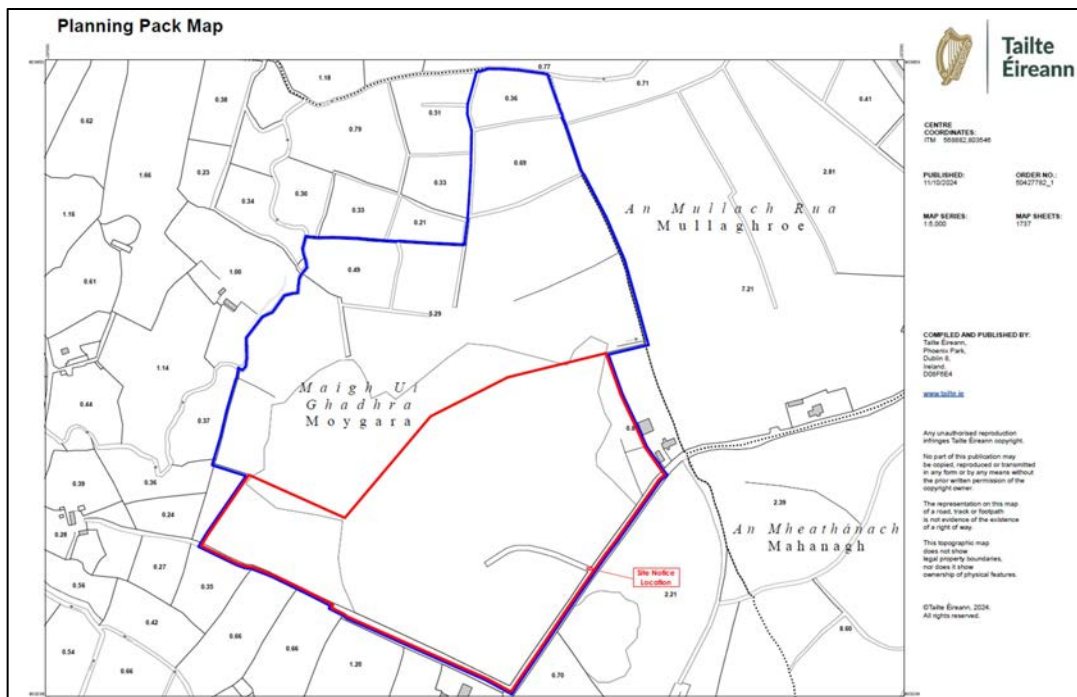


Figure 2.4 Planning boundary map showing the 7.25 ha red-line application boundary and the wider blue-line ownership boundary at Moygara, Gurteen, Co. Sligo.



Figure 2.5 South-western section of the site RLB at Moygara



Figure 2.6 South-eastern section of the site RLB at Moygara (local access road located to the right of image just over the berm)

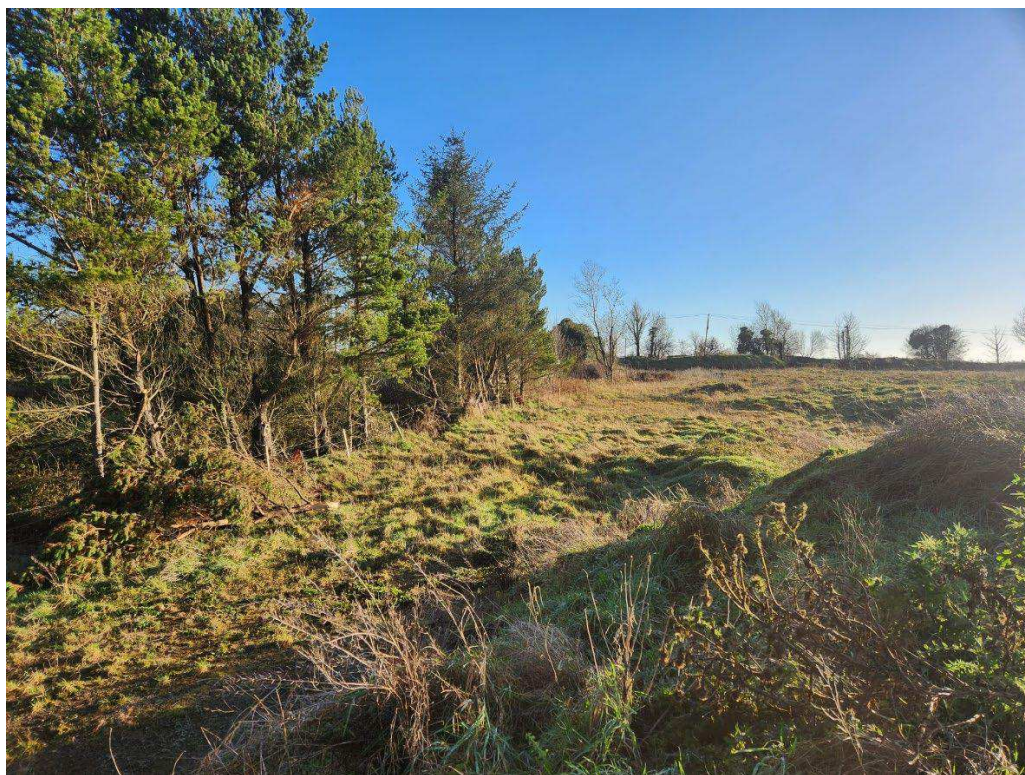


Figure 2.7 North-eastern section of the site RLB at Moygara



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Figure 2.8 North-western section of the site comprising undulating former extraction mounds that have undergone natural ecological succession and are now principally colonised by Wet Grassland (GS4) together with areas of recolonising vegetation.



Figure 2.9 Southern section of the site comprising Wet Grassland (GS4) adjacent to the existing pond. This habitat will be retained as part of the overall site layout and integrated into the wider biodiversity enhancement strategy for the site.



Figure 2.10 A small stream which was associated with the former sand and gravel extraction area is present on the northern part of the site and has potential for connectivity towards the Townaghbrack stream via the existing drainage network associated with the former extraction area (image shown Figure 2.10). This stream has firstly to flow through a sand and gravel berm and secondly, is well vegetated with grasses and pond weeds.

3. Ecological and Hydrological Characteristics of the receiving Environment and Natura 2000 sites

3.1. Desktop Study

A comprehensive desk-based study was undertaken to inform the preparation of this Natura Impact Statement and to identify all European Sites that could potentially be affected by the proposed development, either directly or indirectly. The assessment considered the ecological and hydrological characteristics of the receiving environment together with the potential pathways by which the proposed development could interact with Natura 2000 sites. The desktop study included a review of information obtained from the National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA), Geological Survey Ireland (GSI), Ordnance Survey Ireland (OSI), Sligo County Council, Inland Fisheries Ireland (IFI) and other relevant publicly available datasets. Particular attention was given to site-specific Conservation Objectives, Natura 2000 Standard Data Forms, hydrological mapping, aerial photography, geological mapping and recent planning information relating to the surrounding area. The findings of the desktop assessment were subsequently verified through a detailed field survey of the application site and surrounding receiving environment. Together, these data sources provided the ecological, hydrological and environmental baseline upon which this Natura Impact Statement has been prepared.

3.2. Ecological Characteristics & Receiving Environment

3.2.1 Geology

The purpose of this section is to establish the ecological and hydrological baseline conditions within and surrounding the proposed development site. Understanding the existing receiving environment is fundamental to the Appropriate Assessment process, as it enables potential source–pathway–receptor relationships between the proposed development and nearby European Sites to be identified and assessed using the precautionary principle.

The proposed Sand and Gravel Extraction Facility is situated within an area underlain by extensive **glaciofluvial sand and gravel deposits**, reflecting the geological legacy of the last Ice Age. These deposits were formed by meltwater rivers flowing beneath and in front of retreating glaciers, resulting in well-sorted accumulations of sands and gravels that today represent a valuable aggregate resource. The historical extraction activities previously undertaken at the site exploited these naturally occurring deposits, giving rise to the existing extraction landforms and operational footprint.

According to the Geological Survey Ireland (GSI), the superficial geology within the site is classified as **Glaciofluvial Sands and Gravels**, while the underlying bedrock is mapped as the **Lisgorman Shale Formation**, comprising predominantly thin-bedded calcareous shale and limestone of Devonian age. The combination of permeable superficial deposits over relatively less permeable bedrock influences local groundwater movement, infiltration characteristics and surface water drainage patterns across the site.

The geological characteristics of the site have also influenced the existing topography, which now comprise a series of former extraction faces, sand and gravel mounds, engineered settlement ponds and naturally revegetated areas. Since extraction activities ceased, much of the disturbed ground has undergone natural ecological succession, resulting in the mosaic of habitats described in Section 3.2.2.

From an Appropriate Assessment perspective, the geological setting is important because it informs the assessment of potential hydrological pathways between the proposed development and downstream European Sites. Surface water management associated with the proposed development has been specifically designed having regard to the permeable nature of the superficial deposits and incorporates existing settlement ponds together with additional engineered drainage measures to control runoff, promote settlement of suspended solids and protect downstream receiving waters. Accordingly, the geological and hydrogeological characteristics of the site form an integral component of the environmental design of the proposed development and have been fully considered within the accompanying surface water management strategy prepared by Simon Beale & Associates. These characteristics also inform the assessment of potential source–pathway–receptor relationships presented later in this Natura Impact Statement.

3.2.2 Habitats as per Fossitt (2000)

A detailed habitat survey of the application site was undertaken in accordance with *A Guide to Habitats in Ireland* (Fossitt, 2000). Habitat classification was based upon the vegetation communities present, site management history and the existing physical characteristics of the site. The resulting habitat map is presented in Appendix 2A.

Habitat (Fossitt, 2000)	Code	Ecological Evaluation (NRA, 2009)	Management Objective
Active Quarries and Mines	ER4	Low Local Importance	Confine extraction and associated disturbance to the areas identified on the approved Site Layout Plan.
Recolonising Bare Ground	ED3	Low Local Importance	Retain where feasible and allow natural succession
Wet Grassland	GS4	Low Local Importance	Retain and protect
Other Artificial Lakes & Ponds	FL8	High Local Importance	Retain and manage as aquatic habitat
Treeline	WL2	High Local Importance	Retain and reinforce
Hedgerow	WL1	High Local Importance	Retain, reinforce and extend

Table 3.1 List of habitats identified categorised as per Julie A. Fossitt, 'A Guide to Habitats in Ireland', Heritage Council, Kilkenny (2000) and corresponding ecological evaluation as per National Roads Authority, 2008. Guidelines for the Assessment of the Ecological Impacts of National Road Schemes.

Although none of these habitats are Annex I habitats under the Habitats Directive, together they create a structurally diverse environment that supports a range of common flora and fauna typical of previously disturbed landscapes undergoing natural ecological succession.

Areas classified as **Recolonising Bare Ground (ED3)** represent transitional habitat where naturally colonising vegetation has become established on previously exposed mineral substrates. These areas contribute to habitat diversity, support early successional plant communities and provide valuable foraging opportunities for invertebrates.

The **Wet Grassland (GS4)** habitat occupies much of the open ground surrounding the former extraction areas and is characterised by species adapted to periodically damp conditions. This habitat contributes to local biodiversity while also providing ecological connectivity between the more developed sections of the site and the surrounding agricultural landscape.

The existing **Artificial Lakes and Ponds (FL8)** were originally created as part of the historic extraction and site drainage infrastructure. Over time these waterbodies have become integrated into the local landscape and now provide additional habitat diversity while continuing to fulfil an important function within the site's surface water management system.

Existing **Hedgerows (WL1)** and **Treelines (WL2)** occur principally around sections of the site boundaries and provide visual screening together with valuable ecological corridors. These linear habitats facilitate movement by birds, mammals and invertebrates throughout the wider landscape and represent one of the most important ecological features associated with the site.

As part of the proposed development, these existing habitats will be retained wherever practicable and supplemented through a comprehensive programme of Biodiversity Enhancement. The Biodiversity Enhancement and Management Plan (BEMP) accompanying this application includes the establishment of approximately 2.43 hectares (6 acres) of native broadleaved woodland within the wider ownership lands together with approximately 706.5 metres of additional native Irish hedgerow and treeline planting around sections of the site boundary. These measures have been designed to strengthen habitat connectivity, increase structural diversity and provide long-term ecological enhancement beyond the operational footprint of the extraction facility.

Overall, the habitat resource associated with the application site reflects a previously disturbed landscape that has undergone significant natural regeneration. The proposed development has been designed to retain these ecological features wherever possible while delivering additional habitat creation and long-term biodiversity enhancement through the implementation of the Biodiversity Enhancement and Management Plan.

3.2.3 Flora recorded during the Field Survey

A Guide to Habitats in Ireland (Fossit, 2000) was used to classify habitats based on the vegetation present and the management history of the proposed project site. Habitats recorded on or within the immediate vicinity of the site are listed in Table 3.1.

The proposed site is enclosed on 2 sides by old sand and gravel faces along the south-eastern RLB parallel to the public road and along the south-western RLB. Part of the sand and gravel area to the west is categorized as *Recolonising Bare Ground (ED3)* (Appendix 2A - Habitat Map). Evidence of species within the area of *Recolonising Bare Ground (ED3)* included Colt's-foot (*Tussilago farfara*), Great willowherb (*Epilobium hirsutum*) and Black meddick (*Medicago lupulina*). Vegetation has been slow to develop at the site since the cessation of the historical activity as a sand and gravel extraction pit with plant abundance generally low. Other species recorded include Dandelion (*Taraxacum officinale agg.*), Ragwort (*Senecio jacobaea*) and Cock's foot grass (*Dactylis glomerata*).

The remaining sand and gravel faces have been encroached by species such as Willow (*Salix sp.*) and Gorse (*Ulex europaeus*). Evidence of species at these faces included Bird's-foot Trefoil (*Lotus corniculatus*), Ribwort plantain (*Plantago lanceolata*), Creeping thistle (*Cirsium arvense*), Wild carrot (*Daucus carota*), Red fescue (*Festuca rubra*), Cock's foot grass, Meadow vetchling (*Lathyrus pratensis*), Ragwort, Hard rush (*Juncus inflexus*) and Black knapweed (*Centaurea nigra*). Other areas of rank vegetation comprised Bramble (*Rubus fruticosus*). Ash (*Fraxinus excelsior*) and Hawthorn (*Crataegus monogyna*) (*Treeline WL2*) are colonising part of the south-western and south-eastern-western RLB sand and gravel boundaries.

The central part of the site and the access road to it consist of *Recolonizing Bare Ground (ED3)* and *Other artificial lakes and ponds (FL8)*. *Wet Grassland (GS4)* predominates in the open grassland vicinity of the site that runs across the northern, eastern and southern areas of the site (Figures 2.7, 2.8 and 2.9). The wet grassland vegetation was dominated by evidence of Creeping bent (*Agrostis stolonifera*), Reed canary grass (*Phalaris arundinacea*), Meadowsweet (*Filipendula ulmaria*) and Couch grass (*Elytrigia repens*).

Lodgepole Pine (*Pinus contorta*) coniferous forestry borders the site to the east of where a farmhouse and some old-damaged sheds are located.

The species present at the proposed project site are typical of colonising vegetation of open ground and waste places and are common. No Annex I habitats were recorded within the site boundary and no Third Schedule invasive species were recorded. Table 3.2 below outlines the significance of the habitats recorded based on NRA (2009) classification.

Habitat	Evaluation rating (NRA, 2009)	Rationale
Active Quarries and Mines (ER4)	Locally important (Lower value)	The species recorded within this habitat are common and widespread
Recolonizing bare Ground (ED3)	Locally important (Lower value)	The species recorded within this habitat are common and widespread
Wet Grassland (GS4)	Locally important (Lower value)	The species recorded within this habitat are common and widespread
Other Artificial Lakes and Ponds (EL8)	Locally important (Higher value)	The species recorded within this habitat are common and widespread.
Treeline (WL2)	Locally important (Higher value)	The species recorded within this habitat are common and widespread.
Hedgerow (WL1)	Locally important (Higher value)	The species recorded within this habitat are common and widespread.

Table 3.2 Overall evaluation of habitats present within the proposed site at Moygara

3.2.4 Fauna recorded during the Field Survey

No evidence of protected mammals such as prints, scats/spraints or dens/burrows/setts/holts were recorded at the site or along the nearby Townaghbrack river.

Birds observed during the field survey included Rook (*Corvus frugilegus*), Wren (*Troglodytes troglodytes*) and Meadow pipit (*Anthus pratensis*).

Occasionally in quarries, there will be the potential for Sand Martin habitation going forward in the summer (mid-March to late September) period where elevated gravel faces are denuded of thick vegetation and become exposed. In this instance and as a future-proofing mitigation measure, a Sand Martin Hotel will be established upon an elevated position at an exposed gravel face within the site (See Appendix 3).

There is the potential for Otter to use the river corridor adjacent to the north of the proposed project site. Effects on Otter are however predicted to be minimal as there were no Otter signs or identifiable characteristics recorded in the area. Otter would have been used to activity from the sand and gravel area in the past when it was active. A section of the main site RLB is located a minimum of 88m away from the Townaghbrack river.

No features within the proposed site RLB provide suitable bat roosting habitat. There were no hedgerows or tree lines within the proposed project footprint area that could provide suitable commuting and foraging habitat for bats.

Bird species present at the site were common locally and considered *Locally Important (Lower value)*. Exposed gravel and till sand and gravel faces at Moygara will provide potential habitat via the establishment

of a 'Sand Martin Hotel' for a Sand Martin population into the future and as a *Biodiversity Net Gain* consideration going forward (Appendix 3).

No evidence of animals protected under the EU Habitats Directive or Wildlife Act 1976-2017, including Otter or Badger, were recorded. Although no evidence of Otter was recorded it is possible that an Otter population of *Local importance (Higher value)* utilises sections of the Townaghbrack river and Owenmore rivers further upstream and away from the proposed site. The same applies to Salmon.

3.2.5 Receiving Environment at Moygara

The Townaghbrack Stream represents the nearest identified receiving watercourse to the proposed development and is located approximately 87 metres from the nearest point of the application boundary. The stream lies outside the operational footprint and is separated from the proposed extraction area by existing landforms, vegetation and the engineered drainage infrastructure associated with the historic extraction site.

No natural river or stream occurs within the red-line application boundary. A small-vegetated drainage channel associated with the historic extraction and settlement-pond system is present within the northern section of the site. This feature is not classified as a natural watercourse but has the potential, under certain conditions, to convey water towards the Townaghbrack Stream. It has therefore been incorporated into the precautionary hydrological assessment and surface-water management strategy. This feature is characterised by well-established emergent vegetation including grasses and aquatic macrophytes, reflecting its current function as both a drainage feature and local wetland habitat.

The hydrological relationship between the proposed development and the Townaghbrack Stream has been assessed in detail within the accompanying drainage design prepared by Simon Beale & Associates. Surface water generated during operation of the proposed facility will be managed through the existing settlement ponds and associated engineered drainage infrastructure, thereby substantially reducing the potential for suspended solids or accidental contaminants to enter the receiving environment.

The Townaghbrack Stream subsequently forms part of the wider hydrological network considered within this Natura Impact Statement when assessing potential pathways to downstream European Sites.

3.3 Hydrological Connectivity with European Sites

The assessment of hydrological connectivity forms one of the principal components of this Natura Impact Statement. As the proposed development does not directly adjoin any European Site, the potential for indirect effects is principally dependent upon whether a complete source–pathway–receptor linkage exists between the proposed Sand and Gravel Extraction Facility and downstream Natura 2000 sites.

The site is located in the Sligo Bay 35 WFD catchment and is subsequently located within the Owenmore (Sligo) sub-catchment. It is within the Owenmore_20 (Sligo) WFD river sub-basin.

Potential hydrological pathways were identified through a combination of field survey, hydrological mapping, EPA waterbody datasets, Geological Survey Ireland mapping and aerial imagery. Particular consideration was given to the existing drainage network associated with the former extraction area, the Townaghbrack Stream, the Owenmore River catchment and the wider interconnected river and lake systems downstream of the proposed development.

