

FORM EIS1



An Roinn Talmhaíochta,  
Bia agus Mara  
Department of Agriculture,  
Food and the Marine

For official use only: 2021 EIA / C / 2

Date stamp:



### Application for a Consent Decision

Under the European Communities (Environmental Impact Assessment) (Agriculture) Regulations S.I. No. 456 of 2011 & European Communities (Environmental Impact Assessment) (Agriculture) (Amendment) Regulations S.I. 407 of 2017

Please refer to the EIA Guide for Farmers prior to completing this application form.

### SECTION A – Personal Details

COUNTY : [Galway]

### SECTION B – Details of proposed works

Please indicate which works you propose to carry out:

Please tick: (✓)

- (a) Restructuring of rural land holdings ☐
- (b) Commencing to use uncultivated land or semi-natural areas for intensive agriculture ☒
- (c) Land drainage works on land used for agriculture ☐

**Declaration of Lands affected by proposed works** – a map of this land must be submitted as part of your application

Land Parcel Identification System (LPIS) No :	Townland(s) :	District Electoral Division (DED) :	Area (hectares) or linear measurement (kms) of proposed works (clearly specify which)
	Big Island		3.51
2.			
3.			
4.			
5.			
6.			

## SECTION B (cont.)

## PROTECTED AREAS

**NB:** The onus is on you, as landowner, to establish whether or not the project location of proposed works is in or near an environmentally sensitive area (as listed below). You should consult with your local National Parks and Wildlife Service Conservation Ranger if necessary.

A. Please tick (✓) if the project location of your proposed works is **NOT** in a sensitive area: ☐ OR

B. Please tick (✓) the relevant box(es) below if the project location is in, or in close proximity to any of the following categories of sensitive areas (please specify which):

	Is project location <u>in</u> a sensitive area? Tick (✓)	Is project location <u>near</u> a sensitive area? Tick (✓)
1. in an area designated as a "European site", which means-		
(a) A candidate site of Community importance,		
(b) A site of Community importance,		
(c) A candidate special area of conservation,		
(d) A special area of conservation,	X	
(e) A candidate special protection area, or		
(f) A special protection area	✓	
2. In a Natural Heritage Area (NHA), which means lands subject to a natural heritage area order under section 18 of the Wildlife (Amendment) Act 2000 (No. 38 of 2000):	✓	
3. In a "nature area", which means lands -		
(a) Subject to an order under section 15(2) of the Wildlife Act 1976, as amended by section 26 of the Wildlife (Amendment) Act 2000 ( <i>reserves and refuges</i> );		
(b) Subject to an order under section 16(1) of the Wildlife Act 1976, as amended by section 27 of the Wildlife (Amendment) Act ( <i>nature reserves on land other than land to which section 15 applies</i> )		
(c) Subject to an order under section 17(9) of the Wildlife Act 1976, as amended by section 28 of the Wildlife (Amendment) Act ( <i>refuges for fauna</i> );		
(d) Subject to a notice under section 16(2) of the Wildlife (Amendment) Act 2000 – ( <i>proposed NHAs</i> )		
4. in the vicinity of a recorded monument, which means historic monuments or archaeological areas (within the meaning of section 1(1) of the National Monuments (Amendment) Act 1987 (No 7 of 1987) recorded on the Register of Historic Monuments or a monument recorded under section 12(1) of the National Monuments (Amendment) Act 1994 (no. 17 of 1994) or a national monument in the ownership or guardianship of the Minister for Arts, Heritage and the Gaeltacht or a local authority under the National Monuments Acts 1930 to 2004. <u>Further information on protected sites is available on the National Parks &amp; Wildlife Service website <a href="http://www.npws.ie">www.npws.ie</a></u>		

## FORM EIS1

If the project location of your proposed works is in or near a sensitive area or a recorded National Monument, please provide relevant reference number:

Special Area of Conservation (SAC) Site Code: \_\_\_\_\_

Special Protected Area (SPA) Site Code: \_\_\_\_\_

Natural Heritage Area (NHA) Site Code: \_\_\_\_\_

Monument Record No: \_\_\_\_\_

Description of Monument: \_\_\_\_\_

Nature and extent of the proposed works including the anticipated outcomes (please provide details)

Plough + Reseed the lands Listed on page 1

Details of who will carry out the proposed works (if other than you)

Name :

Company name:

Address:





Forestry, Ecology & Environment

# Natura Impact Statement

DRAFT

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Compiled by Veon Ecology,

Prepared for:

Completion Date: 9<sup>th</sup> December 2022



## Table of Contents

Table of Figures .....	4
Table of Tables .....	4
<b>Section 1: INTRODUCTION.....</b>	<b>6</b>
1.1 Legislative Background .....	6
1.2 Methodology & Report Structure .....	7
1.2.1 Appropriate Assessment Methodology .....	8
1.3 Guidance and Legislation.....	10
1.4 Planning Process.....	11
<b>Section 2: PROPOSED DEVELOPMENT .....</b>	<b>12</b>
2.1 Project Location.....	12
2.2 Project description .....	14
2.3 Potentially Affected Natura 2000 Sites.....	14
2.4 Potentially Affected Habitats/Species .....	15
<b>Section 3: EXISTING ENVIRONMENT .....</b>	<b>16</b>
3.1 Baseline Ecology .....	16
3.2 Desktop Study and Information Sources .....	16
3.3 Field Study .....	17
3.4 Biological Water Quality Data.....	19
3.5 Flooding.....	19
3.6 Geology, Hydrology and Hydrogeology .....	19
<b>Section 4: STAGE 1. SCREENING FOR APPROPRIATE ASSESSMENT.....</b>	<b>21</b>
4.1 Overview of Potential Impacts .....	21
4.2 Determining the Likely Zone of Influence.....	21
4.3 Identification of Relevant European Sites.....	22
4.4 Stage 1: Screening of Relevant European Sites .....	24
4.4.1 Special Areas of Conservation (SACs) .....	24
4.4.2 Special Protection Areas (SPAs) .....	28
4.5 Nationally Designated Sites .....	31
4.6 Screening Conclusion .....	34
<b>Section 5: STAGE 2. SCREENED IN EUROPEAN SITES .....</b>	<b>35</b>
5.1 Conservation Objectives.....	35
5.2 European Site Descriptions.....	36
5.3 Supporting Habitats and Species .....	38
5.4 Threats and Pressures .....	40
5.5 Potential Impacts from the Proposed Development.....	42
5.5.1 Habitat loss, disturbance and fragmentation .....	43

5.5.2 Non-native and invasive plant species.....	43
5.5.3 Disturbance to fauna .....	43
5.5.4 Avifauna.....	43
5.5.5 Bats.....	44
5.5.6 Badgers.....	44
5.5.7 Receiving and downstream watercourses.....	44
5.6 Potential Adverse Effects & Proposed Mitigation .....	45
5.7 Summary of potential Impacts .....	45
<b>Section 6: PROTECTIVE MITIGATION MEASURES .....</b>	<b>46</b>
6.1 Mitigation .....	46
<b>Section 7: RESIDUAL EFFECT .....</b>	<b>47</b>
<b>Section 8: IN-COMBINATION EFFECT.....</b>	<b>48</b>
8.1 County Development Plan.....	48
8.2 Cumulative Impact Assessment.....	48
8.3 Summary of Cumulative Impact Assessment .....	49
<b>Section 9: NIS CONCLUSION .....</b>	<b>50</b>
<b>Section 10: DECLARATION .....</b>	<b>51</b>
<b>Section 11: REFERENCES.....</b>	<b>52</b>
<b>Section 12: APPENDICES.....</b>	<b>55</b>
Appendix 1. MAPS & FIGURES .....	55
<b>Appendix 2. ECOLOGICAL SURVEYS &amp; INVESTIGATIONS .....</b>	<b>65</b>
1. Introduction .....	65
1.1 Objective .....	65
1.2 Phase One habitat Surveys .....	65
1.3 Survey Methodology .....	65
2. Site Overview.....	66
3. Habitat & Vegetation Description.....	67
3.1 Watercourses (FW).....	67
3.2 Improved grassland (GA) .....	68
3.3 Semi-natural grassland (GS).....	68
3.4 Linear woodland (WL) .....	68
3.5 Disturbed Ground (ED) .....	69
4. Ecological Appraisal & Species Recorded .....	69
4.1 Volant & Non-Volant Mammals.....	69
4.2 Amphibians.....	71
4.3 Reptiles.....	71
4.4 Birds/Avifauna .....	71
4.5 Other Relevant Species.....	72

5. Discussion & Conclusion .....	73
<b>Appendix 3. CONSERVATION OBJECTIVES .....</b>	<b>79</b>
River Shannon Callows SAC (000216) .....	79
Middle Shannon Callows SPA (004096) .....	80
Lough Derg, North-east Shore SAC (002241) .....	81
Lough Derg, North-east Shore SAC (004058) .....	82
<b>Appendix 4. PHOTOGRAPHS .....</b>	<b>83</b>

## Table of Figures

Figure 1.1: Stages of Appropriate Assessment. ....	8
Figure 4.1: European Sites within the proposed development's Zone of Influence using SPR model. ....	30
Figure 12.1: Proposed Project area map .....	55
Figure 12.2: Overall Project Map and Site Location .....	56
Figure 12.3: Habitats located within the proposed project area .....	57
Figure 12.4: River and Waterbody Network in the vicinity of Project Area (EPA 2022). ....	58
Figure 12.5: Soil Profile National Soils (EPA 2022). ....	58
Figure 12.6: Subsoil Profile (EPA 2022). ....	59
Figure 12.7: GSI Bedrock Aquifer (EPA 2022). ....	59
Figure 12.8: GSI Bedrock Geology 1:100,000 (EPA, 2022). ....	60
Figure 12.9: Natura 2000 map within 15km (EPA, 2022). ....	60
Figure 12.10: Natura 2000 designated lands within the Proposed development site (EPA, 2022). ....	61
Figure 12.11: 10km x 10km Grid Square M91 (NBDC 2022). ....	61
Figure 12.12: 2km x 2km Grid Square M91G (NBDC 2022). ....	62
Figure 12.13: Map of local past flood events and high probability flood zone (OPW, 2022). ....	62
Figure 12.14: Lower Shannon WFD Catchment (ID 25B) (EPA 2022). ....	63
Figure 12.15: Shannon[Lower]_SC_050 Sub catchment (ID 25B_4) (EPA 2022). ....	63
Figure 12.16: Shannon(Lower)_030 WFD River Sub basin (EPA 2022). ....	64