The assessment has been undertaken using the precautionary principle. Where a plausible hydrological pathway could not be objectively excluded at the screening stage, the relevant European Site has been assessed in detail within this Natura Impact Statement. Conversely, where no complete source–pathway–receptor linkage exists due to separation distance, catchment boundaries or the absence of hydrological connectivity, the potential for adverse effects has been objectively excluded.

The following sections describe the principal hydrological pathways considered during the assessment and identify those European Sites requiring detailed Appropriate Assessment.

3.3.1 Assessment of Hydrological Connectivity – Templehouse and Cloonacleigha Loughs SAC and Unshin River SAC

The EPA catchment mapping, together with field observations and aerial imagery, was reviewed on the 17th of December 2025 to establish whether a complete hydrological source–pathway–receptor linkage exists between the proposed Sand and Gravel Extraction Facility and downstream European Sites. Particular attention was given to the local drainage network associated with the historic extraction area, the Townaghbrack Stream and the wider Owenmore (Sligo) catchment.

The assessment confirmed that the proposed development is located within the Sligo Bay Catchment (35) and specifically within the Owenmore (Sligo)_20 Water Framework Directive (WFD) waterbody. Surface water originating within the application site has the potential to discharge, via the existing drainage infrastructure, towards the Townaghbrack Stream before entering the Owenmore (Sligo) River system downstream. This hydrological network ultimately provides a potential pathway towards the Templehouse and Cloonacleigha Loughs SAC and, further downstream, the Unshin River SAC.

Following a site walkover and desktop review it was not deemed initially possible to exclude, as a matter of scientific certainty, that a proposed new application and development would not have an effect on any Natura 2000 site, individually or together with other plans and projects. Particular consideration has been given to the downstream European Sites of Templehouse and Cloonacleigha Loughs SAC (23.55 km) and Unshin River SAC (39.46 km). These sites have been included within the Appropriate Assessment on a precautionary basis, recognising the presence of a potential indirect hydrological pathway through the wider catchment. A small vegetated drainage feature associated with the former sand and gravel extraction area is present within the site, this area has been assessed on a precautionary basis due to the presence of a potential indirect hydrological pathway with the Townaghbrack Stream (Figure 2.10). Figures 3.1, 3.2 and 3.3 show the proposed site location in relation to the hydrological catchment area and the 2 designated Natura 2000 sites to the north.



Figure 3.1 Proposed site location (red) in relation to the Townaghbrack stream that has potential connectivity to the Templehouse and Clooncleigha Loughs SAC and Unshin River SAC downstream towards the north of the site via the existing drainage network associated with the former extraction area (image shown Figure 2.10).

Detailed review of the receiving catchment indicates that the nearest point of the Townaghbrack Stream lies approximately 88 metres north of the application boundary (Figure 3.1 in purple). The stream subsequently joins the Owenmore (Sligo) River approximately 1.97 kilometres downstream of the site, where EPA monitoring indicates that the receiving waterbody currently achieves High Ecological Status.

From this confluence, the hydrological pathway continues northwards for approximately 23.55 kilometres before reaching the Templehouse and Cloonacleigha Loughs SAC. The Unshin River SAC is located further downstream at an approximate hydrological distance of 39.46 kilometres from the nearest point of the Townaghbrack Stream adjacent to the proposed development.

Although these European Sites are located a considerable hydrological distance downstream of the proposed development, the presence of an interconnected surface water network means that a complete hydrological pathway cannot be excluded solely on the basis of distance. Consequently, and in accordance with the precautionary principle, both SACs have been carried forward for detailed Appropriate Assessment within this Natura Impact Statement.

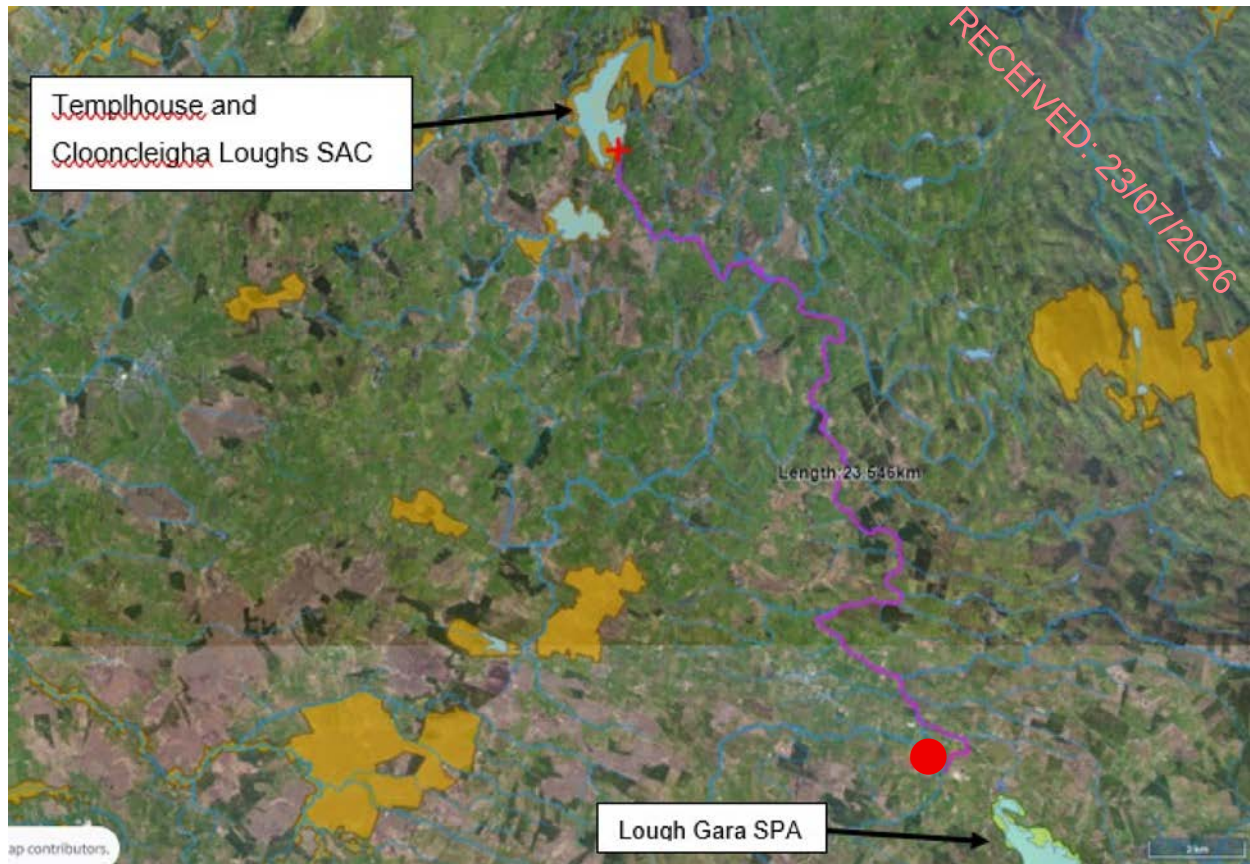


Figure 3.2 Proposed site location (red) in relation to the Townaghbrack river and Owenmore river that have potential hydrological connectivity to the Templhouse and Cloonacleigha Loughs SAC and Unshin River SAC downstream visible here towards the north of the site at distances of 23.5km and 39.4km respectively. All other SAC's & SPA's are upstream/don't have potential hydrological connectivity.

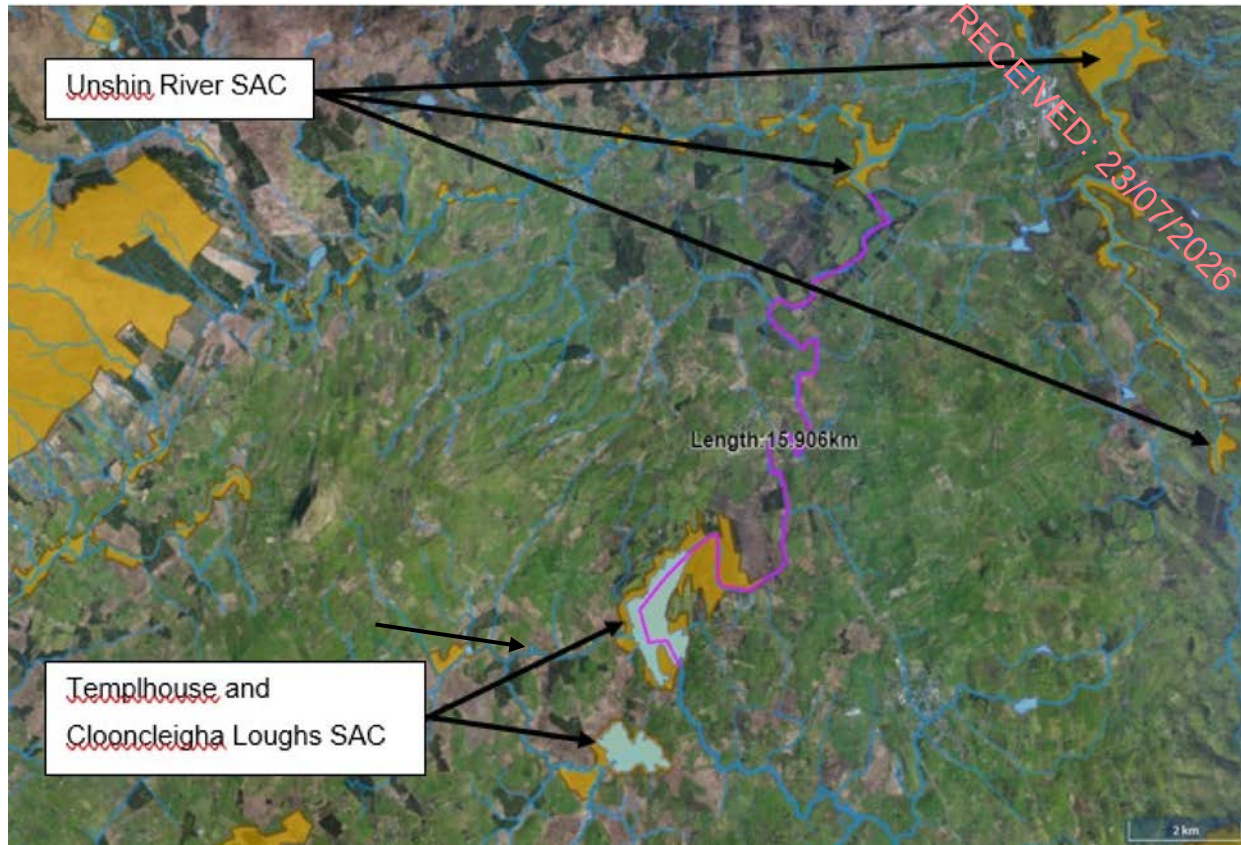


Figure 3.3 The Owenmore (Sligo) stream (purple) that hydrologically links Templehouse and Clooncleigha Loughs SAC and Unshin River SAC further downstream providing potential for hydrological connectivity with the site at Moygara. All other SAC's & SPA's are upstream/don't have potential hydrological connectivity (Table 3.2).

The principal potential impact pathway identified between the proposed development and both downstream SACs is indirect and relates solely to surface water quality. No direct land-take, habitat loss, fragmentation, disturbance or other direct pathways exist. Consequently, the subsequent Appropriate Assessment focuses specifically on whether the proposed development, either alone or in combination with other plans or projects, could adversely affect the conservation objectives of these European Sites through deterioration of water quality or alteration of hydrological conditions.

3.3.2 Assessment of Hydrological Connectivity - Lough Gara SPA

Lough Gara SPA (Site Code 004048) is the nearest European Site to the proposed Sand and Gravel Extraction Facility and is located approximately 786 metres east of the application boundary. The SPA supports a range of internationally important wintering waterbird species together with associated wetland habitats, the ecological integrity of which is intrinsically linked to the maintenance of appropriate hydrological conditions and water quality.

A detailed review of EPA Water Framework Directive (WFD) catchment mapping, aerial imagery and field survey observations was undertaken to determine whether a complete hydrological source–pathway–receptor relationship exists between the proposed development and Lough Gara SPA. The assessment of

available hydrological mapping, aerial imagery and field survey information indicates that a potential indirect hydrological source–pathway–receptor relationship may exist between the proposed development and Lough Gara SPA via the local drainage network and downstream surface water features. While no direct hydrological connection between the application site and the SPA has been identified, the possibility of indirect connectivity cannot be objectively excluded. Accordingly, Lough Gara SPA has been carried forward for detailed Appropriate Assessment in accordance with the precautionary principle.

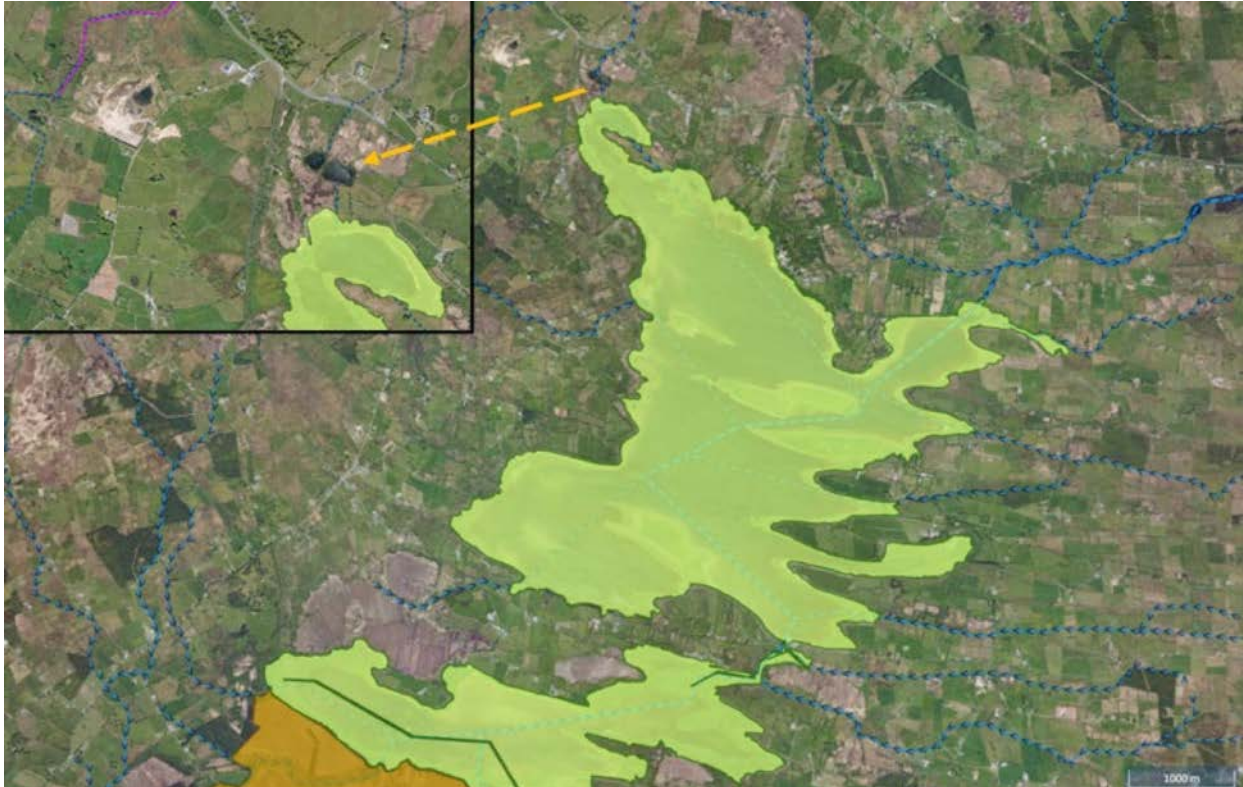


Figure 3.4 Aerial imagery illustrating Lough Gara SPA in relation to the proposed development, the surrounding surface water network and the lake located closest to the application site.

Although the proposed development does not directly adjoin the SPA and no direct habitat loss, fragmentation or disturbance pathways exist, the presence of a continuous surface water pathway means that indirect hydrological connectivity cannot be objectively excluded. Consequently, and in accordance with the precautionary principle set out under Article 6(3) of the Habitats Directive, Lough Gara SPA has been carried forward for detailed Appropriate Assessment.

The principal potential impact pathway identified between the proposed development and Lough Gara SPA relates solely to the protection of downstream water quality and the maintenance of existing hydrological conditions. No direct effects on qualifying habitats or supporting bird habitat are anticipated. Accordingly, the subsequent assessment focuses on whether the proposed development, either alone or in combination with other plans or projects, could give rise to adverse effects on the conservation objectives of the SPA through deterioration of water quality or alteration of hydrological conditions.



Figure 3.5 Proposed Sand and Gravel Extraction Facility in relation to Lough Gara SPA

3.3.3 Assessment of Hydrological Connectivity - Lough Forbes Complex SAC

Lough Forbes Complex SAC (Site Code 001818) is located approximately 60.77 kilometres downstream of the proposed Sand and Gravel Extraction Facility. The designated site is separated from the application site by an extensive network of rivers and lakes within the Shannon River catchment, including the Owenmore (Sligo) River, Boyle River and Upper Shannon River systems.

A detailed review of EPA Water Framework Directive (WFD) catchment mapping, aerial photography and field survey information indicates that no direct hydrological connection exists between the proposed development and Lough Forbes Complex SAC. However, a potential indirect source–pathway–receptor relationship cannot be objectively excluded due to the continuity of the downstream river network linking the wider catchment to the designated site.

The potential hydrological pathway extends through a considerable sequence of intervening rivers and lakes, including Lough Key, Lough Oakport, Lough Cootehall, Lough Eidin, Lough Corry and Lough Boderg, before ultimately reaching Lough Forbes Complex SAC. These intervening waterbodies substantially increase the hydrological travel distance and provide opportunities for attenuation, sediment settlement and natural water quality improvement before waters could potentially reach the designated site.

Although the significant downstream separation considerably reduces the likelihood of adverse effects occurring, the possibility of an indirect hydrological pathway cannot be objectively excluded solely on the basis of distance. Accordingly, and in accordance with the precautionary principle under Article 6(3) of the Habitats Directive, Lough Forbes Complex SAC has been carried forward for detailed Appropriate

Assessment. The only potential impact pathway identified relates to indirect changes in downstream water quality. No direct land-take, habitat loss, habitat fragmentation or disturbance pathways exist between the proposed development and Lough Forbes Complex SAC.

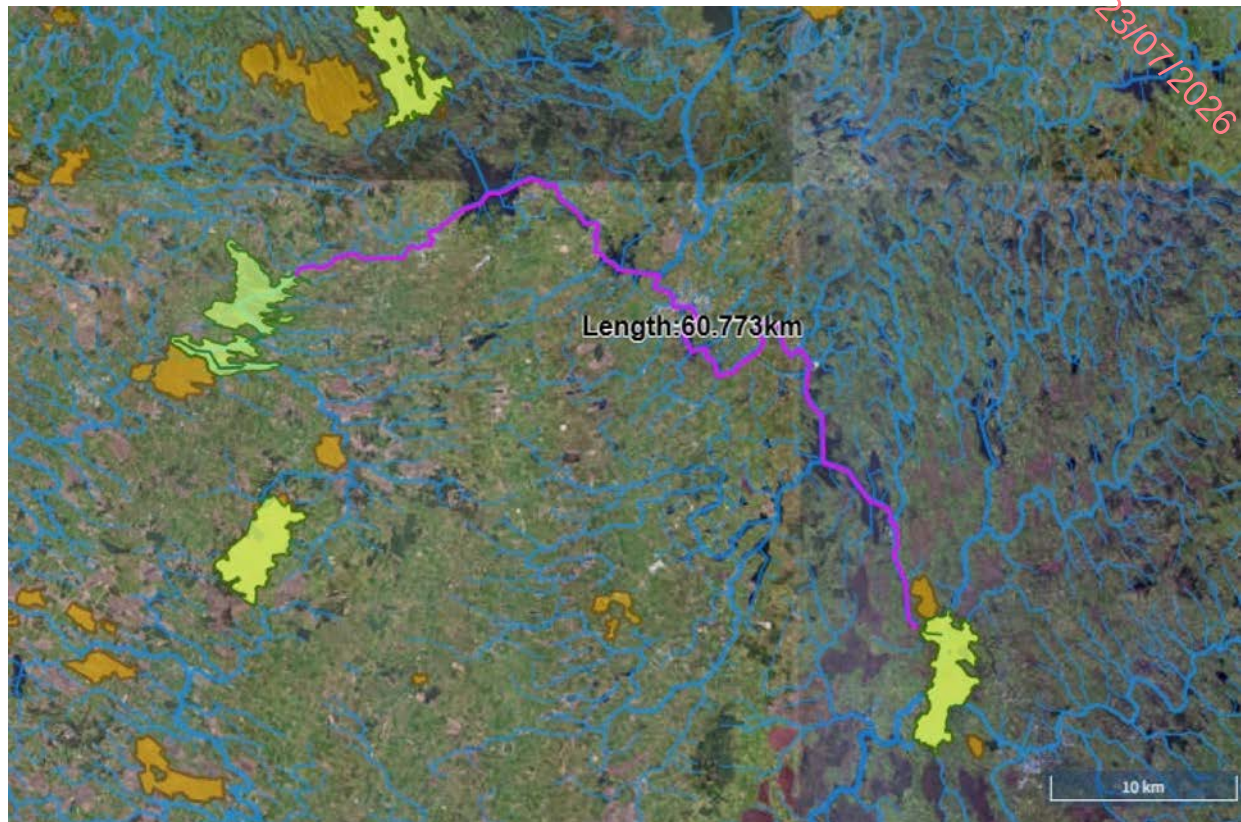


Figure 3.6 Aerial image showing Lough Gara SPA, Lough Forbes Complex SAC (60.77km away) and the overlapping Ballykenney Fisherstown Bog SPA (both hydrologically 60.77km downstream). Potential connectivity is provided via Lough Key, Lough Oakport, Lough Cootehall, Lough Eidin, Lough Corry and Lough Boderg all of which the rivers Boyle and Shannon Upper flow throughout.

3.3.4 Assessment of Hydrological Connectivity – Ballykenney-Fisherstown Bog SPA

Ballykenney-Fisherstown Bog SPA (Site Code 004101) is located within the wider Shannon catchment and occurs in close association with Lough Forbes Complex SAC. The designated site lies approximately 60.77km downstream of the proposed Sand and Gravel Extraction Facility and is separated from the application site by an extensive network of interconnected rivers and lakes.

As described in Section 3.3.3, EPA Water Framework Directive (WFD) mapping, aerial imagery and field survey observations indicate that no direct hydrological connection exists between the proposed development and Ballykenney-Fisherstown Bog SPA. However, a potential indirect source-pathway-receptor relationship cannot be objectively excluded due to the continuity of the downstream river network extending from the Owenmore (Sligo) catchment through the Boyle and Upper Shannon river systems.

The substantial downstream separation, together with the numerous intervening lakes and watercourses, provides substantial hydrological separation and a lengthy downstream pathway between the proposed

development and the European Site. The substantial downstream distance and the presence of intervening waterbodies reduce the likelihood that a measurable project-related effect would reach the European Site. However, these factors are not relied upon as mitigation and the assessment proceeds on the precautionary basis that an indirect pathway cannot be conclusively excluded.

Although the likelihood of any measurable effect occurring at Ballykenny-Fisherstown Bog SPA is considered to be extremely low, the existence of a potential indirect hydrological pathway cannot be objectively excluded solely on the basis of distance. Consequently, and in accordance with the precautionary principle under Article 6(3) of the Habitats Directive, Ballykenny-Fisherstown Bog SPA has been carried forward for detailed Appropriate Assessment.

The only potential impact pathway identified relates to indirect changes in downstream water quality. No direct pathways exist between the proposed development and the SPA, including direct habitat loss, habitat fragmentation, disturbance or land-take.

3.3.5 Summary of Hydrological Connectivity Assessment

The hydrological assessment identified a number of European Sites located within the wider downstream catchment of the proposed development. While no direct hydrological connections or direct impact pathways were identified between the proposed Sand and Gravel Extraction Facility and any European Site, a number of potential indirect source-pathway-receptor relationships could not be objectively excluded based on the available hydrological information.

Accordingly, and in accordance with the precautionary principle, the relevant European Sites have been carried forward for detailed Appropriate Assessment. The subsequent sections of this Natura Impact Statement assess whether the proposed development, either alone or in combination with other plans or projects, could adversely affect the conservation objectives or the integrity of these European Sites, having regard to the embedded environmental protection measures, proposed mitigation and the characteristics of the receiving environment.

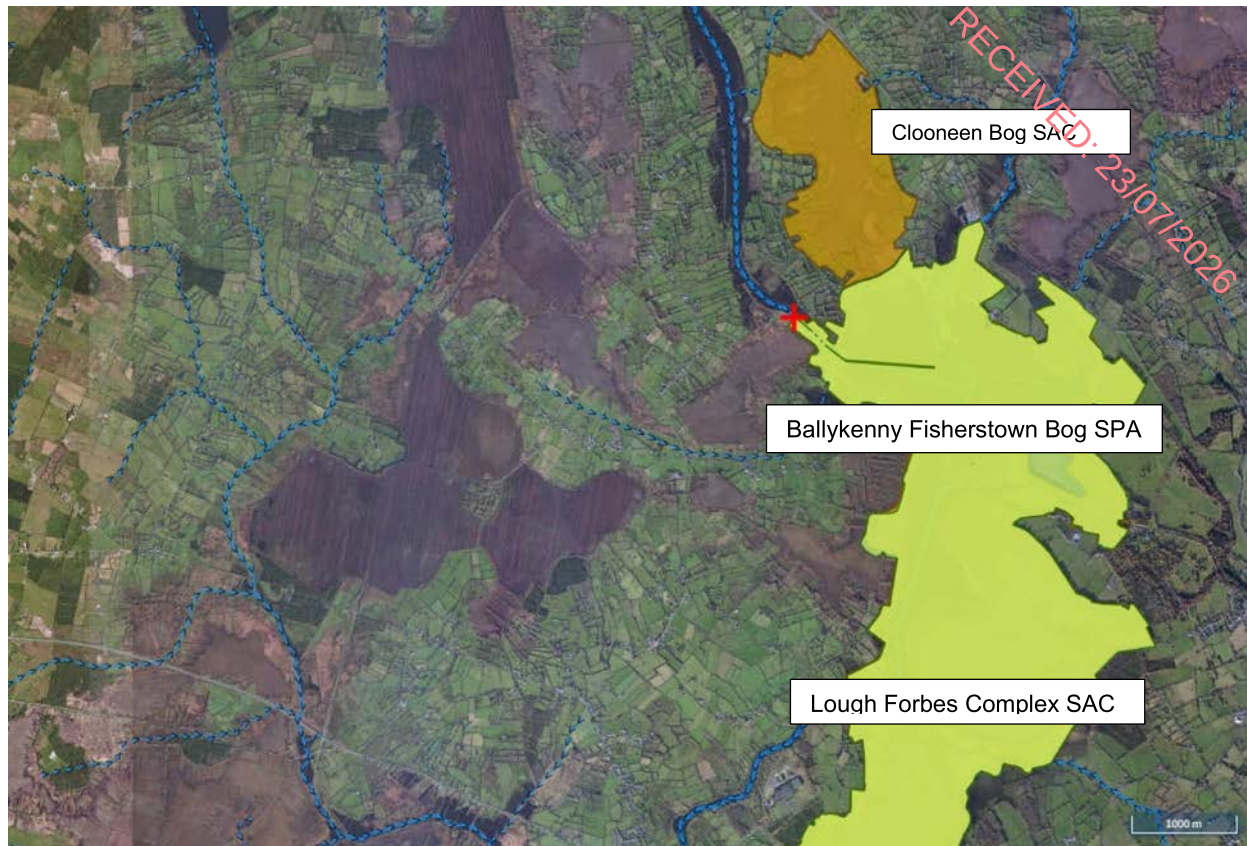


Figure 3.7 Aerial imagery showing the overlapping Lough Forbes Complex SAC and Ballykenny Fisherstown Bog SPA. Clooneen Bog SAC is visible above the former 2 Natura sites however it is upstream of any potential hydrological connectivity and separate to Lough Forbes Complex SAC. The red cross hair marks the location where the Shannon Upper River meets the SAC and SPA.

3.4 Natura 2000 Sites within the 15km Zone of Influence

3.4.1 Background to Natura 2000 Sites

In order to ensure the survival of Europe's most endangered and vulnerable species, EU governments adopted the Habitats Directive in 1992 (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora). Together with the Birds Directive (2009/147/EC), it sets the standard for nature conservation across the EU and enables all European Member States to collaborate within the same legislative framework in order to protect the most vulnerable species and habitat types across their entire natural range within the EU.

The Habitats Directive protects around 1200 European species other than birds which are considered to be endangered, vulnerable, rare and/or endemic. Included in the Directive are mammals, reptiles, fish, crustaceans, insects, molluscs, bivalves and plants. The protection provisions afforded to these species are similar to those in the Birds Directive. They are designed to ensure that the species listed in the Habitats Directive reach a favourable conservation status within the EU. With the introduction of the EU Habitats Directive and Birds Directive which were transposed into Irish law as S.I. No. 94/1997 European Communities (Birds and Natural Habitats) Regulations 1997, the European Union formally recognised the significance of protecting rare and endangered species of flora and fauna, and also, more importantly, their habitats. The 1997 Regulations and their amendments were subsequently revised and consolidated in S.I. No. 477/2011- European Communities (Birds and Natural Habitats) Regulations 2011. This legislation requires the establishment and conservation of a network of sites of particular conservation value that are to be termed 'European Sites'.

Articles 3 – 9 of the EU Habitats Directive provide the legislative framework of protecting rare and endangered species of flora and fauna, and habitats. Annex I of the Directive lists habitat types whose conservation requires the designation of Special Areas of Conservation (SAC). Priority habitats, such as Turloughs, which are in danger of disappearing within the EU are also listed in Annex I. Annex II of the Habitats Directive lists animal and plant species such as Atlantic Salmon and Killarney Fern whose conservation also requires the designation of SAC. Annex IV lists animal and plant species in need of strict protection such as the Lesser Horseshoe Bat and Otter. Annex V lists animal and plant species whose taking in the wild and exploitation may be subject to management measures. In Ireland, species listed under Annex V include Irish Hare, Common Frog and Pine Marten. It is possible for species to be listed in more than one Annex. This is the case with Otter and Lesser Horseshoe Bat.

Europe is home to more than 500 wild bird species. At least 32 % of the EU's bird species are currently not in a good conservation status. The Birds Directive aims to protect all of the 500 wild bird species naturally occurring in the European Union. Concerned with their decline, Member States unanimously adopted the Directive 79/409/EEC in April 1979. It is the oldest piece of EU legislation on the environment and one of its cornerstones. Amended in 2009, it became the Directive 2009/147/EC. Habitat loss and degradation are the most serious threats to the conservation of wild birds. The Directive therefore places great emphasis on the protection of habitats for endangered and migratory species. It establishes a network of Special Protection Areas (SPAs) including all the most suitable territories for these species. Since 1994, all SPAs are included in the Natura 2000 ecological network, set up under the Habitats Directive

92/43/EEC. A particular group of bird species have been identified in the Directive and are listed in Annex I as requiring special conservation measures in relation to their habitats. These species have been listed on account of inter alia: their risk of extinction; vulnerability to specific changes in their habitat; and/or due to their relatively small population size or restricted distribution. Special Protection Areas (SPAs) are to be identified and classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (Article 4).

3.4.2 Identification of Natura 2000 Sites within the Likely Zone of Impact

The most up to date GIS spatial datasets for Surface Water Catchments and European designated sites were downloaded from the EPA website (www.eps.ie) and NPWS website (www.npws.ie), respectively, on the 17/12/2025. European sites within the likely 15km Zone of Likely Impact of the project were identified along with potential surface water connectivity. The following rationale was used to identify the Zone of Likely Impact. Initially, sites within a 15km radius of the proposed project were identified (as per the DoEHLG Guidance, 2010). In addition, using the precautionary principle, European Sites located outside the 15km buffer zone were also taken into account and assessed. In this case, no pathway for effects on any site that is further than 15 km from the site was identified. These European Sites were then individually assessed to determine whether impacts as a result of the proposed development were likely or not.

All European sites located greater than 15km from the proposed development, with no identifiable connectivity or located in a separate hydrological catchment were deemed to be outside the zone of impact of the proposed development as no pathways for significant effects were identified. In this instance, and out of a total of 15 Natura 2000 sites identified within a 15km radius, 2 SAC's had the potential for hydrological connectivity (Templehouse and Cloonacleigha Loughs SAC-23.55km & Unshin River SAC-39.46km) and 1 SPA (Lough Gara SPA-786 metres). Further downstream of Lough Gara and under the precautionary principle an assessment of Lough Forbes Complex SAC and Ballykenny Fisherstown SPA (both over 60km away) was also undertaken.

Table 3.2 below contains a list of all Natura 2000 sites within 15km of the proposed project and the QI species and habitats for which the sites have been designated. It also shows those that are either located upstream of the proposed site and therefore not hydrologically connected and those Natura sites that have the potential for hydrological connectivity.

The site synopsis and conservation objectives of these sites, as per the NPWS website (www.npws.ie), are considered in this report (17/11/2025). Details of these sites, including their distance from the proposed project, are provided in Table 3.2. The table considers which of the sites require further assessment (from a precautionary point of view given their proximity/hydrological connectivity to the proposed site) and those that can be quickly ruled out (due to the separation in distance or lack of connectivity between the proposed site and the Natura 2000 site).

Natura 2000 Site	Distance from Proposed Development	Likely Zone of Impact Assessment
SAC DESIGNATION		
Callow Bog SAC (000595)	6.48km	There is no potential for indirect effects from surface water deterioration on any element of this SAC due to lack of hydrological connectivity' between the proposed development RLB and the SAC and the fact that the SAC is located upstream from the development. No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
Flughany Bog SAC (000497)	7.64km	There is no potential for indirect effects from surface water deterioration on any element of this SAC due to lack of hydrological connectivity' between the proposed development RLB and the SAC and the fact that the SAC is located upstream from the development. No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
Bricklieve Mountains and Keishcorran SAC (001656)	7.77km	There is no potential for indirect effects from surface water deterioration on any element of this SAC due to lack of hydrological connectivity' between the proposed development RLB and the SAC and the fact that the SAC is located upstream from the development. No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
Tullaghanrock Bog SAC (002354)	7.86km	There is no potential for indirect effects from surface water deterioration on any element of this SAC due to lack of hydrological connectivity' between the proposed development RLB and the SAC and the fact that the SAC is located upstream from the development.

		No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
Cloonakillina Lough SAC (001899)	9.53km	There is no potential for indirect effects from surface water deterioration on any element of this SAC due to lack of hydrological connectivity' between the proposed development RLB and the SAC and the fact that the SAC is located upstream from the development. No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
River Moy SAC (002298)	10.06km	There is no potential for indirect effects from surface water deterioration on any element of this SAC due to lack of hydrological connectivity' between the proposed development RLB and the SAC and the fact that the SAC is located upstream from the development. No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
Lough Arrow SAC (001673)	10.46km	There is no potential for indirect effects from surface water deterioration on any element of this SAC due to lack of hydrological connectivity' between the proposed development RLB and the SAC and the fact that the SAC is located upstream from the development. No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
Doocastle Tulough SAC (000492)	11.44km	There is no potential for indirect effects from surface water deterioration on any element of this SAC due to lack of hydrological connectivity' between the proposed development RLB and the SAC and the fact that the SAC is located upstream from the development.

		No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
Cloonshanville Bog SAC (000614)	12.32km	There is no potential for indirect effects from surface water deterioration on any element of this SAC due to lack of hydrological connectivity' between the proposed development RLB and the SAC and the fact that the SAC is located upstream from the development. No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
Templehouse and Cloonacleeigha Loughs SAC (000636)	13.2km	On closer inspection, with regard to the potential for hydrological connectivity and in close proximity to the site, the Townaghbrack river is located 88m away to the north of the site RLB. It then joins up with the Owenmore stream 1.97km downstream where recent Q values were recorded as <i>High</i>. From the nearest point of the Townaghbrack river nearest the proposed site RLB it is 23.55km northwards towards the connection with Templehouse and Cloonacleeigha Loughs SAC. It is a hydrological distance of 39.46km from the nearest point of the Townaghbrack river near the proposed site RLB to the Unshin River SAC further downstream. The interconnecting streams are the Townaghbrack river and the Owenmore (Sligo). The SAC will therefore require further assessment.
Unshin River SAC (001898)	14.43km	From the nearest point of the Townaghbrack river near the site RLB it is 23.55km northwards towards the connection with the the Templehouse and Cloonacleeigha Loughs SAC. It is a hydrological distance of 39.46km from the nearest point of the Townaghbrack river near the proposed site RLB to the Unshin River SAC further downstream.

		Further assessment of this SAC is required.
Ballanagare Bog SAC (000592)	14.52km	There is no potential for indirect effects from surface water deterioration on any element of this SAC due to lack of hydrological connectivity' between the proposed development RLB and the SAC and the fact that the SAC is located upstream from the development. No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
SPA DESIGNATION		
Lough Gara SPA (004048)	786 meters	Lough Gara SPA is located approximately 786m away from the south-eastern periphery of the proposed site RLB at Moygara. There is the potential for hydrological connectivity with Lough Gara SPA which is the closest Natura 2000 site and the proposed sand and gravel pit reopening proposal via the local surface water drainage regime near the vicinity of the proposed site and a small lake that is closer at approximately 716 metres to the proposed sand and gravel pit reopening site RLB. This small lake is hydrologically connected to the larger Lough Gara SPA. Subsequently, there is potential for hydrological connectivity via the eastern periphery of the Lough Gara SPA boundary line and Lough Forbes Complex SAC (60.77km downstream) and the overlapping Ballykenny Fisherstown Bog SPA (60.77km downstream) via both the 'Boyle' and 'Shannon River (Upper)' streams. In between Lough Gara SPA and these 2 Natura 2000 sites approximately 60km away are located a series of 6 lakes; Lough Key, Lough Oakport, Lough Cootehall, Lough Eidin, Lough Corry and Lough Boderg that the interconnected rivers Boyle and Shannon Upper flow through. Further assessment of this SPA is required.

Lough Arrow SPA (004050)	10.48km	There is no potential for indirect effects from surface water deterioration on any element of this SPA due to lack of hydrological connectivity' between the proposed development RLB and the SPA and the fact that the SAC is located upstream from the development. No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
Bellanagare Bog SAC (004105)	14.39km	There is no potential for indirect effects from surface water deterioration on any element of this SAC due to lack of hydrological connectivity' between the proposed development RLB and the SAC and the fact that the SAC is located upstream from the development. No complete source-pathway-receptor linkages for direct or indirect impacts exist. The site is therefore not within the likely zone of impact.
Outside of the 15km Zone of Influence but with the potential for hydrological connectivity to the propose sand and gravel pit reopening site at Moygara		
Lough Forbes Complex SAC (001818)	60.77km	There is potential for hydrological connectivity with Lough Forbes Complex SAC (60.77km) via both the 'Boyle' and 'Shannon River (Upper)' streams. In between Lough Gara SPA and this Natura site approximately 60km away are located a series of 6 lakes; Lough Key, Lough Oakport, Lough Cootehall, Lough Eidin, Lough Corry and Lough Boderg that the interconnected rivers Boyle and Shannon Upper flow through providing significant assimilative capacity. However, under the precautionary principle, further assessment will be required with regard to Lough Forbes Complex SAC and potential hydrological connectivity with Lough Gara SPA and the proposed development at Moygara, Gurteen, Co. Sligo.