## Table of Tables

Table 1.1: Townlands containing the overall proposed project infrastructure. ....	11
Table 4.1: European Sites located within 15 km of the Proposed Development Site. ....	23
<i>Table 4.2: Nationally Designated Sites within 15km of the Proposed Development.</i> .....	32
Table 5.1: Negative Threats, Pressures and Activities for River Shannon Callows SAC. ....	40
Table 5.2: Negative Threats, Pressures and Activities for Middle Shannon Callows SPA. ....	41
Table 5.3: Negative Threats, Pressures and Activities for Lough Derg, North-east Shore SAC. ....	41
Table 5.4: Negative Threats, Pressures and Activities for Lough Derg (Shannon) SPA. ....	42
Table 5.5: Impact Source – Pathway and Zone of Influence for the proposed project .....	42
<i>Table 9.1: Bat Suitability Index for the site and its surrounding area (NBDC, 2022).</i> .....	70
<i>Table 9.2: Bird species observed and recorded during the phase 1 habitat survey site visit.</i> .....	72
<i>Table 9.3: Protected bird species recorded in 10km x 10km grid surrounding the site (NBDC, 2022).</i> .....	75
<i>Table 9.4: Protected bird species recorded in 2km x 2km grid surrounding the site (NBDC, 2022).</i> .....	78
<i>Table 9.5: Protected Mammal species recorded in 10km x 10km grid surrounding the site (NBDC, 2022).</i> .....	78
<i>Table 9.6: Protected Mammal species recorded in 2km x 2km grids surrounding the site (NBDC, 2022).</i> .....	78
<i>Table 9.7: Protected amphibian species recorded in 10km x 10km grid surrounding the site (NBDC, 2022).</i> .....	78
<i>Table 9.8: Protected freshwater species recorded in 10km x 10km grids surrounding the site (NBDC, 2022).</i> .....	78



## General Details

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**Describe scope of contribution in preparing this NIS**

Desktop Survey, Habitat Survey, Screening, Ecological Assessment and Finalising report.

Veon Ltd. Veon Ecology							
Revision	Description	Author:	Date	Reviewed By:	Date	Authorised by:	Date
1	Draft Report		07/12/2022		08/12/2022		



## Section 1: INTRODUCTION

Veon Ltd. (Veon Ecology) has been appointed by xxxxxxxxxxxxxxxx, to carry out an Appropriate Assessment (AA) Screening and a Natura Impact Statement (NIS) for a proposed project in association with a private farm on lands at Meelick, Eyrecourt, Co. Galway. The location of the proposed project is presented in **Figure 2.1**.

The Screening for Appropriate Assessment and Natura Impact Statement (NIS) has been prepared to provide the competent authority, Galway County Council, with the relevant scientific information to conduct the Appropriate Assessment (AA) in accordance with the requirement of Article 6(3) of the Habitats Directive (Directive 92/43) and in accordance with the provisions of section 177T of the Planning & Development Act 2000 (as amended). This information will allow Galway County Council to determine, in view of best scientific knowledge, if the proposed project, individually or in combination with other plans and projects is likely to have a significant effect on a European site and, where necessary, to ascertain whether or not the proposed project would adversely affect the integrity of a European site.

A Screening for Appropriate Assessment for the Proposed Project has been prepared and is provided in **Section 4**. The screening assessment concluded as follows:

*‘It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the Proposed Project (i.e. the sowing of seeds in association with farming activities), individually or in combination with other plans and projects, would have a significant effect on the following European Sites:*

- **River Shannon Callows SAC (000216)**
- **Middle Shannon Callows SPA (004096)**
- **Lough Derg, North-east Shore SAC (002241)**
- **Lough Derg (Shannon) SPA (004058)**

*As a result, an Appropriate Assessment of the Proposed Project is required, and a Natura Impact Statement shall be prepared in respect of the Proposed Project (i.e. the sowing of seeds in association with farming activities)’.*

### 1.1 Legislative Background

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as “The Habitats Directive”, provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000.

Natura 2000 sites are defined under the Habitats Directive (Article 3) as a coherent European ecological network of special areas of conservation, composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, shall enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range. In Ireland, these sites are designated as European Sites and include Special Protection Areas (SPAs), established under the EU Birds Directive (79/409/EEC, as codified by 2009/147/EC) for birds and Special Areas of Conservation (SACs), established under the Habitats Directive 92/43/EEC for habitats and species.

The Habitats Directive has been transposed into Irish law by Part XAB of the Planning and Development Act, 2000 - 2015 and the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011) as amended. Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to adversely affect the integrity of European Sites (Annex 1.1).

*Article 6(3) establishes the requirement for Appropriate Assessment (AA):*

Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

Article 6(3) of the Habitats Directive, transposed into Irish Law relevant to this project includes Part XAB of the Planning and Development Act, 2000-2019 and the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

Natura 2000 sites in Ireland (herein referred to as European sites) that form part of the Natura 2000 network of protected sites include Special Areas of Conservation (SACs) designated due to their significant ecological importance for species and habitats protected under Annexes I and II respectively of the Habitats Directive, and Special Protected Areas (SPAs), designated for the protection of populations and habitats of bird species protected under the EU Birds Directive (Council Directive 2009/409/EEC). Features for which SACs and SPAs are designated are termed Qualifying Interests and Special Conservation Interests respectively. Collectively, Qualifying Interests and Special Conservation Interests are herein referred to as Qualifying Features.

As the proposed project is not directly connected with or necessary to the management of any European Site, Galway County Council as the competent authority, is obliged to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with other plans or projects, is likely to have a significant effect on European Sites.

The appropriate assessment process undertaken to meet Article 6(3) obligations is described in **Section 1.2.1** below.

In consideration of the findings of the Screening report, a Natura Impact Statement (NIS) has been prepared in accordance with the in compliance with the provisions of Section 177T of the Planning & Development Act 2000 as amended. In addition, the NIS follows the European Commission guidance document 'Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC' (EC, 2001) and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (DoEHLG, 2010).

## 1.2 Methodology & Report Structure

The information contained in this Natura Impact Statement (NIS) is formulated to comply with the provisions of sections 177 T (1)(b) and 177 T (2) in that it comprises of a scientific examination of evidence and data, carried out by competent person(s) to identify and classify any implications for the relevant European sites in view of their conservation objectives, and to allow the Competent Authority to assess in accordance with the provisions of section 177 V of the Planning & Development Act 2000 (as amended);

- (i) Whether there will be any adverse effects on the integrity of any European Site, in the event the Proposed Project proceeds.
- (ii) Whether the Proposed Project, alone or in combination with other plans and/or projects will adversely affect the integrity of any European Sites in view of their conservation objectives.

The Proposed Project is described in detail in **Section 2** of this report. Following on from this the results of the desk and field surveys that were undertaken are presented in **Section 3**, to provide the necessary details of the ecological baseline conditions of the site for the Proposed Project. The proposed operations of the project are considered in the context of potential effects on the baseline environment, with particular reference to the potential for adverse effect on the integrity of the relevant European Sites.

The conservation objectives and Qualifying Interests (QI)/Special conservation interests (SCI) of the “screened in” European Sites are described in **Section 5**, with the identification of potential pathways for effects on each individual (QI)/(SCI). Where potential pathways for effects are identified, the potential for these adverse effects on each QI/SCI is assessed with respect to the national level pressures and threats. Where available, the site-specific attributes and targets, associated with the individual QI/SCI are also assessed in relation to the Proposed Project taking into consideration best practice guidelines and following the precautionary principle as detailed in Article 191 of the Treaty on the Functioning of the European Union (TFEU). Following on from this assessment a further assessment of the potential for effects when the Proposed Project is considered cumulatively and in combination with other plans and/or projects is detailed in **Section 8** of this report.

Finally, a concluding statement is provided in **Section 9** of the report. This includes a summary of the results of the assessment along with a summary statement of the lack of adverse effects on the integrity of any European Site (in light of the Conservation Objectives of the site as per Box 10 of EC, 2001). As per EC (2001) the meaning of integrity is defined as follows:

*The integrity of a site involves its ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the site’s conservation objectives’ (MN2000, paragraph 4.6(3))’. The information contained in this report will allow the Competent Authority to determine that the Proposed Project either individually or in combination with other projects will not adversely affect the integrity of any European Site.*

### 1.2.1 Appropriate Assessment Methodology

The purpose of an Appropriate Assessment (AA) is to establish whether a particular plan or project is likely to have a significant effect on a Natura 2000 Site, either individually or in combination with other plans and/or projects. Natura 2000 sites in Ireland are European sites, including Special Protection Areas (SPAs), and Special Areas of Conservation (SACs).

The four distinct stages in the AA process are summarised diagrammatically in **Figure 1.1**. Stages 1-2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of the Article 6(3) Assessment or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Figure 1.1: Stages of Appropriate Assessment.



### *Stage 1: Screening for Appropriate Assessment.*

Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

Whether a plan or project is directly connected to or necessary for the management of the site, and whether a plan and/or project, alone or in combination with other plans and/or projects, is likely to have significant effects on a European site in view of its conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). Screening should be undertaken without the inclusion of mitigation, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project, in which case the screening process is repeated on the altered plan. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact.

### *Stage 2: Appropriate Assessment (Natura Impact Statement).*

The aim of Stage 2 of the AA process is to identify any adverse impacts that the plan or project might have on the integrity of relevant European sites. As part of the assessment, a key consideration is 'in combination' effects with other plans or projects. Where adverse impacts are identified, mitigation measures can be proposed that would avoid, reduce or remedy any such negative impacts and the plan or project should then be amended accordingly, thereby avoiding the need to progress to Stage 3.

This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement, i.e. the report of a targeted professional scientific examination of the plan or project and the relevant European sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, taking account of in-combination effects. This should provide information to enable the public authority to carry out the AA. The information required in a Natura Impact Statement, is outlined in Regulation 42(5) (a) of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) as amended, as follows:

A Natura Impact Statement shall, in addition to addressing the issues referred to in the interpretation contained in Regulation 2(1), include such information or data as the public authority considers necessary, and specifies in a notice given under paragraph (3), to enable it to ascertain if the plan or project will affect the integrity of the site.

*Where appropriate, a Natura Impact Statement shall include, in addition:*

- (i) The alternative solutions that have been considered and the reasons why they have not been adopted.
- (ii) The imperative reasons of overriding public interest that are being relied upon to indicate that the plan or project should proceed notwithstanding that it may adversely affect the integrity of a European site.
- (iii) The compensatory measures that are being proposed.

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 3, or the plan or project should be abandoned. The competent authority must make a determination to that effect before proceeding to the next stage.

### 1.3 Guidance and Legislation

The Screening for AA and This NIS report has been prepared with regard to the relevant provisions of the EU Council Directive 92/43/EEC and Ireland's EU (Birds and Natural Habitats) Regulations 2011 (as amended). The methodology considered in preparation of this report and additional guidance and legislation followed for this assessment are outlined below:

- DoEHLG (2009, rev. 2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government.
- European Commission (EC) (2018), Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats Directive' 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.
- EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.
- EC (2021) Assessment of Plans and Projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC.
- EC (2007a) 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, overall coherence, opinion of the commission. European Commission.
- EC, (2007b), Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. European Commission.
- EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.
- EC (2021) Assessment of Plans and Projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC.
- Chartered Institute of Ecology and Environmental Management (CIEEM) Version 1.1 (September 2019), Guidelines for Ecological Impact Assessment in the UK and Ireland.
- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report.
- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report.
- Office of the Planning Regulator (OPR) (2021) Practice Note PN01 - Appropriate Assessment Screening for Development Management.
- The European Communities (Birds and Natural Habitats) Regulations 2011 as amended.
- The Planning and Development Act 2000-2022.
- The Planning and Development Regulations 2001-2022.

## 1.4 Planning Process

Due to the nature of the Proposed Project, a Natura Impact Statement (NIS) report for the purpose of planning applications is required.

The planning application and NIS report will be made to Galway County Council under Section 34 of the Planning and Development Acts 2000 to 2018 for the sowing of seeds in association with farming activities.