Ballykenny Fisherstown Bog SPA (004101)	60.77km	There is potential for hydrological connectivity with Ballykenny Fisherstown Bog SPA (60.77km) via both the 'Boyle' and 'Shannon River (Upper)' streams. In between Lough Gara SPA and this Natura site approximately 60km away are located a series of 6 lakes; Lough Key, Lough Oakport, Lough Cootehall, Lough Eidin, Lough Corry and Lough Boderg that the interconnected rivers Boyle and Shannon Upper flow through providing significant assimilative capacity. However, under the precautionary principle, further assessment is required with regard to Ballykenny Fisherstown Bog SPA and potential hydrological connectivity with Lough Gara SPA and the proposed development at Moygara, Gurteen, Co. Sligo.
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Table 3.2 Identification of Natura 2000 sites within 15km Zone of Influence and the nearest Natura sites to the proposed site outside this zone but hydrologically connected.

3.5. Templehouse and Cloonacleigha Loughs SAC Qualifying Interest Species & Habitats

Templehouse and Cloonacleigha Loughs SAC (000634) comprises a complex of marl-influenced lakes, wetlands and associated hydrological catchments in south County Sligo. The SAC is designated for high-quality aquatic habitats, including Hard Oligo-mesotrophic Waters with benthic *Chara* vegetation [3140] and Watercourses with *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation [3260] both of which are highly dependent on excellent water quality, stable hydrological regimes and low levels of nutrient and sediment input. The loughs support extensive charophyte beds, diverse macrophyte assemblages and sensitive riverine vegetation, forming one of the region's most important freshwater ecological networks. The integrity of the site is closely tied to the condition of its wider catchment, where changes in land use, hydrology or water quality have the potential to affect these qualifying interest habitats.

Utilising the precautionary approach, a potential pathway for indirect effects on a number of the aquatic Qualifying Interest species and supporting habitats for aquatic dependent flora and fauna from the full list of Qis below for this SAC could not be conclusively ruled out as a result of deterioration of surface water quality though potential silt laden run off from the works area during the construction & operation phase of the development. These QI species and supporting habitats are referenced more specifically in Table 3.3 below:

3.5.1 Templehouse and Cloonacleigha Loughs SAC Qualifying Interest Species and Habitats

- *Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140]*
- *Water courses of plain to montane levels with the Ranunculus fluitantis and Callitriche-Batrachion vegetation [3260]*

Qualifying Interests	Conservation objective
Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]	To restore the favourable conservation condition of Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. in the SAC
Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]	To maintain the favourable conservation condition of Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation in the SAC

Table 3.3 List of the aquatic Qualifying Interest species and supporting habitats for aquatic fauna in the SAC where a potential pathway for indirect effects exists.

3.5.2 Hard Oligo-mesotrophic Waters with Benthic Vegetation of Chara spp. [3140] and Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260]

Both of these Qualifying Interest (QI's) comprise naturally clear, calcareous, nutrient-poor to moderately nutrient-rich lake systems that support extensive benthic communities dominated by Chara species in the case of the first QI. The habitat relies on stable hydrological conditions, high water transparency, and low nutrient and sediment inputs. Within Templehouse and Cloonacleigha Loughs SAC, the integrity of habitat 3140 is defined by the persistence of diverse charophyte meadows in the littoral and sub-littoral zones, which perform essential ecological functions including sediment stabilisation, maintenance of water clarity, and provision of habitat for aquatic fauna.

The operation of a sand and gravel extraction facility upstream has the potential to introduce potential sediment and contaminants relevant to the conservation of this habitat. The most significant pathways of effect are those of water quality and sediment. Without robust controls and mitigation (Section 4.4), sand and gravel extraction activities can increase the risk of fine sediment mobilisation, nutrient loading, and hydrological alteration, all of which are incompatible with the ecological requirements of Chara-dominated systems.

The second Qualifying Interest (3260) comprises fast-to moderate-flowing watercourses characterised by submerged and floating-leaved vegetation dominated by species such as *Ranunculus fluitans*, *Ranunculus penicillatus*, *Callitriche* spp., *Fontinalis antipyretica*, and associated aquatic species. These communities occur in streams and rivers with clean, well-oxygenated waters, stable flow regimes, and low to moderate nutrient levels. The ecological integrity of the 3260 QI depends on maintaining consistent channels, high water transparency, minimal siltation and no barrier to hydrological processes.

Within the catchments feeding Templehouse and Cloonacleigha Loughs SAC, the 3260 QI habitat typically occupies stretches of watercourse where natural flow conditions support good growth of *Ranunculus* beds. These communities are highly sensitive to hydrological changes, sediment deposition, nutrient enrichment, and any reduction in dissolved oxygen. Their structure and function are directly dependent on the maintenance of natural flow rates, clean substrates and low suspended solids.

A sand and gravel extraction facility upstream has the potential to introduce sediment mobilisation, changes in water quality and alteration of hydrological conditions. In the absence of robust mitigation measures (Section 4.4) these factors can adversely affect *Ranunculion* and *Callitriche-Batrachion* vegetation due to the habitat's reliance on clean gravel, good levels of light and flowing, oxygen rich waters.

3.5.3 Key Site Pressures (Applicable to Templehouse and Cloonacleigha Loughs SAC QI's 3140 and 3260)

The operation of a sand and gravel extraction facility 23.55km upstream of Templehouse and Cloonacleigha Loughs SAC has the slight potential to introduce pressures relevant to both aquatic Qualifying Interests. Although the two habitats have different ecological characteristics—one being

lacustrine and charophyte-dominated, the other riverine with *Ranunculus/ Callitriche* communities—they share core sensitivities related to water quality, hydrology, and sediment dynamics. The following pressures therefore apply to both habitats:

Sedimentation, Turbidity and Substrate Smothering

Sand and gravel extraction facility activities such as extraction, stockpiling, and HGV movements (numbers will be relatively small) can mobilise fine sediments. Increased sediment loads can:

- Reduce light penetration, impairing photosynthesis in *Chara*, *Ranunculus*, *Callitriche* and associated macrophytes.
- Smother benthic substrates, inhibiting rooting and suppressing community structure.
- Modify flow-dependent habitats, particularly where clean gravels or clear substrates are essential.

This is one of the most significant risk pathways for both QIs.

Hydrological Alteration and Flow Modification

Changes to drainage networks, settlement ponds, or site dewatering may alter:

- Flow magnitude and timing in watercourses.
- Water-level stability feeding downstream lacustrine habitats.
- Flow frequency or low-flow conditions.

Habitat 3260 requires stable, oxygen-rich flow regimes, while habitat 3140 depends on steady water levels and minimal hydrological disturbance. Both are vulnerable to hydrological shifts that modify habitat structure or water quality.

Nutrient Enrichment from Disturbed Ground

Although quarries are not nutrient-generating operations, exposed soils and disturbed subsoils can contribute modest nutrient loads. Even small increases can:

- Encourage slight algal blooms, reducing water clarity.
- Create competitive pressure on sensitive species (*Chara* spp., *Ranunculus* spp.).
- Alter ecological processes in downstream aquatic systems.

Both 3260 and 3140 habitats are dependent on retaining low nutrient concentrations.

Pollution Risk from Hydrocarbons or Other Contaminants

Fuel handling, machinery operation, and maintenance activities present potential pathways for:

- Hydrocarbon spills.
- Contaminated run-off with suspended solids or oily residues.
- Introduction of cementitious or chemical pollutants (if present onsite).

Such contaminants can depress dissolved oxygen, alter water chemistry, and damage aquatic vegetation and fauna associated with both QIs.

Erosion and Physical Disturbance of Watercourse Margins

Uncontrolled drainage or poorly stabilised surfaces may accelerate erosion. Resulting impacts include:

- Increased delivery of fine sediments to streams and lakes.
- Disturbance of riparian zones that regulate run-off.
- Modification of channel morphology downstream.

This can have implications for both the formation of *Ranunculus* beds and the maintenance of charophyte meadows.

Increased Vulnerability due to Climate Interactions

Climate variability can amplify site-derived pressures. For example:

- Intense rainfall events increase the risk of sediment mobilisation.
- Prolonged dry periods reduce assimilative capacity in watercourses.
- Altered seasonal flows or water levels may reduce resilience of aquatic vegetation.

A Storm Water Drainage Strategy has been developed as part of a set of mitigation measures for the site that will robustly ensure the avoidance of adverse impacts on any Qualifying Interest species of the SAC. These cumulative interactions heighten the importance of robust surface-water management at the site at Moygara.

3.6. Unshin River SAC Qualifying Interest Species & Habitats

Unshin River SAC is designated under the EU Habitats Directive for four Annex I habitats and two Annex II species. The site encompasses the main stem of the Unshin (Arrow) River, associated tributaries and a range of semi-natural terrestrial habitats that contribute to the overall ecological integrity of the river system.

Utilising the precautionary approach, a potential pathway for indirect effects on a number of the aquatic Qualifying Interest species and supporting habitats for aquatic dependent flora and fauna from the full list of Qis below for this SAC could not be conclusively ruled out as a result of deterioration of surface water quality though potential silt laden run off from the works area during the construction & operation phase and through wastewater during the construction and operational phase of the development. These QI species and supporting habitats are referenced more specifically in Table 3.4 below:

- Water courses of plain to montane levels with the *Ranunculon fluitantis* and *Callitricho-Batrachion* vegetation [3260]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

Qualifying Interests	Conservation objective
Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]	To maintain the favourable conservation condition of Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation in Unshin River SAC
Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]	To restore the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) in Unshin River SAC
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]	To restore the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) in Unshin River SAC
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]	To restore the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) * in Unshin River SAC
<i>Salmo salar</i> (Salmon) [1106]	To maintain the favourable conservation condition of Atlantic Salmon (<i>Salmo salar</i>) in Unshin River SAC

Lutra lutra (Otter) [1355]

To maintain the favourable conservation condition of Otter (*Lutra lutra*) in Unshin River SAC

Table 3.4 List of the aquatic Qualifying Interest species and supporting habitats for aquatic flora and fauna in the SAC where a potential pathway for indirect effects exists.

3.6.1 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260]

This habitat comprises naturally flowing freshwater streams and rivers supporting a characteristic assemblage of submerged and floating aquatic macrophytes. Typical species include *Ranunculus fluitans*, other river water-crowfoots (*Ranunculus* spp.), Water-starworts (*Callitriche* spp.), and other submerged plants adapted to moderate to fast flow regimes, good water clarity, and low nutrient concentrations. These communities require stable flows, clean gravels or sands for rooting, and high dissolved oxygen levels. The Unshin River supports one of the best examples of this habitat in Ireland, reflecting largely unmodified hydrology, base-rich waters derived from underlying limestone, and exceptional aquatic plant diversity.

3.6.2 Semi-natural Dry Grasslands and Scrubland Facies on Calcareous Substrates (Festuco-Brometalia) (Important Orchid Sites) [6210]

This habitat consists of species-rich dry grasslands and calcareous scrubland on well-drained lime-rich soils adjacent to the river corridor. It supports diverse herbaceous flora, including orchids and other calcareous based species, which reflect long-established low-intensity land use. These grasslands provide structural and ecological buffering to the SAC's freshwater systems and contribute to landscape diversity.

3.6.3 Molinia Meadows on Calcareous, Peaty or Clayey-silt-laden Soils (Molinion caeruleae) [6410]

This habitat comprises species-rich wet meadows dominated by Purple Moor-grass (*Molinia caerulea*) on seasonally wet, base-rich soils, often in transitional zones between dry grassland and wetter river margins. It supports a mosaic of sedges, rushes and moist grassland species, providing functional connectivity between aquatic and terrestrial ecosystems and offering feeding and refuge habitat for a range of fauna.

3.6.4 Alluvial Forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]

Alluvial (riparian) woodland is characterised by periodically inundated forests dominated by Alder (*Alnus glutinosa*), Ash (*Fraxinus excelsior*), Willow (*Salix* spp.), and associated wet woodland species. These forests develop on nutrient-rich alluvial soils within the river corridor and play vital roles in bank stability, shading and cooling of watercourses, nutrient cycling, and provision of habitat for invertebrates, birds and mammals.

3.6.5 Atlantic Salmon (*Salmo salar*) [1106]

Atlantic Salmon is a migratory fish species of European conservation importance. Within Unshin River SAC, salmon utilise the river-lough system for all life stages: spawning occurs on clean gravel beds in upstream river reaches, juveniles rear in freshwater before out-migration to marine environments, and adults return to natal tributaries. The species depends on high water quality, unimpeded longitudinal connectivity, adequate dissolved oxygen, and intact flow regimes. Maintenance of access to upstream spawning and rearing habitat, and minimising barriers to migration, are critical for its favourable conservation status.

3.6.6 Otter (*Lutra lutra*) [1355]

Otter is a wide-ranging semi-aquatic mammal present throughout the Unshin River catchment. Otters forage along riverbanks and in open water for fish and other aquatic prey, and use a variety of riparian habitats for resting and breeding. Key requirements include good prey availability, clean water, undisturbed river margins, and suitable holt/lay-up sites. The presence of extensive riverine and riparian habitats within the SAC supports a resident otter population, contributing to the species' conservation at both national and European levels.

3.6.7 Key Site Pressures (Applicable to Unshin River SAC QI's 3260, 6210, 6410, 91E0, 1106 and 1355)

The proposed sand and gravel extraction facility site upstream of Unshin River SAC has the potential to give rise to pressures that may adversely affect the ecological conditions supporting the SAC's Qualifying Interest habitats and species.

Although sand and gravel extraction is spatially removed from the designated site and does not inevitably result in significant effects, certain activities associated with sand and gravel extraction, stockpiling, surface water drainage and management create pathways of impact that warrant assessment. The following pressures are relevant across the six QI's of Unshin River SAC and reflect the sensitivities of both aquatic and terrestrial elements of the SAC:

Sedimentation, Turbidity and Deposition of Fine Material

Sand and gravel extraction operations may mobilise fine sediments from exposed soils, aggregate stockpiles, haulage roads, and drainage channels. Elevated suspended solids can:

- Reduce water clarity and inhibit light penetration, affecting aquatic vegetation characteristic of QI 3260.
- Smother gravel substrates required for Salmon (QI 1106) spawning and juvenile development.
- Cause deposition along river margins, altering microhabitats used by Otter (QI 1355).

- Modify hydrological conditions influencing adjacent riparian habitats, particularly QI 91E0 Alluvial Woodland.

Hydrological Alteration and Changes to Flow Regime

Sand and gravel extraction site dewatering, modification of surface-water pathways, and creation of artificial drainage networks can influence the timing, magnitude, and quality of flows entering the river system. Potential effects include:

- Altered flow velocities affecting *Ranunculus* and *Callitriche* communities (QI 3260).
- Disruption of natural inundation patterns supporting QIs 6410 and 91E0.
- Reduced stability in flows critical for salmon migration, holding, and spawning (QI 1106).
- Modified riverbank moisture regimes that may influence vegetation structure in QIs 6210 and 6410.

These pressures are generally reversible through design and management but require assessment and control and are included in the robust set of mitigation measures (Section 4.4).

Nutrient and Organic Matter Enrichment

While sand and gravel extraction sites are typically significantly low-nutrient operations, exposed soils and disturbed ground may contribute small nutrient inputs during runoff events. Slight increases in nitrogen can:

- Favour filamentous algae at the expense of QI 3260 macrophyte communities.
- Reduce water quality and oxygen levels affecting Salmon and their prey base (QI 1106).
- Influence productivity along river margins where Otters forage (QI 1355).
- Alter competitive balances within sensitive calcareous grasslands and Molinia meadows (QIs 6210 and 6410).

The potential magnitude is generally low but has warranted assessment and subsequent robust Mitigation Measures (Section 4.4).

Pollution Risk from Hydrocarbons and Other Potential Contaminants

The use of heavy machinery, fuel storage, and maintenance on site introduces potential pathways for accidental release of:

- Hydrocarbons.

- Oils or lubricants.
- Contaminated runoff carrying suspended solids.

Such pollutants can impair gill function in Salmonids, reduce dissolved oxygen, degrade habitat quality for Otter, and affect vegetation in both the aquatic dependent habitats of (QI 3260) and Alluvial Woodland (QI 91E0). Robust pollution-prevention measures will eliminate this risk and are provided for in Section 4.4.

Physical Disturbance, Erosion and Habitat Modification

Increased surface-water flow from poorly controlled surface water drainage or from erosive runoff from sand and gravel extraction sites can:

- Destabilise riverbanks and promote geomorphological change.
- Influence the structure of Alluvial Woodland (QI 91E0).
- Modify sediment delivery patterns important for both Salmonid spawning and macrophyte rooting (QIs 1106 and 3260).
- Affect vegetation dynamics in Molinia meadows and calcareous grasslands through changes in moisture or soil deposition (QIs 6410 and 6210).

This pressure is often site-specific and depends on topography and drainage design. A robust set of Mitigation Measures have been designed for this purpose (Section 4.4).

Disturbance Effects on Mobile Fauna

Although sand and gravel extraction site noise and activity are localised, potential disturbance to Otter (QI 1355) may occur if works significantly increase human presence or vehicle movements near watercourses used for foraging or commuting. Indirect disturbance may also affect Salmon due to changes in water quality or flow rather than noise alone. Mitigation Measures (Section 4.4) have been designed to accommodate hours of working during construction and operation whilst being cognisant of the crepuscular nature and hours of activity of Otter.

Spread of Invasive or Non-native Species

Soil and aggregate movement, as well as increased vehicular traffic, may facilitate the introduction of invasive plants or aquatic species to the wider catchment. Such species can:

- Outcompete riverine vegetation (QI 3260).
- Alter riparian habitat structure (QI 91E0).
- Reduce habitat quality for Otter and Salmon (QIs 1355 and 1106).

Biosecurity protocols normally mitigate this risk effectively and are included in the Mitigation Measures.

Cumulative Pressures Amplified by Climate Variability

Changing rainfall patterns and more frequent high-intensity storms may amplify site-related pathways such as:

- Sediment pulses reaching the Unshin River.
- Hydrological instability affecting both aquatic and terrestrial QIs.
- Increased stress on species with narrow ecological tolerances, including Atlantic Salmon and *Ranunculus*-dominated vegetation.

Recognition of these interactions helps ensure appropriate resilience in Mitigation Measures and consideration of their design.

A Storm Water Drainage Management strategy has been developed as part of a set of mitigation measures for the site that will robustly ensure the avoidance of adverse impacts on any Qualifying Interest species of the SAC.

3.7. Lough Gara SPA Qualifying Interest Species & Habitats

Lough Gara SPA (004048) is designated under the Birds Directive for two wintering waterfowl species of international and national conservation importance. The SPA comprises a large, shallow lake with extensive wet grassland, marginal reedbeds, and surrounding pastoral land, all of which contribute functionally to the site's suitability as a wintering site for migratory swans and geese. Utilising the precautionary approach, a potential pathway for indirect effects on a number of the avian Qualifying Interest species and supporting aquatic habitats for avian fauna from the full list of Qis below for this SPA could not be conclusively ruled out as a result of deterioration of surface water quality though potential silt laden run off from the works area during the construction & operation phase of the development. These QI species and supporting habitats are referenced more specifically in Table 3.5 below:

- Whooper Swan (*Cygnus cygnus*) [A038]
- Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

Qualifying Interests	Conservation objective
Whooper Swan (<i>Cygnus cygnus</i>) [A038]	To restore the Favourable conservation condition of Whooper Swan in Lough Gara SPA
Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	To restore the Favourable conservation condition of Greenland White-fronted Goose in Lough Gara SPA

Table 3.5 List of the aquatic Qualifying Interest species and supporting habitats for avian fauna in the SPA where a potential pathway for indirect effects exists.

3.7.1 Whooper Swan (*Cygnus cygnus*) [A038]

Whooper Swan is a wintering migrant to Ireland, with individuals originating largely from Iceland. Lough Gara SPA supports an internationally important population of this species during the winter months. The swans utilise a mosaic of habitats across the SPA, including open water for roosting, shallow lake margins for foraging, and adjacent improved and semi-improved grasslands for grazing.

The species is sensitive to disturbance, changes in water levels, water quality decline, and loss of foraging habitat. High-quality wetlands and low-lying agricultural fields within and around the SPA help maintain the favourable wintering conditions required by Whooper Swan. These areas provide accessible vegetation, safe roosting sites and suitable flight paths between feeding areas and the lake.

3.7.2 Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

The Greenland White-fronted Goose is a distinct and highly conservation-sensitive population that breeds in west Greenland and winters exclusively in Ireland and Scotland. Lough Gara SPA is one of the sub-principal wintering sites in Ireland, supporting a nationally important flock during the winter period. The species is dependent on open, undisturbed feeding areas such as improved grasslands, peatland margins, and agriculturally managed lowlands and uses the lake margins and quieter peripheral fields as secure roosting and refuge zones. They exhibit strong site fidelity and are highly sensitive to disturbance, land-use change and alterations to feeding habitat availability. Maintenance of open sightlines, low disturbance levels and sustained foraging opportunities is essential for their conservation.

3.7.3 Key Site Pressures (Applicable to Lough Gara SPA QI's A038 and A395)

The proposed sand and gravel extraction facility site 786m upstream of Lough Gara SPA that has the potential for hydrological connectivity may give rise to pressures relevant to wintering Whooper Swan and Greenland White-fronted Goose in the absence of robust mitigation measures. These species are primarily sensitive to changes in habitat conditions, water quality, disturbance, and landscape function rather than direct hydrological impacts. The following pressures outline potential (not assumed) pathways of effect.

Disturbance from Noise, Human Activity and Vehicle Movements

Although the sand and gravel extraction is not located immediately adjacent to the SPA (786m), elevated noise levels or increased human activity in flight corridors or supporting farmland may influence:

- Energetic expenditure through repeated flushing events.
- Roosting and feeding patterns within the SPA hinterland.
- Use of peripheral lands that form part of the functional wintering range.

Both species are highly sensitive to disturbance, particularly Greenland White-fronted Goose. A robust set of mitigation measures will be put in place for the proposed site at Moygara (Section 4.4).

Loss or Modification of Supporting Feeding Habitat

If the sand and gravel extraction facility development alters farmland, wetlands, or grasslands within the wider functional area of the SPA (i.e., areas used for daily commuting flights or feeding), potential effects include:

- Reduction in accessible grazing fields.
- Fragmentation of foraging habitat.
- Increased pressure on remaining fields within the SPA boundary.

This pressure relates to other lands rather than the proposed site itself but is recognised in wintering bird assessments. There are no suitable lands within the proposed RLB for either of the 2 avian QI species of Lough Gara SPA.

Hydrological or Water Quality Changes Affecting Roost Conditions

Measurable impact on:

- Lake water levels,
- Clarity or eutrophication risk, or
- Sediment deposition in marginal zones

Any adverse impact upon the SPA could influence roosting suitability for Whooper Swan and peripheral refuge areas used by Greenland White-fronted Goose. Effects of this nature are generally unlikely but must be assessed as potential pathways. A Storm Water Drainage design has been developed as part of a set of mitigation measures for the site that will not impact either avian species in this manner.

Increased Sediment or Nutrient Inputs to Downstream Systems

Where and if surface-water from the proposed site enters connected watercourses, increased sediment or nutrient loads could:

- Reduce the ecological condition of shallow roosting areas.
- Influence aquatic vegetation important for swan foraging.
- Alter marginal wetland habitats that contribute to SPA function.

Such changes would typically require sustained and unmanaged inputs to result in significant effects. A Storm Water Drainage design has been developed as part of a set of mitigation measures for the site that will not impact either avian species in this manner.

Cumulative and Climate-Related Interactions

Climate variability may amplify sand and gravel extraction related pressures:

- Increased storm events could mobilise sediment.
- Altered grassland productivity may influence availability of winter forage.
- Heightened disturbance sensitivity during cold periods may reduce tolerance for landscape change.

A Storm Water Drainage design has been developed as part of a set of mitigation measures for the site that will not impact either avian species in this manner.

3.8. Lough Forbes Complex SAC Qualifying Interests and Habitats

Lough Forbes Complex SAC (001818) encompasses a mosaic of freshwater, wetland, peatland and riparian woodland habitats situated around Lough Forbes and adjoining landscapes in Counties Longford and Roscommon. The site supports a diverse range of Annex I habitats listed under the EU Habitats Directive. Lough Forbes Complex SAC is located approximately 60 km downstream by the identified hydrological pathway. Although the substantial separation reduces the likelihood of a measurable project-related effect, distance and intervening waterbodies are not relied upon as mitigation. The assessment therefore proceeds on the precautionary basis that a potential indirect pathway cannot be conclusively excluded.

Utilising the precautionary approach, a potential pathway for indirect effects on a number of the Qualifying Interest species and supporting habitats for flora and fauna from the full list of Qis below for this SAC could not be conclusively ruled out as a result of deterioration of surface water quality though potential silt laden run off from the works area during the construction & operation phase and through wastewater during the construction and operational phase of the development. These QI species and supporting habitats are referenced more specifically in Table 3.6 below:

- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation [3150]
- Active raised bogs [7110]
- Degraded raised bogs still capable of natural regeneration [7120]
- Depressions on peat substrates of the *Rhynchosporion* [7150]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]

Qualifying Interests	Conservation objective
Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150]	To restore the favourable conservation condition of Natural eutrophic lakes with <i>Magnopotamion</i> or

	Hydrocharition-type vegetation in Lough Forbes Complex SAC.
Active raised bogs [7110]	To restore the favourable conservation condition of Active raised bogs in Lough Forbes Complex SAC.
Degraded raised bogs still capable of natural regeneration [7120]	The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in Lough Forbes Complex SAC.
Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	Depressions on peat substrates of the <i>Rhynchosporion</i> is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in Lough Forbes Complex SAC.
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	To restore the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) in Lough Forbes Complex SAC.

Table 3.6 List of the Qualifying Interest species and supporting habitats for flora and fauna in the SAC where a potential pathway for indirect effects exists.

3.8.1 Natural Eutrophic Lakes with *Magnopotamion* or *Hydrocharition*-Type Vegetation [3150]

This habitat comprises nutrient-rich standing waters with extensive submerged and floating vegetation, including species of pondweeds (*Potamogeton* spp.), water-milfoil (*Myriophyllum* spp.) and other macrophytes forming structurally diverse aquatic communities. Natural eutrophic lakes within the SAC are characterised by high productivity, relatively shallow depths, and a mosaic of open water, reedbeds and marginal vegetation that supports a rich invertebrate fauna and provides feeding and refuge habitat for wetland birds. Lough Forbes itself exhibits extensive littoral vegetation interspersed with deeper open water zones that together reflect the dynamic ecological gradients supporting this habitat type.

3.8.2 Active Raised Bogs (Priority Habitat) [7110]

Active raised bogs are peatland ecosystems dominated by a thick, actively accumulating peat layer and extensive cover of bog mosses (*Sphagnum* spp.). Characteristically acidic, nutrient-poor and waterlogged, these habitats include a variety of microtopographic features such as hummocks, wet flats, pools, soaks

and flushes, supporting a suite of specialist flora including Cotton grasses (*Eriophorum* spp.), Bog asphodel (*Narthecium ossifragum*), Sundews (*Drosera* spp.) and a diversity of mosses and low shrubs. Active raised bogs within Lough Forbes Complex SAC represent intact peatland processes, with hydrological regimes that sustain peat formation and a characteristic assemblage of bog species.

3.8.3 Degraded Raised Bogs Still Capable of Natural Regeneration [7120]

This habitat encompasses areas of raised bog where the hydrological regime has been altered by past drainage, peat extraction or other land-use activities, but where peat-forming processes may be restored through re-wetting and management. Vegetation typically includes a mix of bog mosses, grasses, sedges and ericaceous shrubs, with surface hydrology that shows signs of recovery potential. Within Lough Forbes Complex SAC, degraded raised bog occurs adjacent to or in proximity with active bog remnants and forms part of the wider peatland complex that contributes to landscape-scale biodiversity and hydrological function.

3.8.4 Depressions on Peat Substrates of the *Rhynchosporion* [7150]

Habitats of the *Rhynchosporion* type occur as wet hollows, pool edges, flushes or shallow depressions on peatland surfaces. These areas typically support a distinctive sedge-dominated vegetation community, including species such as white beak-sedge (*Rhynchospora alba*), brown beak-sedge (*Rhynchospora fusca*), bog asphodel (*Narthecium ossifragum*), deergrass (*Scirpus cespitosus*) and sundews (*Drosera* spp.). These microhabitats are integral to high-quality active bog systems, contributing to structural diversity and providing rare niches for specialist peatland plants and invertebrates. In Lough Forbes Complex SAC, *Rhynchosporion* depressions occur within the broader raised bog and wetland matrix, reflecting intact ecological gradients.

3.8.5 Alluvial Forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]

Alluvial or riparian woodland is characterised by periodically inundated forests dominated by alder (*Alnus glutinosa*), Ash (*Fraxinus excelsior*), Willow (*Salix* spp.) and other native broadleaved trees occupying riverine and floodplain environments. These woodlands are dynamic habitats influenced by fluvial processes and soil moisture gradients, providing structural complexity, bank stabilisation, and ecological connectivity between aquatic and terrestrial systems. Within the Lough Forbes Complex, alluvial forests occur along the Shannon River corridor and within associated floodplain areas, supporting an assemblage of native woodland flora and fauna reflective of long-established riparian processes.

3.8.6 Key Site Pressures (Applicable to Lough Forbes Complex SAC QIs 3150, 7110, 7120, 7150 and 91E0)

The following section outlines potential pressures that a sand and gravel pit located upstream of the hydrological catchment associated with Lough Forbes Complex SAC may present to the SAC's Qualifying Interests. This reflects precautionary consideration of pathways by which such low-scale sand and gravel extraction activities could indirectly affect ecological conditions within the site, without presuming inevitable or significant impacts.

Altered Surface-Water Quality, Sediment Input and Turbidity

Sand and gravel extraction operations can mobilise fine sediment from extraction areas, stockpiles and haul routes, particularly during storm events. Increased sediment loads entering watercourses may:

Modify water clarity and substrate conditions within natural eutrophic lake habitats (QI 3150), potentially altering macrophyte communities.

Influence wetland fringe and littoral zones by promoting silt deposition.

Potentially alter moisture regimes on peatland margins when adjacent soils transport sediment into bog systems during extreme events.

Even modest but sustained increases in suspended solids can affect light penetration, nutrient cycling, and habitat structure. Appropriate design and erosion controls are essential to manage this pathway. These have been incorporated into a robust set of Mitigation Measures (Section 4.4).

Hydrological Regime Modification

Surface-water abstraction, dewatering, drainage realignment or construction of settlement ponds at the site could alter downstream flow regimes. Potential consequences include:

Changed hydroperiods affecting wetland components of eutrophic lakes and adjacent callow grasslands associated with QI 3150.

Altered water tables on active or degraded raised bogs (QIs 7110/7120) which depend on high and stable near-surface water levels to sustain peat-forming processes.

Modified inundation and flush patterns sustaining Rhynchosporion depressions (QI 7150).

Fluctuations in floodplain water levels essential for alluvial woodland structure (QI 91E0). Hydrological continuity is critical for these habitats; therefore, any abstraction or diversion must maintain existing downstream flow characteristics.

Nutrient Enrichment from Run-off

Although such low-scale sand and gravel extraction sites do not typically generate high nutrient loads, uncovered mineral soils and stockpiles may contribute low levels of nutrients or organic matter in runoff. Increased nitrogen concentrations could:

Shift ecological balances in eutrophic lakes (QI 3150), favouring algal growth over diverse macrophyte assemblages.

Influence nutrient dynamics on peatland surfaces where nutrient enrichment can alter plant community composition and peat accumulation processes (QIs 7110/7120/7150).

Nutrient management plans and buffer zones are important in mitigating this risk.

Pollution Risk from Machinery and Materials

Operations involving heavy machinery, fuel storage, vehicle maintenance, and material handling introduce potential pathways for accidental releases of hydrocarbons, oils and other contaminants. If such substances reach watercourses or groundwater feeding into the SAC, they could:

Impair water quality in lake and floodplain habitats (QI 3150 and QI 91E0).

Alter soil chemistry on peatland and woodland margins.

Stringent pollution-prevention systems should be implemented to eliminate this risk.

A robust set of Mitigation Measures are provided in Section 4.4.

Erosion, Channel Instability and Sediment Redistribution

Unmanaged sand and gravel extraction site drainage can enhance erosion of surface soils and increase sediment delivery to watercourses. Downstream effects may include:

Altered sediment deposition patterns on floodplains influencing alluvial woodland structure (QI 91E0).

Potential changes in microtopography critical for peatland depressions (QI 7150).

Enhanced bank erosion downstream that could modify lake or wetland margins (QI 3150). Best practice erosion and sediment control measures can minimise these pathways.

Cumulative and Climatic Interactions

Climate variability, particularly increased frequency of intense rainfall events, may amplify the delivery of sediment and run-off from disturbed sand and gravel extraction lands. This could heighten the sensitivity

of peatland hydrology and lake nutrient cycles, emphasising the need for robust water management systems.

3.9. Ballykenney Fisherstown Bog SPA Qualifying Interest Species and Habitats

Ballykenney Fisherstown Bog SPA (004101) is located on the Longford–Roscommon border in the north-central midlands. It is centred on a complex of raised bog, cutover bog, wet grassland, and the Lough Forbes/River Shannon system and overlaps with Lough Forbes Complex SAC (001818) and also lies adjacent to Clooneen Bog SAC (002348). These overlapping designations reflect the tight ecological linkage between bog, lake and floodplain habitats in the area. It is worth noting that this SPA, whilst hydrologically there is connectivity, it is over a considerable distance of 60km away which does in itself provide assimilative capacity of waters over that distance.

Utilising the precautionary approach, a potential pathway for indirect effects on a number of the Qualifying Interest species and supporting habitats for avian species from the full list of QI's below for this SPA could not be conclusively ruled out as a result of deterioration of surface water quality though potential silt laden run off from the works area during the construction & operation phase and through wastewater during the construction and operational phase of the development. The QI avian species and supporting habitats are referenced more specifically in Table 3.7 below:

- Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

Qualifying Interests	Conservation objective
Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	To restore the Favourable conservation condition of Greenland White-fronted Goose in Ballykenney-Fisherstown Bog SPA.

Table 3.7 List of the Qualifying Interest species and supporting habitats for avian species in the SPA where a potential pathway for indirect effects exists.

3.9.1 Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

The SPA is designated for the Greenland White-fronted Goose, a discrete flyway population that breeds in west Greenland and winters almost exclusively in Ireland and Scotland. Ballykenney–Fisherstown Bog SPA historically formed part of the network of inland wintering sites used by the Kilglass Lough/Lough Forbes flock which foraged and roosted across bog, wet grassland and lakeshore habitats within and around the SPA. NPWS conservation objectives note that the site held a regularly occurring flock in the 1980s, with the last documented record from winter 1990/91 (111 birds). The current objective is to restore the favourable conservation condition of Greenland White-fronted Goose at this SPA recognising that the suitability, availability and management of supporting habitats (foraging fields, bog margins, roost areas and flight lines) remain important if the species is to re-establish regular winter use of the site.

The species requires:

- Open, largely undisturbed grasslands, cutover bog and marginal wetlands for daytime foraging.
- Quiet, secure wetland or bog-edge areas for roosting and loafing.
- Good visibility and low disturbance, allowing flocks to detect predators and human activity.
- A coherent flight network between roost and feeding sites within an approximate core foraging range of several kilometres.

Although the flock is currently absent from Ballykenny–Fisherstown Bog SPA, it is still managed and assessed on the basis that it retains, or can restore, the ecological conditions necessary for the species to resume regular use in line with National and EU-level Conservation Objectives.

3.9.2 Key Site Pressures (Applicable to Ballykenny–Fisherstown Bog SPA QI A395)

The proposed sand and gravel extraction facility has the potential to introduce indirect pressures relevant to Greenland White-fronted Goose, particularly if located within or near the functional wintering range of the SPA (e.g. within typical commuting distance of foraging/roosting habitats). It is worth noting that this SPA, whilst hydrologically there is connectivity, it is over a considerable distance of 60km away which does in itself provide assimilative capacity of waters over that distance. The following pressures are framed as potential pathways, not assumed significant effects, and can generally be managed through appropriate design and mitigation.

Disturbance from Noise, Visual Intrusion and Human Activity

Low-scale operations (plant, HGVs and regular human presence) can create disturbance cues that sensitive geese may avoid. Potential consequences, if birds resume using the SPA and nearby lands, include:

- Reduced use of fields, bog margins or wet grasslands within line of sight or hearing of the sand and gravel extraction facility.
- Increased energy expenditure if birds are repeatedly displaced from preferred feeding areas.
- A shift in roosting or feeding locations that may reduce the effectiveness of the SPA's supporting habitat network.

Given the current absence of the flock, this is a precautionary consideration aimed at avoiding constraints on future re-use of the site by Greenland White-fronted Goose.

Hydrological and Water-Quality Changes Affecting Supporting Wetlands

Where there is a hydrological connection between the sand and gravel extraction facility and the Lough Forbes / Shannon system or local wetlands:

- Changes in water levels, hydroperiod, or wetness of peat and marginal grasslands could alter the structure and suitability of roost and foraging habitats used by geese.
- Increased sediment or nutrient loading could affect shallow flooding regimes or vegetation composition on callow grasslands, cutover bog and wet margins that together form the functional feeding resource for the species.

This pathway overlaps with the hydrological considerations already identified for Lough Forbes Complex SAC and should be assessed in combination.

Landscape-Scale Barrier or Displacement Effects

Large-scale landscape changes associated with the sand and gravel extraction facility (visual intrusion, lighting, traffic patterns) may, in some circumstances, lead to:

- Avoidance of traditional or potential flight paths between roost and feeding fields.
- Geese opting to use alternative sites if the perceived disturbance or visual clutter in the sand and gravel extraction area is high.

Greenland White-fronted Geese are particularly sensitive to disturbance and changes in landscape openness; however, a sand and gravel sand and gravel extraction facility is typically relatively low-profile, so effects of this type are often limited and context-dependent.

Cumulative and Climate-Related Interactions

In combination with other land-use or climate-related changes in the region, low-scale sand and gravel extraction facilities derived pressures could contribute to:

- Incremental reduction in high-quality wintering habitat available within the broader midlands network of sites.
- Increased sensitivity of any re-establishing flock to disturbance, especially during harsh weather conditions when energetic margins are narrow.

Recognising these interactions supports a cautious approach to habitat protection and disturbance management, even though no current flock is present.

A Storm Water Drainage design has been developed as part of a set of mitigation measures for the site that will not impact either avian species in this manner.

4. Assessment of Potential Adverse Effects

4.1. Potential for Direct Effects on Natura 2000 Sites

The proposed development site lies entirely outside the boundaries of any EU designated natura 2000 site and there is therefore no potential for direct effects.

4.2. Potential for Indirect Effects on any Natura 2000 Sites

4.2.1 Deterioration of Water Quality

The underlying geology at the location of the proposed site at Moygara comprises Glaciofluvial Sands and Gravels with Sandstone Sands and Gravels from the Devonian period. The underlying rock comprises mainly Lisgorman Shale Formation with thin bedded calcareous shale and limestone. The baseline environment of the lands surrounding the proposed site are that of agricultural use and historically would have been the case for many decades. The area of land which is subject to this application indicates an area that was historically utilised as a sand and gravel extraction site but has not been recently utilised for many years and has since been colonised by mainly rank vegetation an overgrowth.

Following the precautionary approach, the construction and operation phase of the proposed sand and gravel extraction facility, a potential pathway for indirect effects on the surface waters dependent Qualifying Interests of the following Natura 2000 sites could not be ruled out in the form of deterioration of water quality and supporting habitats for aquatic dependent fauna; these sites are assessed above in Section 3:

- Templehouse and Cloonacleigha Loughs SAC
- Unshin River SAC
- Lough Gara SPA
- Lough Forbes Complex SAC
- Ballykenny Fisherstown Bog SPA

4.2.2 Wastewater and Surface Water Treatment at the Site

The proposed development will include a mobile welfare unit. All wastewater generated will be collected in a sealed holding tank and removed by an authorised contractor for treatment at an appropriately licensed wastewater-treatment facility. No discharge of foul wastewater to ground or surface water will occur at the site.