For the purposes of this NIS report, where the Proposed Project is referred to, this relates to the 3.52ha field in which the seeds will be sowed. This field is located on big island which is surrounded by the Shannon River and an oxbow channel of the Shannon River.

*Table 1.1: Townlands containing the overall proposed project infrastructure.*

Project Components	Townlands
Big island sowing seeds	Victoria Lock



## Section 2: PROPOSED DEVELOPMENT

### 2.1 Project Location

The project site is located at Victoria Lock south of Eyrecourt, Co. Galway. The proposed project area occurs within Big Island which is surrounded by an oxbow system of the River Shannon (**Location Map, Figure 2.1**). The proposed project area is comprised of one large field approximately 3.52ha in size. The field and surrounding lands are agricultural lands. There is a treeline to the south and western borders of the project area field. There are other associated treelines in the surrounding lands.

The proposed project area occurs within the boundaries of the River Shannon Callows SAC (000216), and the Middle Shannon Callows SPA (004096) as well as the proposed Natural Heritage Area (pNHA) of River Shannon Callows (000216). Approximately 13.7km downstream of the proposed project area is the Lough Derg, North-east Shore SAC (002241), the Lough Derg (Shannon) SPA (004058) and the pNHA of Lough Derg (000011). There are other European sites within a 15km radius of the proposed project area, although, there is no direct or in-direct connection between these sites and the proposed project area.

The most significant hydrological feature in the vicinity of the proposed development site is the Shannon River and associated oxbow channel. The river itself runs along the southern boundary of Big Island and the oxbow channel occurs along the eastern and northern edges of the proposed project area. The River Nore is the predominant hydrological feature in the vicinity of the proposed development site. Within the site there are field drains which connect to the river.

There are no residential or commercial properties within Big Island. There is an unnamed public road that runs east/west through Big Island in the southern portion just North of the Shannon River. The site is relatively flat with elevation ranges between 31 and 32m above sea level.

The bedrock underlying the proposed project area is part of the Visean limestone and calcareous shale as part of the Palaeozoic, Carboniferous, Mississippian Geological age (1 million). The 100k GSI bedrock for the project area is described as the Lucan Formation which has dark limestone and shale. The bedrock aquifer is classified as a Locally Important Aquifer with bedrock which is moderately productive only in local zones. The GSI classifies vulnerability of the bedrock aquifer underlying the location of the proposed project areas as Moderate (M) Vulnerability.

A map of all of the hydrological features within the boundary and in the immediate vicinity of the proposed substation development site is presented in **Appendix 1**. There are no significant sensitive hydrogeological or groundwater features or resources within or in the immediate vicinity of the location of the proposed development, such as public or group groundwater supply sources.

Mitigation measures are discussed in **Section 6** of this report to ensure that there are no adverse negative impacts on the existing hydrological, hydrogeological and ecological features within and in the vicinity of the proposed project area.

The proposed development site lies with the 2km x 2km grid square of M91G of the Biodiversity Ireland Database. During the ecological walkover of the project area no invasive species listed on the Third Schedule of the 2011 European Communities (Birds and Natural Habitats) Regulations (i.e. species of which it is an offense to disperse, spread or otherwise cause to grow in any place) were recorded within the proposed development site boundary.



Figure 2.1: Project site location.



## 2.2 Project description

The proposed project is for the reseeding of a 3.52ha plot within Big Island, south of Eyrecourt, Co. Galway. The site is centred at 53.169181°, -8.095262° located in Grid Reference M 93679 13166. The reseeding of the field will be completed by the following stages:

- Remove the current sward by grazing
- Use herbicide ("Roundup") on the remaining sward
- The field will be ploughed to a depth of 15 inches and use a power harrow to till the soil
- Mole plough the field to a depth of 18 inches
- Sow a catch crop of rape for consumption through the first autumn/early winter
- The following April will require a further cultivation of mixed species sward of perennial ryegrass, chicory, and clover
- In order to protect the crop establishment a gas powered bird scarer will be used
- Boundary hedges will be trimmed
- A change from mixed sheep and cattle grazing a low stocking rate is proposed to grazing cattle only in rotational system with one or two year old heifers and dry cows at increased stocking rates
- In order to reduce impacts to the environment, best practice measures will be followed and a buffer zone from the watercourse edge will be applied in order to reduce impacts to the watercourse and any downstream habitats

## 2.3 Potentially Affected Natura 2000 Sites

Natura 2000 sites in the vicinity of the proposed development and with a direct physical connection to this development were checked for on the mapping system of the NPWS website <http://webgis.npws.ie/npwsviewer/>. Natura 2000 sites within 15km of the subject site are shown in **Appendix 1**.

The proposed project area occurs with the boundaries of two Natura 2000 sites: River Shannon Callows SAC (000216), and Middle Shannon Callows SPA (004096). The site is also located with the boundary of a proposed Natural Heritage Area (pNHA) of River Shannon Callows (000216). There is further hydrological connection to the Lough Derg, North-east Shore SAC (002241), the Lough Derg (Shannon) SPA (004058) and the pNHA of Lough Derg (000011), which are located approximately 13.7km downstream. See **Appendix 1** for hydrological mapping.

Other Natura 2000 sites within a 15km radius include: Redwood Bog SAC (002353), All Saints Bog and Esker SAC (000566), Ardgraique Bog SAC (002356), Ridge Road, SW of Rapemills SAC (000919), Kilcarren-Firville Bog SAC (0000647), Ballyduff/Clonfinane Bog SAC (000641), Arragh More (Derrybreen) Bog SAC (002207), Liskeenan Fen SAC (001683), River Little Brosna Callows SPA (004086), All Saints Bog SPA (004103), River Suck Callows SPA (004097), and Dovegrove Callows SPA (004137). The NHAs located within a 15km radius of the proposed development site includes River Little Brosna Callows NHA (000564), Ballymacegan Bog NHA (000642), Meeneen Bog NHA (000310), Kileen Bog NHA (000648), Arragh More Bog NHA (000640), Lorrha Bog NHA (001684), Capira/Derrew Bog NHA (001240), Moorfield Bog NHA (001303), Cloonoolish Bog NHA (000249), Eskerboy Bog NHA (001264), Kilnaborris Bog NHA (000284), Suck River Callows NHA (000222).