4.3. Site Establishment Phase Control Measures and Assessment

Any potential conduit or pathway that would allow adverse impacts to occur were considered during the design phase of the proposed development. The excavation phase of the development has the potential to encounter sub-surface and ground water during the proposed works. However, it is not anticipated that this will be significant as the site has been subject to historic extraction and contains existing landforms and infrastructure associated with that former use. The current application seeks permission for the

proposed Sand and Gravel Extraction Facility and associated works as described in Section 2 and shown on the accompanying planning drawings.

Should groundwater be encountered during the excavation phase of the development, the excavation will be de-watered using a pump equipped with a silt bag on the outlet to capture any silty material prior to subsequent natural percolation to ground. Alternatively, this water will be tankered off site if required. In order to avoid hydrocarbons encountering groundwaters onsite, the described mitigation measures (Section 4.4) will provide an avoidance of the release of hydrocarbons onsite. No natural river or stream occurs within the red-line application boundary. A small-vegetated drainage channel associated with the historic extraction and settlement-pond system is present within the northern section of the site. This feature is not classified as a natural watercourse but has the potential, under certain conditions, to convey water towards the Townaghbrack Stream. It has therefore been incorporated into the precautionary hydrological assessment and surface-water management strategy.

The following pollution prevention measures will be adopted for the protection of all watercourses and potential hydrological conduits. A silt fence will be erected between the proposed development and any watercourse that it may potentially drain to. This will comprise wooden posts and a geotextile membrane that is buried below the ground (approx. 200mm). The silt fence will secure the development site and prevent potential run off and siltation during the construction works. The fence will remain in place after the works are completed and until the excavated areas of soil have re-vegetated with grass and other vegetation species.

The proposed development at Moygara will adhere to the best practice mitigation and environmental control measures (Section 4.4) and will include the measures described below. A member of the project team, such as the foreman, will be appointed as Environmental Officer for the duration of the construction stage and will ensure that these standard environmental control measures described below are adhered to. Any environmental incidents will be reported to the site manager immediately. These measures are an integral part of the design of the project:

4.4. Measures to Mitigate Potential Adverse Impacts

4.4.1 Introduction to Mitigation for the Development Site at Moygara

Mitigation refers to all works required to comply with legislation during development within protected areas or on sites occupied by protected species. Generally, there are two elements to this process:

- Mitigation - refers to practices, which reduce or remove damage.
- The following mitigation measures form integral and enforceable components of the proposed development. Their purpose is to avoid or prevent adverse effects on the integrity of European Sites by controlling sediment, hydrocarbons, wastewater, disturbance, lighting and invasive-species risks throughout the site-establishment, operational and decommissioning phases.

In order to minimise environmental impacts, it is important in the first instance that the following general principles are taken on board:

- Implementation of good construction work practices on site.
- Working in accordance with relevant legislation, including that relating to invasive species.
- Contractors should ensure adequate site supervision and security.
- Construction workers should be briefed to ensure that environmental issues are taken into consideration and that guidelines and codes of practice are followed.

4.4.2 Earth Works and Excavation Controls

To prevent sediment mobilisation and protect downstream SAC and SPA habitats:

- Silt fencing will be installed at hydrologically appropriate locations identified by the contractor and the project ecologist/engineer, particularly downslope of exposed ground and between active works and any drainage feature capable of conveying runoff off-site. Silt fencing will not be positioned in a manner that obstructs engineered drainage routes or causes impoundment and bypass flows.
- Excavation depths and volumes will be minimised and restricted to stable, dry ground conditions to prevent unnecessary disturbance to subsoils or groundwater pathways.
- Earthworks and soil-stripping activities will not commence during heavy rainfall or where heavy rainfall is forecast. Works will be suspended where runoff cannot be effectively contained by the approved drainage and sediment-control system. This is to avoid runoff and potential hydrological impacts on surface waters linked to Templehouse & Cloonacleigha Loughs SAC, Unshin River SAC, Lough Gara SPA, Lough Forbes Complex SAC and Ballykenny Fisherstown SPA.
- Temporary soil and overburden storage areas will be located within the approved operational area and outside drainage channels, settlement features and preferential runoff pathways. Stockpiles will be stabilised or covered where required to prevent erosion. These measures ensure that sedimentation risks to sensitive habitats such as 3140, 3260, 3150, and peatland QI's (7110, 7120, 7150) are fully addressed.

4.4.3 Hydrocarbon usage

To protect Salmon (1106), Otter (1355) and all aquatic QI's from hydrocarbon pollution:

- Hydrocarbon use (ie fuel) during the construction phase may lead to potential pollution of watercourses. Examples of potential threats include spillages during re-fuelling operations and other such leaks with regard to poorly maintained plant machinery on site. With reference to this, the following must be adhered to at all times:

- Fuel storage - all fuels, lubricants and hydraulic fluids should be kept in secure bunded areas away from any watercourse or drainage ditches. Fuel, lubricants and hydraulic fluids will be stored only within the designated compound area in appropriately bunded containers. The storage and refuelling area will be positioned away from the vegetated drainage channel, settlement features and preferential runoff pathways and will be served by appropriate spill-containment measures. The bunded area will accommodate 110% of the total capacity of the containers within it.
- Containers will be properly secured to prevent unauthorised access and misuse. An effective spillage procedure should be put in place. Any waste oils or hydraulic fluids should be collected, stored in appropriate containers and disposed of off-site in an appropriate and secure manner.
- The contractor should provide spill kits and they should be stored on-site during construction and used in the event of a fuel or chemical spillage. Such kits should contain absorbent materials (such as absorbent granules, booms or mats). Appropriate operatives responsible for handling chemicals or oils or for plant refuelling should be trained in the use of this kit.
- Refuelling will take place only within the designated refuelling area shown or described in the approved operational documents. Mobile refuelling outside that area will not occur except in an emergency and will then be undertaken over a drip tray with a spill kit immediately available.
- All construction vehicles should be regularly maintained and checked to prevent hydrocarbon leaks.
- All stationary machinery such as pumps should be placed on drip trays to contain any hydrocarbon spillages. These trays will be checked regularly, and rainwater removed to maintain their effectiveness.
- Biodegradable, vegetable-based oils should be used to oil any shuttering boards if required for foundation works. Any hydraulically operated machinery to be used within 50m of a watercourse or river should utilize synthetic biodegradable hydraulic oil such as Castrol Tribal Biotop 1448.

These measures prevent hydrocarbons entering hydrological pathways feeding the SACs.

4.4.4 Pollution prevention from Fuel and Oil, Site Management

To maintain water quality and prevent contamination:

- Prior to the outset of any works, the minimum area necessary will be identified as part of the works area and there will be no access to works vehicles outside this identified area.
- Any site plant required for the works will be inspected at the beginning of each day prior to its use. Defective plant shall not be used until the defect is satisfactorily fixed. All major repair and maintenance operations will take place strictly off site.
- Any washings from vehicles, plant or equipment will be disposed of off-site, or only disposed of onsite when the appropriately engineered site drainage system has been installed as per the construction requirements.

- Plant machinery will be regularly serviced and checked for leaks.
- Vehicles will never be left unattended during refuelling. Only dedicated trained and competent personnel will carry out refuelling operations and plant refuelling procedures shall be detailed in the contractor's method statements.
- Fuels, lubricants and hydraulic fluids for any equipment used on the site will be carefully handled at all times to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment in accordance with current best practice.
- Any fuels, oils, greases and hydraulic fluids required onsite must be stored in bunded compounds.
- Any refuelling activities carried out for machinery will take place only at a designated area located on the entrance road of the site to the east.
- Existing native Irish treeline and hedgerow will be retained where possible in order to protect and enhance the local biodiversity and assist pollinators.

4.4.5 Surface Water Mitigation and Drainage

Surface-water management will be undertaken strictly in accordance with the Storm Water Drainage Strategy and associated drawings prepared by Simon Beale & Associates. The approved system incorporates the existing sump and settlement infrastructure and the operational controls specified in that report. No uncontrolled discharge of sediment-laden water will be permitted from the active working areas.

Existing ponds and settlement features will be retained, managed or incorporated into the operational drainage system in accordance with the approved Site Layout Plan and Storm Water Drainage Strategy. Where a pond lies within a defined extraction or operational area and is not proposed for permanent retention, its existing ecological function has been acknowledged in the assessment, and any alteration will be undertaken only in accordance with the approved project design and applicable ecological controls.

To prevent downstream hydrological and water quality effects:

- The site boundary will be properly fenced off prior to works commencing to protect adjacent habitats and to prevent any egress of machinery outside of the site during construction activities.
- A silt fence will be erected appropriately and as required at the site in order to avoid any preferential escape of silt laden water offsite. This will comprise wooden posts and a geotextile membrane that is buried below the ground (approx. 100mm). The silt fence will secure the development site and prevent potential run off and siltation during the construction works. The fence will remain in place after the works are completed and until the exposed soil has re-vegetated with other vegetation species.
- Works shall not take place at periods of high rainfall, and shall be scaled back or suspended if heavy rain is forecast.

- All surface water generated within the sand and gravel extraction facility will be directed to a specifically designed and engineered settlement and attenuation infrastructure designed to ensure that outflow does not exceed baseline suspended solids or nutrient concentrations (See Appendix 3 Storm Water Drainage Strategy document).
- Machinery deliveries shall be arranged using existing historical infrastructure and along the existing road.
- Machinery deliveries shall be via already existing access routes.
- Any excess construction material inadvertently arising as a result of the site construction works shall be immediately removed from the area and sent to an appropriately license and authorized waste recovery facility.
- Spill kits shall be available in each item of plant required.

4.4.6 Waste Management

To prevent pollution and protect all downstream Natura 2000 sites:

- Any waste arisings will be collected in an appropriately sized skip and the site will be kept tidy and free of debris at all times.
- Any arising waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or recycling.
- All construction waste materials will be stored within the confines of the site and away from any drainage features, prior to removal from the site to an appropriately permitted waste facility.
- Current best practice with regards to Biosecurity Measures, invasive plant species and machinery movements to and from the site will be implemented and adhered to at all times.
- Good construction site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (e.g. Rhododendron, Japanese Knotweed, Giant Rhubarb etc.) by thoroughly washing vehicles prior to entering and leaving any site.

4.4.7 Disturbance Limitation Measures

To protect Otter and wintering SPA bird species such as Whooper Swan, Greenland White-fronted Goose

- Noise levels on plant machinery will operate in line with BS 5228-1:2009/1996 noise emission limits
- All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 'European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996'.

- Plant will be chosen to avoid significant low-frequency noise emissions which increase nuisance potential and where possible be located in a well screened area
- Noisier plant will be positioned to optimise screening by other plant.
- Plant machinery will be turned off when not in use.
- Operational activities will generally be restricted to the approved daytime working hours, thereby avoiding regular activity during night-time periods when light and noise disturbance could be greater.

4.4.8 Species-Specific Measures for Otter

To protect QI 1355 (Otter):

- Where works or machinery access are proposed within 50 m of the Townaghbrack Stream or another suitable aquatic feature, a qualified ecologist will conduct an Otter survey for holts or couches.
- Should an active holt be found, NPWS will be consulted immediately and exclusion or derogation measures considered and implemented.
- Holts and resting places will not be disturbed or obstructed.

4.4.9 Species-Specific Measures for Atlantic Salmon

To protect QI 1106 (Salmon):

- No instream works will occur at any point.
- All surface-water management infrastructure will ensure that suspended solids, pH, nutrients and hydrocarbons will not increase above baseline levels.
- Settlement ponds will be maintained to guarantee effective removal of fine sediments.
- Any emergency discharge will be immediately reported and contained.

4.4.10 Lighting Measures

To protect Otter and SPA Bird species (A038, A395):

- Any lighting will be directional, downward-facing and designed to avoid light spill beyond the site boundary.
- No hedgerows, treelines or open fields will be illuminated.
- Any lighting will consist of low-intensity warm LED fixtures (3000K) to minimise disturbance.

- Any security lighting will be motion-activated with short timers (1 minute).
- No upward-directed luminaires will be used as a result of any light installations.

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4.4.11 Site Biosecurity Management Protocols

To prevent the spread of Third Schedule invasive species:

- Plant and machinery will arrive at the site clean and free of visible soil and organic material. Machinery that has been used in an area containing invasive alien species will be cleaned at an appropriate off-site facility before arrival. The wheelwash will be operated and maintained in accordance with the approved site-management arrangements, and wash water will be contained within the engineered drainage system.
- Soil, aggregate and water will be managed to avoid transport of invasive species propagules.
- Any invasive species encountered will be managed in accordance with national legislation and best-practice guidelines.

4.4.12 Visual Impact and Species

The proposed sand and gravel extraction facility is visually contained via treeline, hedgerow and a berm along the local access road which runs adjacent to the site at Moygara and no mitigation is required from a Natura 2000 site perspective. No line-of-sight effects on Greenland White-fronted Geese, Whooper Swans or Otters are predicted.

4.4.13 Site Decommissioning

To prevent pollution during site closure:

Decommissioning of the Sand and Gravel Extraction Facility will be carefully managed as there is the potential for polluting material to enter any drainage ditch/watercourse. In addition, the proposed native broadleaved woodland, retained boundary habitats and permanent biodiversity-enhancement features will remain in place following cessation of extraction.

- Any contaminated materials should be removed from the site and disposed of in the appropriate manner.
- No construction materials, plant or machinery should be left on site following completion of works.
- Any future re-instatement will avoid modification of natural surface-water pathways.

4.5. Operation Phase Control Measures and Assessment

The controls specified in Sections 4.4.2–4.4.12 will apply throughout the operational lifetime of the facility, insofar as they relate to extraction, processing, fuel use, surface-water management, noise, lighting, waste and biosecurity. They are not limited to the initial site-establishment phase. Indirect effects during

the operational stage of the proposed development at Moygara are not anticipated and there will be no deterioration in groundwater quality as a result of the proposed development.

The design of the surface water run off management incorporates a range of vegetated drainage systems including settlement ponds and a large reed bed. These systems are in common use at such sand and gravel extraction sites in Ireland whilst some are utilised for other types of storm water treatment. Some are routinely used in mainland Europe and the United States. The natural, vegetated drainage system is designed, constructed and will be maintained in such a manner that the whole drainage system, whilst satisfactorily performing its main purpose of removing surface water rapidly from working sand and gravel extraction areas can also provide some degree of both attenuation and treatment of the flow. The natural design will reduce the risk of storm water either affecting the natural hydrology of the surrounding catchment area (causing potential flooding) or polluting the downstream surface watercourse of ground waters.

The settlement ponds, reed bed and swales are incorporated design solution. From a treatment perspective, the primary function of these features is to slow the flow of water to provide filtration. This parameter may need to be balanced with their additional attenuation functions of conveyance and water storage. They are particularly effective in controlling pollution when there is degree of infiltration to the subgrade or where residence times are long and flow times low.

No indirect effects on water quality during the operational stage of the development are thus anticipated. There is no potential for adverse impact on the listed water dependent Qualifying interest species of any Natura 2000 site as a result of deterioration in water quality. The above measures ensure that the proposed project does not prevent or obstruct any Natura 2000 QI's or SCI's from reaching Favourable Conservation Status as per Article 1 of the EU Habitats Directive.

Based on the size, scale, location and nature of the proposed development; no complete source-pathway-receptor chain for significant impact during either the construction or operational phase of the development have been identified. Due to the nature, scale and location of the proposed small-scale development at Moygara there will be no disturbance of any listed QI species of any natura 2000 sites as already described in this report.

5. Residual Impact Assessment – Natura 2000 Sites with Potential Hydrological Connectivity to the Proposed Site

The following assessment considers whether, after implementation of the full suite of mitigation any residual impacts remain that could affect the Qualifying Interests or the Conservation Objectives of the relevant SAC's and SPA's downstream (either to the north or the south-east) of the proposed development at Moygara. Residual impacts refer to those effects that persist after mitigation and are relevant to the integrity test under Article 6(3) of the Habitats Directive.

5.1. Templehouse and Cloonacleigha Loughs SAC Relevant QI's

- [3140] Hard oligomesotrophic waters with benthic vegetation of *Chara* spp.
- [3260] Watercourses with *Ranunculon fluitantis* and *Callitricho-Batrachion* vegetation

Residual Impact Assessment

The key risks to these QI's relate to sediment mobilisation, nutrient enrichment, and hydrological disturbance. With the adoption of site-specific mitigation, including the natural vegetative bespoke settlement systems, suspended-solid mitigation, controlled surface water drainage, silt fencing, weather-dependent earthworks, and strict hydrocarbon management and controls, the potential for sediment or pollutant transportation downstream is effectively eliminated. Because minimal alteration to natural drainage patterns will occur and minimal dewatering is proposed, no hydrological modifications are anticipated that could impact lake levels, water clarity, or macrophyte rooting conditions downstream.

Residual Effect:

No residual impact is predicted. The mitigation ensures that water quality, flow regime, and sediment dynamics remain within natural variation compatible with maintaining the ecological structure and function of both 3140 and 3260 habitats.

5.2. Unshin River SAC Relevant QI's

- [3260] Watercourses with *Ranunculus* / *Callitriche* vegetation
- [6210] Semi-natural dry grassland (orchid-rich)
- [6410] Molinia meadows
- [91E0] Alluvial forests
- Atlantic Salmon (1106)

- Otter (1355)

Residual Impact Assessment

Sediment and Water-Quality Risks: All potential sources of suspended solids, hydrocarbons and nutrient runoff are fully mitigated through a set of robust construction management measures and mitigation.

Hydrological risks: No dewatering or alteration of surface-water pathways are proposed; all flows leaving the sand and gravel extraction area are attenuated to mimic natural greenfield rates. Hence, hydrological pressure on habitats such as 91E0 Alluvial Woodland and 6410 Molinia Meadows are avoided.

Atlantic Salmon: Settlement pond performance standards will ensure no increase in turbidity or pollutants reaching spawning or juvenile habitats. No instream works are required.

Otter: Pre-works holt surveys and disturbance controls ensure that holts/resting areas will not be impacted. Water-quality protections maintain prey resources.

Residual Effect:

No residual impact remains. All pressures that could influence sensitive riverine vegetation, riparian habitats, Salmonid ecology or Otter habitat have been fully neutralised.

5.3. Lough Gara SPA

Relevant QIs

- A038 – Whooper Swan
- A395 – Greenland White-fronted Goose

Residual Impact Assessment

The proposed sand and gravel facility lies outside the SPA to the north-west and its known core wintering areas. The principal potential pressures relate to disturbance and indirect effects on functional feeding habitat.

Noise controls and restriction of works to daylight hours remove risk of disturbance during critical dawn/dusk periods.

No land take or habitat modification occurs within wetlands or grasslands that could serve as supporting habitat for these species.

Residual Effect:

No residual impact is anticipated. Following implementation of the drainage, pollution-prevention and disturbance-control measures, no residual hydrological or disturbance effect is predicted that would adversely affect the conservation objectives or integrity of Lough Gara SPA.

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5.4. Lough Forbes Complex SAC

Relevant QI's

- [3150] Natural eutrophic lakes
- [7110] Active raised bog (priority)
- [7120] Degraded raised bog capable of regeneration
- [7150] Rhynchosporion depressions
- [91E0] Alluvial forests

Residual Impact Assessment

The key risks to these habitats include hydrological alteration, moisture-regime changes, and sediment/nutrient delivery. The proposed sand and gravel facility will operate entirely outside the hydrological units supporting the bog domes and alluvial woodland and includes measures preventing any discharge toward peatland receptors.

All surface water is captured, treated and released at controlled volumes and quality. No mechanism exists for lowering water tables, changing bog hydrology, or altering the hydroperiod of alluvial forest areas.