The pNHAs located within a 15km radius of the proposed development site includes River Shannon Callows pNHA (000216), Redwood Bog pNHA (000654), All Saints Bog and Esker pNHA (000566), Ridge Road, SW of Rapemills pNHA (000919), Ross and Glensn Ekers pNHA (000920), Dovegrove Callows pNHA (000010), Woodville Woods pNHA (000927), Lough Coura pNHA (000909), Grand Canal pNHA (002104), Ballyduff/Clonfinane Bog pNHA (000641), Kilcarren-Firville Bog pNHA (000647), Friar's Lough pNHA (000933), Lough Derg pNHA (000011), Ardgraique Bog pNHA (001224), and Cloonascragh Fen and Black Wood pNHA (001247).

Many of the sites within a 15km radius do not have a pathway (physical or hydrological connections which could act as a route for potential impacts) from the source site to these European Sites. As a result, they cannot be considered potential receptors and impacts on the European sites Conservation Objectives, thus, they can be screened out.

## 2.4 Potentially Affected Habitats/Species

The area of potential impact during construction phase is taken as being the site of the proposed development and the downstream aquatic habitat. While the aquatic zone of potentially highest impact is from the location of a proposed development to 5km downstream (Escauriaza *et. al.*, 2017), potential impacts on protected habitats and species in the entire downstream section of the River Shannon are also considered.

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## Section 3: EXISTING ENVIRONMENT

### 3.1 Baseline Ecology

The study area has been mapped in detail, following a phase 1 habitat survey, and was cross referenced with 'A Guide to Habitats in Ireland' (Fossitt, 2000). The findings of the Phase 1 habitat survey are described below, while habitat maps and photographs showing the extent of habitats within the proposed development site are presented in **Appendix 2 and 4**.

The majority of the site of the proposed development site is pastureland, which is classified as **GA1 (Improved agricultural grassland)**. The vegetation is dominated by common grass species, mainly rye grass (*Lolium sp.*) and Yorkshire fog (*Holcus lanatus*). Other species observed within the area include Creeping Bent (*Agrostis stolonifera*), Meadow Foxtail (*Alopecurus pratensis*), and Sweet Vernal Grass (*Anthoxanthum odoratum*). Common agricultural weeds can also be found within this habitat including creeping thistle (*Cirsium arvense*), spear thistle (*Cirsium vulgare*), ragwort (*Senecio jacobaea*), dock (*Rumex obtusifolius*), clover (*Trifolium sp.*), and creeping buttercup (*Ranunculus repens*). This is of low biodiversity value.

Hedgerows **WL1** and Treelines **WL2** are located along the southern and western edges of the proposed project field. The species found in these habitats included Hawthorn (*Crataegus monogyna*), Bramble (*Rubus fruticosus*), Holly (*Ilex aquifolium*), Gorse (*Ulex europaeus*), Ivy (*Hedera helix*), Bracken (*Pteridium aquilinum*), nettles (*Urtica dioica*), Ash (*Fraxinus excelsior*), Birch (*Betula pendula*) and Sycamore (*Acer pseudoplatanus*).

There are no built or artificial surfaces within the vicinity of the proposed project area, including houses, structures or roads, however there are access roads which are classified as **ED3 (Recolonising Bare Ground)**. Here common species include ragwort (*Senecio jacobaea*), willow herbs (*Epilobium sp.*), dandelion (*Taxacum sp.*), doc (*Rumex obtusifolius*), creeping thistle (*Cirsium arvense*), clover (*Trifolium sp.*) and bryophytes.

The proposed project area is adjacent to an oxbow channel of the Shannon River which is classified as **FW2 (Depositing/Lowland Rivers)**. This oxbow channel occurs along the eastern and northern boundaries of the proposed project area and connects into the Shannon River south of the proposed project area. There are Drainage Ditches **FW4** within the field of the proposed project area.

There is a low-lying area within the field that contained standing water at the time of the survey (November 24th, 2022). The habitat near this area is classified as **Wet Grassland (GS4)**. Common species here include hard rush (*Juncus inflexus*), cuckooflower (*Cardamine pratensis*), common rush (*Juncus effusus*), black bog rush (*Schoenus nigricans*), grasses such as Yorkshire-fog (*Holcus lanatus*), Creeping Bent (*Agrostis stolonifera*) and Marsh Foxtail (*Alopecurus geniculatus*) and creeping thistle (*Cirsium arvense*). Within the scrub species including gorse (*Ulex europaeus*), willow (*Salix sp.*), bramble (*Rubus fruticosus*), and birch (*Betula pendula*).

### 3.2 Desktop Study and Information Sources

An ecological desktop study was undertaken to inform this screening assessment and Natura Impact Statement (NIS) report. The desktop study comprised a review of the following key datasets and information sources:

- Identification of European sites within the Zone of Influence (Zoi) of the Proposed Development area through the identification of potential pathways/links from the Proposed Development area and European sites and/or supporting habitats.
- Review of the National Parks and Wildlife Service (NPWS) site synopsis, Natura 2000 data forms and Conservation Objectives for European sites identified through potential pathways from the Proposed Development (<https://www.npws.ie/protected-sites>).