The substantial downstream separation reduces the likelihood that a measurable project-related effect would reach Lough Forbes Complex SAC. However, distance and intervening waterbodies have not been relied upon as mitigation. The conclusion is based on the prevention of uncontrolled discharge at source through the approved drainage design and operational mitigation measures. Following implementation of those measures, no residual effect is predicted that would adversely affect the structure, function, conservation objectives or integrity of Lough Forbes Complex SAC.

Residual Effect:

No residual impact remains. The SAC's peatland and lacustrine habitats are not affected in structure, function, or hydrological regime.

5.5. Ballykenny Fisherstown Bog SPA

Relevant QI

- A395 – Greenland White-fronted Goose

Residual Impact Assessment

Although the designated goose flock has not used the site consistently for decades, conservation objectives seek to restore conditions suitable for future reoccupation. Residual risks involve disturbance or loss of functionally linked feeding habitat. Given that no sand and gravel extraction activities will occur within potential foraging areas of the SPA and works are screened, contained, and limited to daytime,

disturbance potential is negligible. Directional lighting and noise restrictions ensure no interference with flight lines or loafing areas. Hydrological changes are fully controlled, meaning no effects on callows or wet grasslands associated with the SPA.

Residual Effect:

No residual impact is predicted. There is no remaining pathway for significant disturbance or habitat loss.

5.6. Overall Conclusion – Residual Effects

After the implementation of the comprehensive suite of mitigation measures:

- No deterioration in water quality is predicted.
- No change in hydrology is predicted.
- No disturbance or displacement effects remain for SPA birds.
- Following implementation of the mitigation measures specified in this NIS and the accompanying Storm Water Drainage Strategy, no residual effect is predicted that would adversely affect the conservation objectives or integrity of the European Sites assessed including Qis such as Salmon and Otter.
- No losses or functional impairment arise for any Annex I habitats.

Therefore, the proposed development will not result in any residual impacts capable of affecting the integrity of the relevant SAC or SPA sites, either alone or in combination with other plans or projects.

6. Cumulative Effects

6.1. Likely Cumulative Impact of the Proposed Project on Natura 2000 Sites in combination with other plans and projects

The proposed project was assessed in combination with other plans and projects in the nearby vicinity that could result in cumulative effects on Natura 2000 Sites. A review was undertaken of:

Sligo County Development Plan 2024-2030

- **P-BD-1** - Protect, conserve, enhance and sustainably manage the natural heritage, biodiversity, geological heritage, landscape and environment of County Sligo.
- **P-BD-2** - Protect and, where possible, enhance the plant and animal species and their habitats that have been identified under EU Habitats Directive (92/43/EEC), the EU Birds Directive (2009/147/EC), European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011) as amended, Flora (Protection) Order 2015, the Wildlife Act 1976 (as amended), and the Wildlife (Amendment) Act 2000 as amended, including all statutory instruments made under each act.
- **P-BD-3** - Ensure that the ecological impact of all development proposals on habitats and species are appropriately assessed by suitably qualified professionals, in accordance with best practice guidelines, taking full account of the precautionary principle where uncertainty exists.
- **P-BD-4** - Minimise adverse impacts of proposed developments on existing habitats (whether designated or not) by including mitigation and/or compensation measures as appropriate. This shall comprise the retention and enhancement of all possible existing habitats, vegetation and breeding sites in the early design stages of the development.
- **P-BD-6** - Support the implementation of the All-Ireland Pollinator Plan 2021-2025 and any subsequent revisions.

The proposal aligns with Chapter 24 – Natural Heritage of the Sligo County Development Plan 2024–2030 (Interim Consolidated Version, 11 November 2024):

- **O-BD-1** Implement, in partnership with the Department of Housing, Local Government and Heritage, relevant stakeholders and the community, the objectives and actions of both the County Sligo Biodiversity Action Plan and the National Biodiversity Action Plan as it relates to the remit and functions of Sligo County Council.

- O-BD-2 Prepare and support the implementation of a Green Infrastructure Strategy for County Sligo.

The accompanying ownership drawing identifies an area outside the red-line application boundary as being potentially available for possible future development. No defined project, extraction proposal or planning application presently exists for this area, and it does not form part of the development assessed in this NIS. Accordingly, it cannot presently be assessed as a specific project under Article 6(3). Any future proposal would require separate environmental assessment and, where applicable, Appropriate Assessment, both individually and in combination with the development currently proposed.

The online planning system for Sligo County Council was consulted on the 21st of July, 2026 for the townland of Moygara, Co. Sligo. No other application and associated decisions were made by the local authority and were returned in the last 5 years. There is no potential for significant cumulative and/or in-combination pollution disturbance, displacement or habitat loss effects on any Natura 2000 Site or any of their subsequent Qualifying Interest habitats and species identified with regard to the proposed low-scale sand and gravel extraction development at Moygara.



Figure 6.1 Large open water area associated with the previous sand and gravel extraction activity (Other Artificial Lakes and Ponds – FL8) with reed bed to the right of image and proposed main sand and gravel extraction activity in the distance at the top of image.

7. Concluding Statement

This NIS has provided an assessment of all potential direct or indirect adverse effects on Natura 2000 sites within the vicinity of the proposed development. Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction operation and decommissioning phases of the proposed development do not adversely affect the integrity of any EU designated Natura 2000 sites or its Qualifying Interest habitats or species. Therefore, it can be objectively concluded that the proposed development, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.

The risks to the safeguarding and integrity of the qualifying interests and conservation objectives of these Natura 2000 sites have been addressed by the inclusion of mitigation measures in the Natura Impact Statement that will reduce and effectively eliminate any such potential impacts.

It is therefore concluded that, subject to the full implementation of the mitigation measures set out in this NIS, the proposed low-scale and intermittent sand and gravel extraction activities at Moygara, Gurteen, Co. Sligo will not adversely affect the integrity of any European Site. This NIS provides the scientific information necessary to enable the competent authority to undertake the Appropriate Assessment.

Given the small nature and scale of the proposed project, by itself or in-combination with other plans and projects, in light of best scientific knowledge in the field, there will not, in view of any sites conservation objectives, be a significant impact on any Natura 2000 Site.

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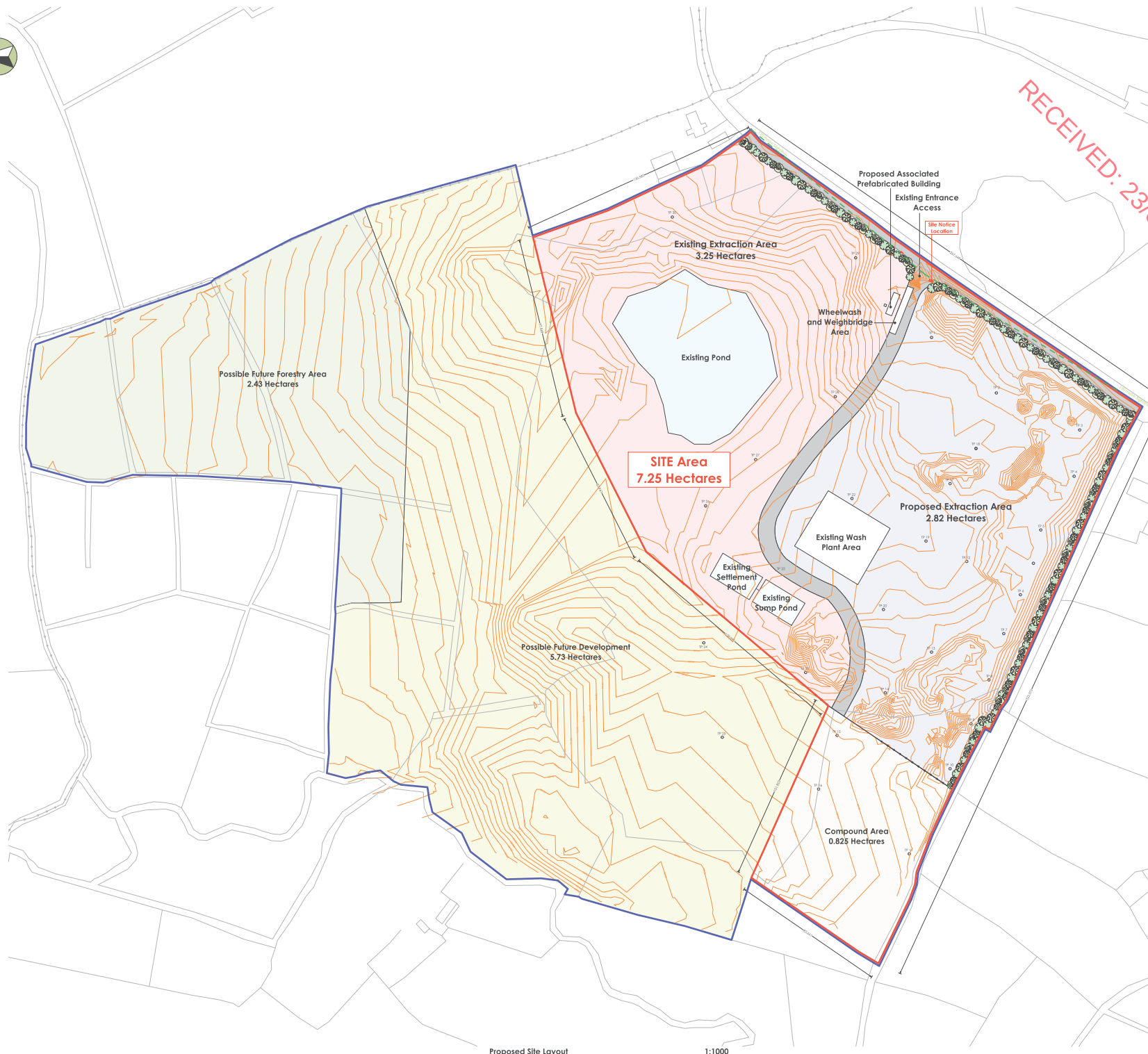
9. Appendices

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Appendix 1 – Site Layout Plan



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Client: Trueforce Limited	Drawing Title: Site Layout
Site Address: Moygara, Gorteen, Co. Sligo.	Drawn By: Edel Bailey
Project: Re-opening of Sand and Gravel Extraction Facility	Date: 21 July 2026
Drawing No: 24-140-A-P-1000	Drawing Scale: As Shown @ A1
Drawing Status: PLANNING PURPOSES ONLY	



Appendix 2A – Existing Habitat Map

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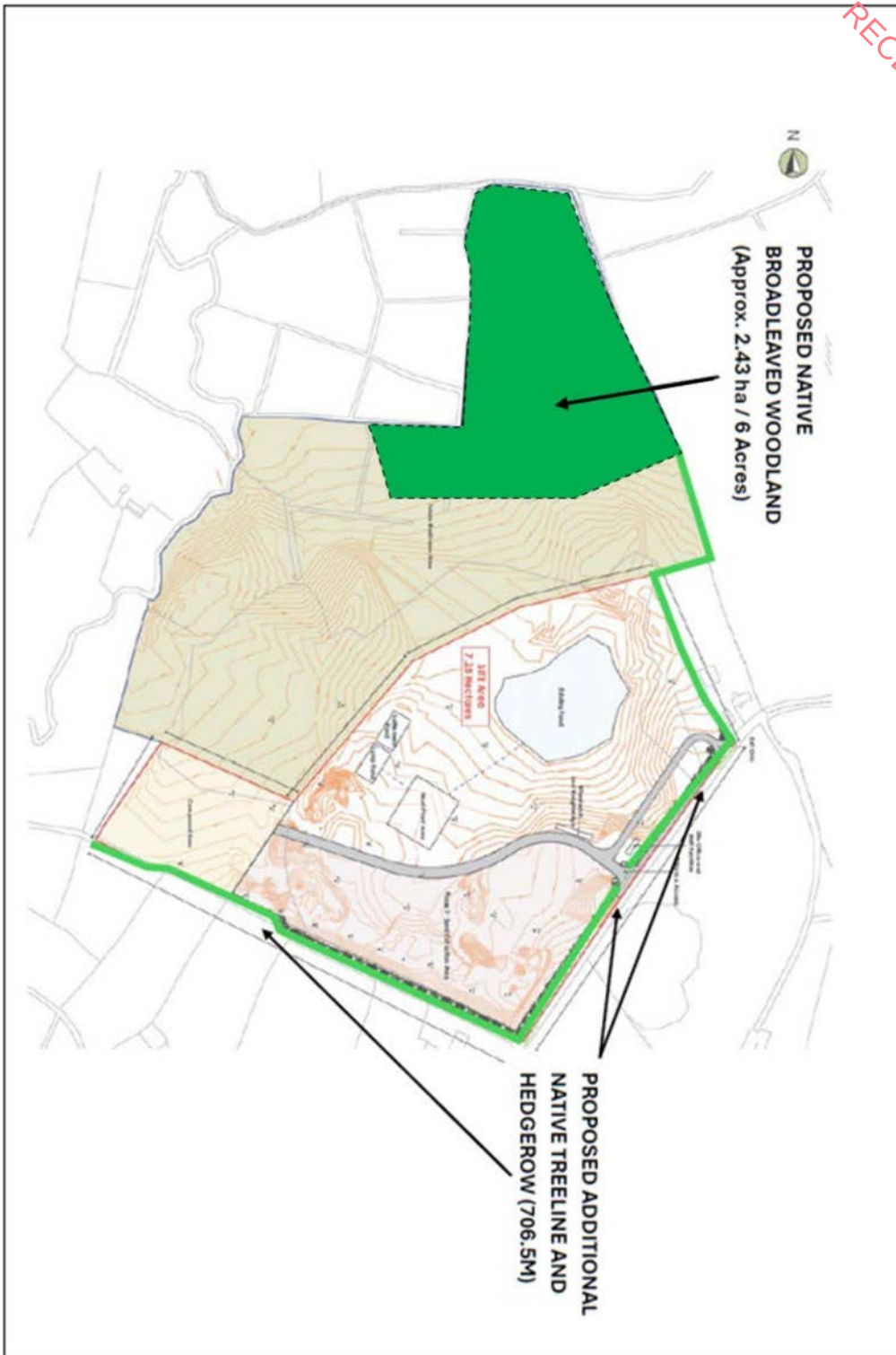
- WET GRASSLAND (GS4) & EXISTING EXTRACTION AREA
- OTHER ARTIFICIAL LAKES & PONDS FL8
- SPOIL & BARE GROUND ED2
- ACTIVE QUARRIES & MINES ER4
- RECOLONISING BARE GROUND ED3
- TREELINE (WL2) AND HEDGEROW (WL1)

Simon Bole & Associates Environmental Consultants	
Project Name: [REDACTED] Project Ref: [REDACTED] Client: [REDACTED] Location: [REDACTED] Scale: [REDACTED] Date: [REDACTED]	Drawn by: [REDACTED] Checked by: [REDACTED] Approved by: [REDACTED] Date: [REDACTED]
Project Manager: [REDACTED] Project Engineer: [REDACTED] Project Surveyor: [REDACTED] Project Designer: [REDACTED] Project Checker: [REDACTED] Project Approver: [REDACTED]	Project Manager: [REDACTED] Project Engineer: [REDACTED] Project Surveyor: [REDACTED] Project Designer: [REDACTED] Project Checker: [REDACTED] Project Approver: [REDACTED]

Appendix 2B – Proposed Habitat Enhancement and Ecological Connectivity Maps

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Appendix 3 – Storm Water Drainage Strategy

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Simon Beale + Associates
Chartered Engineers

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STORMWATER DRAINAGE STRATEGY

for

Trueforce Ltd

on the site at

Moygara Quarry, Gurteen, Co Sligo, Ireland

on

22nd July 2026

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Table of Contents

1	INTRODUCTION	1
2	PURPOSE OF THIS REPORT	1
3	THE SITE/DEVELOPMENT	2
3.1.1	Development/Site Name	2
3.1.2	Existing Development/Site (if any)	3
3.1.3	Proposed Development/Site.....	4
4	PROPOSED DRAINAGE STRATEGY	5
4.1.1	General Site Areas.....	5
4.1.2	Wash Plant Areas	6
4.1.3	Sand Extraction Area.....	6
4.1.4	Wheel Wash Facilities	7
5	SuDS MAINTENANCE SCHEDULE.....	8
6	CONCLUSIONS/RECOMMENDATIONS	10

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1 INTRODUCTION

SIMON BEALE + ASSOCIATES have been appointed by Trueforce Ltd to prepare a Stormwater Drainage Strategy for a development at Moygara Quarry, Boyle, Co Sligo, Ireland.

2 PURPOSE OF THIS REPORT

The purpose of this report is to recommend a suitable stormwater drainage strategy for said development in support of a planning application. With the nature of the development comprising an existing quarry, the proposed drainage strategy serves to manage the quality of surface water runoff on site, ensuring that downstream watercourses and receptors are not polluted as a result of the quarrying activities.

3 THE SITE/DEVELOPMENT

3.1.1 Development/Site Name

The site is located at Moygara Quarry, Gurteen, Co Sligo. The site currently consists of an existing sand and gravel pit quarry with existing highway access and associated informal areas of hard landscaping. It is understood that the development will comprise the reopening of the existing quarry for sand and gravel extraction.

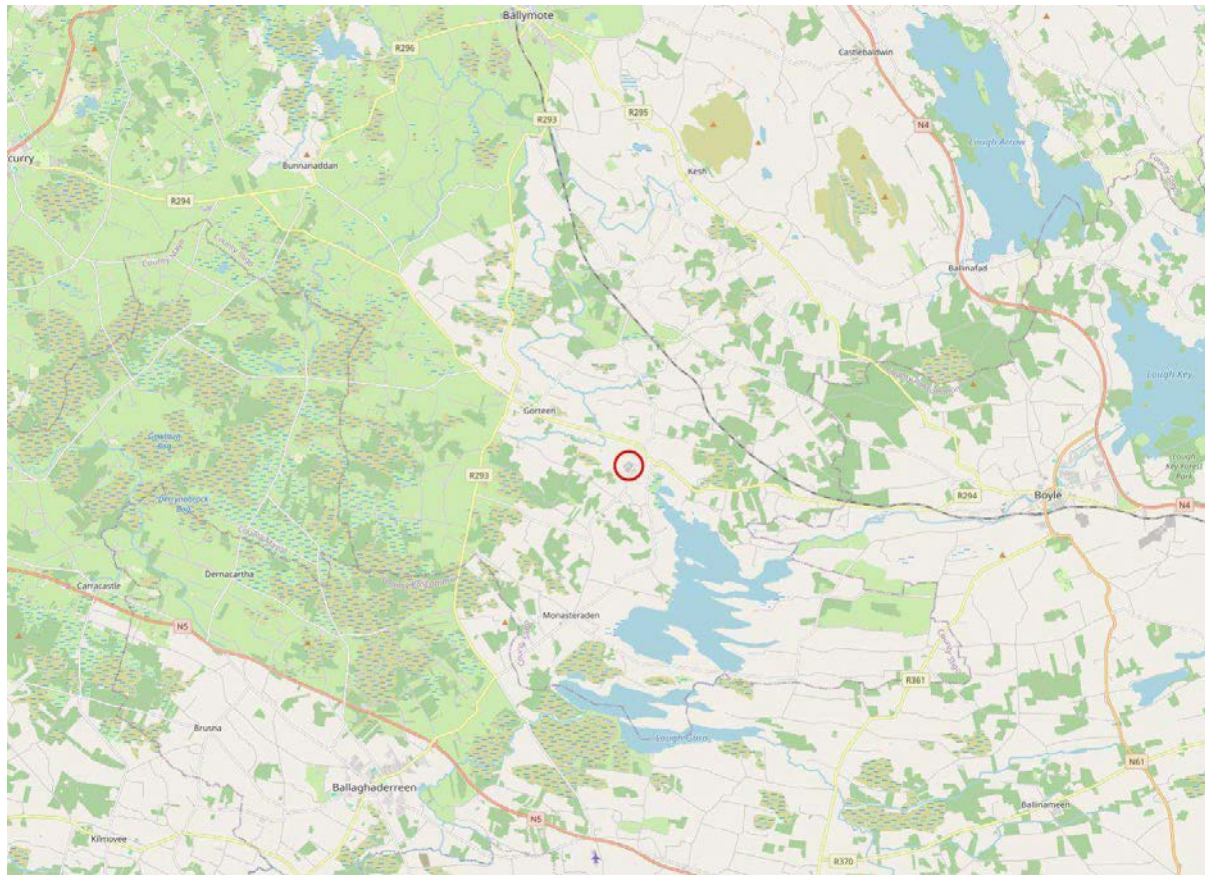


Figure 1.1 Site location map (Source: Openstreetmaps.org)

The location of the site is circled in red in Figure 1, above.