- Review of available literature and web data. This included a detailed review of the NPWS and National Biodiversity Data Centre (NBDC) websites including mapping and available reports for relevant sites and in particular Qualifying Interests and Special Conservation Interests described and their Conservation Objectives.
- GIS Online mapping (<http://dcenr.maps.arcgis.com>; and EPA Mapping database (<https://gis.epa.ie/EPAMaps/AAGeoTool>).

In addition, aerial photography (Google Earth, Bing Maps) and mapping (Ordnance Survey of Ireland, Geological Survey of Ireland) were used to identify non-designated habitats such as rivers, woodlands, and hedgerows of local ecological importance.

### 3.3 Field Study

An ecological field survey was undertaken by David McGillicuddy B.Sc. (Hons) in Wildlife Biology from MTU, QCIEEM. A site investigation at the proposed project area located south of Eyrecourt, Co. Galway, was undertaken on the 24<sup>th</sup> of November 2022 following best practice guidance methodologies for multi-disciplinary walkover surveys, as per the National Road Authority (NRA) (2008). The Site was searched for evidence of Annex I habitats and Annex II species listed on the EU Habitats Directive (92/43/EEC). The site was also searched for the presence of invasive plant species listed in Part 1 of the Third Schedule of S.I No. 477 of 2011, European Communities (Birds and Natural Habitats) Regulations (2011). Findings of the surveys were used to inform this NIS and are summarised below.

The purpose of the investigation was to define the site in terms of conservation status, habitat type and general composition, to identify any Annex I habitats or Annex II species and to take cognisance of the fact that some Annex species may not be present or easily observed, and as such should identify if suitable habitat for the species is present. It may then be assumed, using the precautionary principle, that the species is potentially present on the site. Note that Annex I habitats may be defined using indicator species which may not be present at time of survey.

The site was divided into different habitats and observations of fauna species present and surrounding land uses were also made in addition to research of available information from Biological Records Centre (NBDC, 2022) presented in **Appendix 2**.

*The following methodologies were adopted for this study:*

*Habitat identification follows:*

- Fossitt, J. A. 2000. A Guide to Habitats in Ireland. The Heritage Council, Kilkenny

*Plant species identification follows:*

- Webb, D. A., Parnell, J. and Doogue, D. 1996. An Irish Flora. Dundalgan Press, Dundalk
- Hubbard, C. E. 1992. Grasses: A Guide to their Structure, Identification, Uses and Distribution in the British Isles. Penguin Books, Middlesex.
- Smith, A. J. E. 2004. The Moss Flora of Britain & Ireland. 2nd Ed. Cambridge
- Jermy, A. C., Chater, A. O. & R. W. David. 1982. Sedges of the British Isles: BSBI Handbook No. 1. BSBI, London.

*Nomenclature follows:*

- Stace, C. 2010. New Flora of the British Isles. Cambridge University Press.

*Mammals:*

- Hayden, T. Harrington, R. 2000. Exploring Irish Mammals. Town House & Country House Ltd. Dublin.

### Avifauna:

- Cleave, A. 1995. Birds of Britain & Europe. Chancellor Press, Hong Kong.

### Overview of Habitat Survey:

The study area has been mapped in detail, following a phase 1 habitat survey, and was cross referenced with 'A Guide to Habitats in Ireland' (Fossitt, 2000). The findings of the Phase 1 habitat survey are described below, while habitat maps and photographs showing the extent of habitats within the proposed development site are presented in **Appendix 2 and 4**.

The majority of the site of the proposed development site is pastureland, which is classified as **GA1 (Improved agricultural grassland)**. The vegetation is dominated by common grass species, mainly rye grass (*Lolium sp.*) and Yorkshire fog (*Holcus lanatus*). Other species observed within the area include Creeping Bent (*Agrostis stolonifera*), Meadow Foxtail (*Alopecurus pratensis*), and Sweet Vernal Grass (*Anthoxanthum odoratum*). Common agricultural weeds can also be found within this habitat including creeping thistle (*Cirsium arvense*), spear thistle (*Cirsium vulgare*), ragwort (*Senecio jacobaea*), dock (*Rumex obtusifolius*), clover (*Trifolium sp.*), and creeping buttercup (*Ranunculus repens*). This is of low biodiversity value.

Hedgerows **WL1** and Treelines **WL2** are located along the southern and western edges of the proposed project field. The species found in these habitats included Hawthorn (*Crataegus monogyna*), Bramble (*Rubus fruticosus*), Holly (*Ilex aquifolium*), Gorse (*Ulex europaeus*), Ivy (*Hedera helix*), Bracken (*Pteridium aquilinum*), nettles (*Urtica dioica*), Ash (*Fraxinus excelsior*), Birch (*Betula pendula*) and Sycamore (*Acer pseudoplatanus*).

There are no built or artificial surfaces within the vicinity of the proposed project area, including houses, structures or roads, however there are access roads which are classified as **ED3 (Recolonising Bare Ground)**. Here common species include ragwort (*Senecio jacobaea*), willow herbs (*Epilobium sp.*), dandelion (*Taxacum sp.*), doc (*Rumex obtusifolius*), creeping thistle (*Cirsium arvense*), clover (*Trifolium sp.*) and bryophytes.

The proposed project area is adjacent to an oxbow channel of the Shannon River which is classified as **FW2 (Depositing/Lowland Rivers)**. This oxbow channel occurs along the eastern and northern boundaries of the proposed project area and connects into the Shannon River south of the proposed project area. There are Drainage Ditches **FW4** within the field of the proposed project area.

There is a low-lying area within the field that contained standing water at the time of the survey (November 24th, 2022). The habitat near this area is classified as **Wet Grassland (GS4)**. Common species here include hard rush (*Juncus inflexus*), cuckooflower (*Cardamine pratensis*), common rush (*Juncus effusus*), black bog rush (*Schoenus nigricans*), grasses such as Yorkshire-fog (*Holcus lanatus*), Creeping Bent (*Agrostis stolonifera*) and Marsh Foxtail (*Alopecurus geniculatus*) and creeping thistle (*Cirsium arvense*). Within the scrub species including gorse (*Ulex europaeus*), willow (*Salix sp.*), bramble (*Rubus fruticosus*), and birch (*Betula pendula*).