3.1.2 Existing Development/Site (if any)

The existing site comprises an existing sand and gravel pit quarry with existing highway access and associated soft landscaping.

A topographic survey of the overall existing site has been undertaken and shows that the general topography falls from the south to the north. The level on the southern corner of the site is at 83.080m, falling to 71.000m on the northwest boundary. The development site itself occupies approximately 50% of the total site area, comprising the southeastern area of the site only.

The levels along the western boundary of the development site form a high point, with levels from this boundary falling to the east to the low point which is in the form of an existing pond. The existing pond has a surface area of approximately 5,300m² and a water level of approximately 70.760m AOD.

The total area of the site is approximately 72,500m², of which 100% is currently considered to be impermeable undeveloped area.

Surface water runoff from the existing site currently follows the natural topography to the existing pond which is located at the low point of the site. Surface water within the pond is assumed to infiltrate into the underlying soils, before migrating to local ditches to the northwest of the main development site. During intense storm events where the existing pond can surcharge, exceedance flows continue overland to the existing ditches located to the northwest of the site.

The greenfield runoff rates for the existing site have been undertaken based on the full site area and are outlined below:

1 in 1 year: 35.0 l/s

1 in 30 years: 67.9 l/s

1 in 100 years: 80.2 l/s

QBAR: 41.1 l/s

The Greenfield Runoff Rates can be found in **Appendix A**.



3.1.3 Proposed Development/Site

The development proposals comprise the reopening of the existing sand and gravel quarry, along with the reuse of the existing settlement ponds and wash plant area. The proposal includes the provision of new office and welfare facilities, wheel wash bay and weighbridge, together with all ancillary site works. Informal haulage roads will be provided through the site for the removal of washed aggregates and sands.

4 PROPOSED DRAINAGE STRATEGY

The proposed development will mimic the existing impermeable area of the site and will result in no increase in surface water runoff rates or volume.

With the quarry activities anticipated on site, the principal purpose of the Stormwater Drainage Strategy is to manage the quality of surface water runoff from the site, ensuring that there is no detrimental impact to receiving watercourses and landscapes.

4.1.1 General Site Areas

Surface water runoff from the primary undisturbed areas of the site will predominantly occur as overland flow, following the existing topography and ultimately discharging to the established on-site pond. The pond will serve to manage this runoff by providing temporary attenuation storage and facilitating water quality improvement through sedimentation and interception processes.

Periodic maintenance of the pond will be required to remove accumulated silt and debris, thereby ensuring that the designed storage capacity is maintained. Maintenance activities, including dredging, shall be undertaken with due care to avoid the re-suspension of settled sediments, which could otherwise result in downstream water quality impacts.

The existing pond currently provides approximately 200 mm of freeboard. In order to increase the available storage capacity and reduce the risk of exceedance flows impacting downstream receptors, it is proposed to construct a raised bund along the lowest boundary of the pond. This intervention will increase the spill level by approximately 500 mm and is estimated to provide an additional attenuation volume of circa 2,500 m³.

A flood exceedance plan highlighting the existing overland surface water runoff routes is provided in **Appendix B**.

4.1.2 Wash Plant Areas

The wash plant area is anticipated to generate the highest concentrations of silt and debris across the site; accordingly, the management of surface water runoff from this area is of critical importance. A dedicated surface water treatment strategy will therefore be implemented, comprising a closed-loop system.

Process water used in the washing of quarried sands will be reused on a cyclical basis. Following its use in the washing process, the water will be directed to the existing Sump Pond, where coarse sediments and larger particulate matter will settle out. A high-level overflow from the Sump Pond will discharge to the existing Settlement Pond, facilitating the removal of finer suspended solids through further settlement.

Clarified water from the Settlement Pond will subsequently be pumped back to the existing wash plant for reuse within the sand washing process, thereby minimising overall water demand and discharge.

To mitigate the risk of contamination to adjacent land and downstream receptors, both the Sump Pond and the Settlement Pond will be bunded. This will ensure that any overflow or accidental spillage is contained within the system and does not migrate off-site.

In line with the requirements for the existing pond, both the Sump Pond and Settlement Pond will require routine maintenance. This will include the periodic removal of accumulated silt and sediment to maintain adequate storage capacity and ensure the continued effectiveness of the treatment process over the operational lifespan of the facility.

4.1.3 Sand Extraction Area

Loose aggregates and sands will be present towards the surface of the Sand Extraction Area and will be easily mobilised during rainfall events. Whilst it is anticipated that the sands are free draining which will limit the extent of surface water runoff, during peak storm events an increase in surface water runoff will be expected. To reduce the risk of this washing downstream where the sand and aggregates risk polluting water courses and ditches, localised bunds shall be provided adjacent to the Sand Extraction Area to intercept the runoff of suspended solids at source.



4.1.4 Wheel Wash Facilities

Prior to egressing the development site, vehicles will pass through a wheel wash facility to remove any retained dirt and debris to prevent this being carried onto the public highway. The wheel washing facility will require periodic maintenance to remove the build up of debris and to ensure a suitable level of cleaning to wheels is provided.

The proposed surface water drainage strategy can be found in **Appendix C**.

5 SuDS MAINTENANCE SCHEDULE

This section sets out the inspection and maintenance requirements for long term management of the developments surface water drainage strategy. This work is to be undertaken by the occupier of the site as part of the site operations.

All those responsible for maintenance should take appropriate health, safety and welfare precautions for all activities including lone working, if relevant, and risk assessments should always be undertaken. The sites infrastructure Health and Safety File should be consulted before carrying out any works either inside or outside of the development's boundary and information regarding the location of existing utilities passed on to operatives.

The requirements of the Health and Safety at Work Act 1974 and The Construction (Design and Management) Regulations 2015 should be adhered to and any residual risks identified in the Health and Safety File should be managed and information passed on the maintenance operatives through task specific risk assessments.

There are three types of maintenance activities associated with surface water drainage systems.

The SuDS Manual, CIRIA C753, defines these as:

- Regular Maintenance – 'basic tasks undertaken on a frequent and predictable schedule' including vegetation management, litter and debris removal, and inspections.'
- Occasional Maintenance – 'tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).'
- Remedial Maintenance – 'intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site specific characteristics or unforeseen events, and as such timings are difficult to predict.'

Regular maintenance consists of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections.

Occasional maintenance comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the regular tasks (e.g., sediment removal or filter replacement). Table 2 summarises the likely maintenance activities required for each SuDS component and guidance on specific maintenance activities is given in the following sections.

Remedial maintenance describes the intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design, construction, and regular maintenance activities. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and so timings are difficult to predict. Remedial maintenance can comprise activities such as:

- inlet/outlet repairs
- erosion repairs
- reinstatement or realignment of edgings, barriers, riprap or other erosion control
- infiltration surface rehabilitation
- replacement of blocked filter fabrics
- construction stage sediment removal (although this activity should have been undertaken before the start of the maintenance contract)
- system rehabilitation immediately following a pollution event.

It is important to note that these remedial activities will not be required for all systems, but for the purpose of estimating whole life maintenance costs, a contingency sum of 15-20% should be added to the annual regular and occasional maintenance costs to cover the risk of these activities being required.

6 CONCLUSIONS/RECOMMENDATIONS

The development proposals comprise the reopening of the existing sand and gravel quarry, along with the reuse of the existing settlement ponds and wash plant area. The proposal includes the provision of new office and welfare facilities, wheel wash bay and weighbridge, together with all ancillary site works. Informal haulage roads will be provided through the site for the removal of washed aggregates and sands.

The proposed development will mimic the existing impermeable area of the site and will result in no increase in surface water runoff rates or volume.

Surface water runoff from the primary undisturbed areas of the site will predominantly occur as overland flow, following the existing topography and ultimately discharging to the established on-site pond. The pond will serve to manage this runoff by providing temporary attenuation storage and facilitating water quality improvement through sedimentation and interception processes.

The existing pond currently provides approximately 200 mm of freeboard. In order to increase the available storage capacity and reduce the risk of exceedance flows impacting downstream receptors, it is proposed to construct a raised bund along the lowest boundary of the pond. This intervention will increase the spill level by approximately 500 mm and is estimated to provide an additional attenuation volume of circa 2,500 m³.

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Process water used in the washing of quarried sands will be reused on a cyclical basis. Following its use in the washing process, the water will be directed to the existing Sump Pond, where coarse sediments and larger particulate matter will settle out. A high-level overflow from the Sump Pond will discharge to the existing Settlement Pond, facilitating the removal of finer suspended solids through further settlement.

Clarified water from the Settlement Pond will subsequently be pumped back to the existing wash plant for reuse within the sand washing process, thereby minimising overall water demand and discharge.

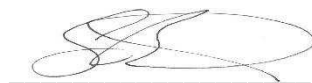
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Prior to egressing the development site, vehicles will pass through a wheel wash facility to remove any retained dirt and debris to prevent this being carried onto the public highway. The wheel washing facility will require periodic maintenance to remove the build-up of debris and to ensure a suitable level of cleaning to wheels is provided.

Signed:

SIMON BEALE + ASSOCIATES



SIMON BEALE

MA(Planning), BSc (Hons), Dip. Ind.,

CEng MIEI, C.Build E MCABE,



Harry Hunter

BEng (Hons)



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APPENDIX A – Greenfield Runoff Rates

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	24/04/2026
Calculated by	HH
Reference	
Model version	2.2.3

Location

Site name	Moygara Quarry
Site location	



Site easting (Irish Grid)	168924
Site northing (Irish Grid)	303427
Site easting (Irish Transverse Mercator)	568882
Site northing (Irish Transverse Mercator)	803439

Site details

Total site area (ha)	7.25	ha
----------------------	-----------------------------------	----

Greenfield runoff

Method

Method

IH124

SAAR (mm)

My value

1252

mm

Map value

1252

How should SPR be derived?

WRAP soil type

WRAP soil type

3

3

SPR

0.37

QBar (IH124) (l/s)

41.1

l/s

Growth curve factors

Hydrological region

My value

13

Map value

13

1 year growth factor

0.85

2 year growth factor

0.95

10 year growth factor

1.4

30 year growth factor

1.65

100 year growth factor

1.95

200 year growth factor

2.15

Results

Method

IH124

Flow rate 1 year (l/s)

35.0

l/s

Flow rate 2 year (l/s)

39.1

l/s

Flow rate 10 years (l/s)

57.6

l/s

Flow rate 30 years (l/s)

67.9

l/s

Flow rate 100 years (l/s)

80.2

l/s

Flow rate 200 years (l/s)

88.4

l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

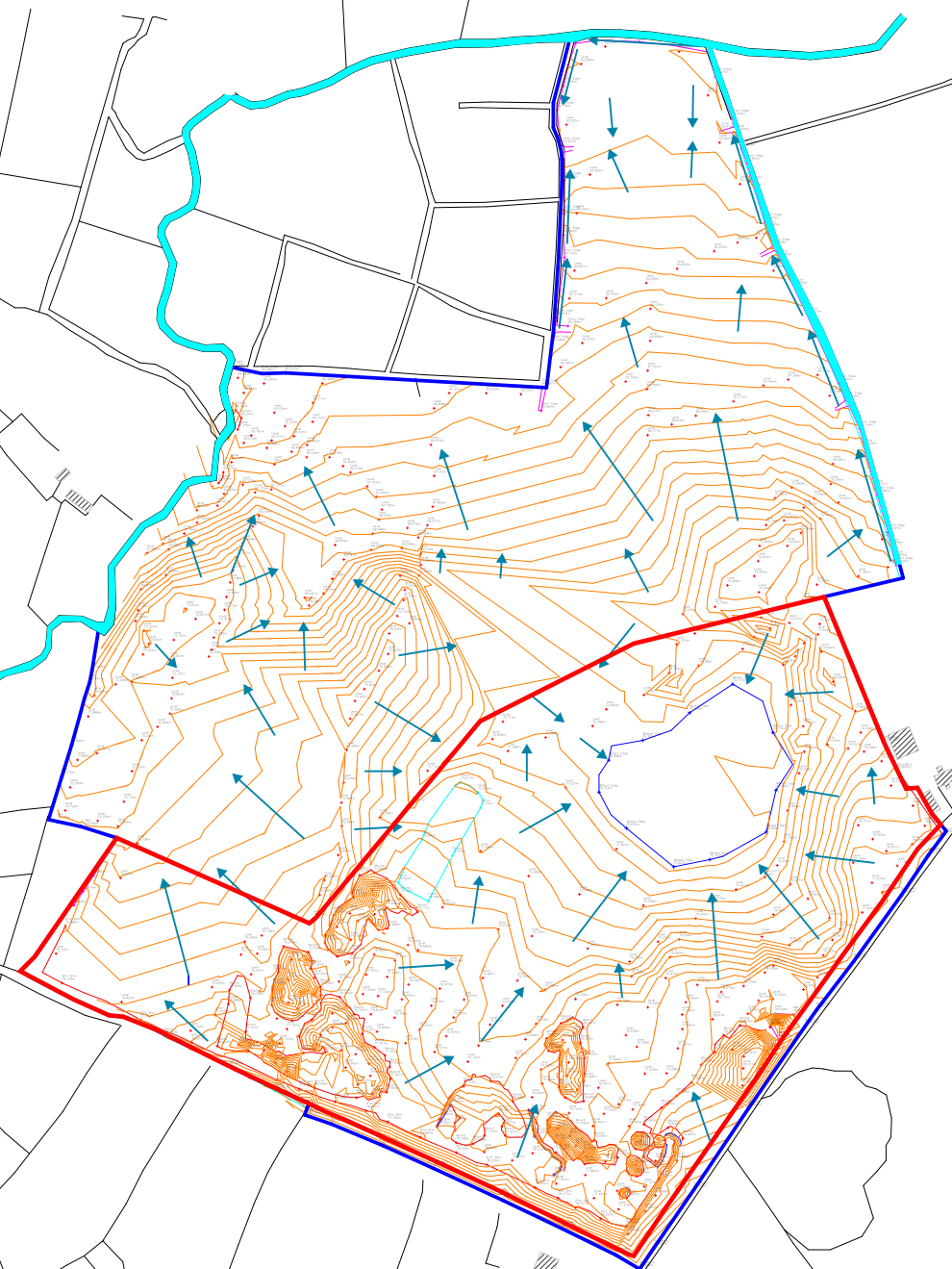
This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at [uksuds.com](https://www.uksuds.com) (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.



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APPENDIX B – Flood Exceedance Plan

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Client:
Trueforce Limited

Site Address:
Moygarr, Gurteen, Co. Sligo.

Project:
Re-opening of Sand and Gravel Pit

Drawing No:
24-140-0100-C-P

Drawing Title:
Overland Flood Exceedance Plan

Drawn By:
Harry Hunter

Date:
30 April 2026

Drawing Scale:
As Shown @ A1

Drawing Status:
PLANNING PURPOSES ONLY

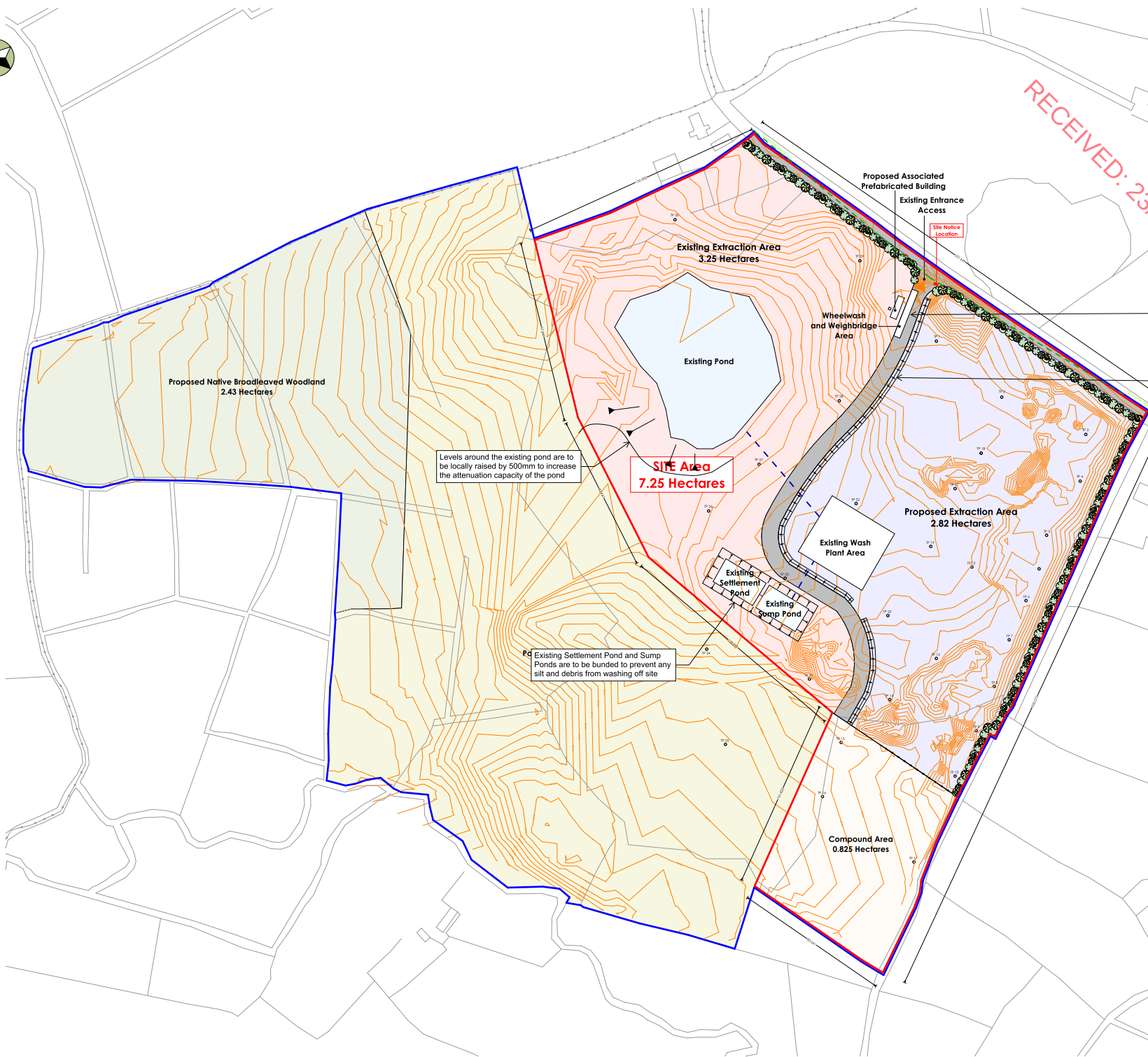


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APPENDIX C – Proposed Drainage Strategy



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Wheel wash facility is to comprise a closed drainage network to allow for effective operation and maintenance

Shallow bunding is to be provided adjacent to the sand extraction area to prevent fine sands and aggregate from washing off site during intense rainfall events

Levels around the existing pond are to be locally raised by 500mm to increase the attenuation capacity of the pond

Existing Settlement Pond and Sump Ponds are to be banded to prevent any silt and debris from washing off site

Proposed Site Layout 1:1000

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Client: Trueforce Limited

Site Address: Moygara, Gorteen, Co. Sligo.

Project: Re-opening of Sand and Gravel Pit

Drawing No: 24-140-0500-C-P

Drawing Title: Surface Water Drainage Strategy

Drawn By: Harry Hunter

Date: [blank]

Drawing Scale: As Shown @ A1

Drawing Status: PLANNING PURPOSES ONLY

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