### Birds

Bird activity within the proposed development site and its surrounding environs was typical for the habitat assemblages present i.e. areas comprising of improved grassland and linear hedgerow habitats and drainage channels. To that end, the greatest levels of breeding bird activity was associated with habitats affording suitable cover, i.e. hedgerows and adjacent areas of treelines. The open areas of improved grassland, which are the majority of the site, are largely unsuitable for breeding passerine birds and ground nesting waders and wildfowl.

Species of interest of conservation concern such as hen harrier (*Circus cyaneus*) has been recorded within the 10km x 10km grid square (NBDC, 2022). Other species of conservation interest, and for which the SPA was designated, have also been observed within the 10km x 10km grid square (M91) such as Whooper Swan (*Cygnus cygnus*), Corncrake

(*Crex crex*), Golden Plover (*Pluvialis apricaria*), Lapwing (*Vanellus vanellus*), Black-tailed Godwit (*Limosa limosa*), and Black-headed Gull (*Larus ridibundus*).

Bird species that were seen or heard during the survey period are presented in **Appendix 2**.

### Mammals

No underground mammal dwellings including badger setts were encountered during the survey. No evidence of badger was encountered but this species has been recorded in previous surveys and is common in an agricultural setting and is likely to occur, at least occasionally, within the study area. No evidence of other mammal activity was observed during the site visit.

The drainage channels on site and nearby watercourses provide poor suitability to support otter commuting, foraging and feeding and it is unlikely that otter would use this site or its associated drainage channels. However, suitable habitats for these species are frequent in the larger geographic area. Otters (*Lutra lutra*) have been observed within the 10km x 10km grid square and the area is surrounded by suitable habitat in the form of the oxbow channel of the Shannon River. Thus, it cannot be ruled out that these species may use the site for foraging and/or passageway between areas.

The results of the Phase 1 habitat survey and photographs of the proposed development site are presented in **Appendix 2**.

## 3.4 Biological Water Quality Data

The Shannon River oxbow channel neighbouring the proposed project area is not detailed on the EPA mapping tool details for the Shannon River. The channel to the west of the project area and the main river channel to the south are both labelled on the EPA mapping tool. The Water Framework Directive (WFD) Status 2013 – 2018 shows an overall status of 'Moderate' for this channel as well as the Shannon River.

## 3.5 Flooding

A search of the Office of Public Works (OPW) Flood maps (<https://www.floodinfo.ie/map/floodmaps/>) shows the flood potential for the proposed project area. The entirety of Big Island is located within the low – medium probability zone for flood risk. While the majority of Big Island is also located within the High probability zone for flooding, there are small areas that are excluded from this probability. Some of these small sections are within the proposed project area. While there are no past flood events recorded within the proposed project area or Big Island, there are past flood records for the surrounding lands. See **Appendix 2** for the flood risk mapping and past flood events.

## 3.6 Geology, Hydrology and Hydrogeology

The Geological Survey of Ireland (GSI) online database was consulted for available geological and hydrological information of the proposed development site see **Appendix 2**. The proposed project area is relatively flat. Existing ground levels at the site range from 31 - 32m above sea level.

The most significant hydrological feature in the vicinity of the proposed development site is the Shannon River and associated oxbow channel. The river itself runs along the southern boundary of Big Island and the oxbow channel occurs along the eastern and northern edges of the proposed project area. The River Nore is the predominant hydrological feature in the vicinity of the proposed development site. Within the site there are field drains which connect to the river.



The bedrock underlying the proposed project area is part of the Visean limestone and calcareous shale as part of the Palaeozoic, Carboniferous, Mississippian Geological age (1 million). The 100k GSI bedrock for the project area is described as the Lucan Formation which has dark limestone and shale. The bedrock aquifer is classified as a Locally Important Aquifer with bedrock which is moderately productive only in local zones.

The GSI classifies vulnerability of the bedrock aquifer underlying the location of the proposed project areas as Moderate (M) Vulnerability. Groundwater vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities. Where the subsoil thickness is >3 m, the vulnerability is rated as High, Moderate or Low (depending on the nature and thickness of the subsoil).

There are no significant sensitive hydrogeological or groundwater features or resources within or in the immediate vicinity of the site, such as public or group groundwater supply sources. Existing properties in the vicinity of the site are supplied either via public mains supply or via individual private wells.

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## Section 4: STAGE 1. SCREENING FOR APPROPRIATE ASSESSMENT

### 4.1 Overview of Potential Impacts

The main threats and pressures to the River Shannon Callows SAC (000216) and the Middle Shannon Callows SPA (004096) are the same: abandonment of pastoral systems, lack of grazing; grazing; urbanised areas, human habitation; paths, tracks, cycling tracks; bridge, viaduct; nautical sports; fertilisation; walking, horse riding, and non-motorised vehicles; hunting; and leisure fishing.

The main threats and pressures to the downstream Natura 2000 site of Lough Derg, North-east Shore SAC (002241) are: paths, tracks, cycling tracks; piers/tourist harbours or recreational piers; pollution to surface waters (limnic, terrestrial, marine and brackish); invasive non-native species; eutrophication (natural); intensive grazing; removal of hedges and copses or scrub; problematic native species; human induced changes to hydraulic conditions; species composition change (succession); temperature changes (e.g. rise of temperature and extremes); droughts and less precipitation; flooding and rise of precipitation; fertilisation; mining and quarrying; outdoor sports and leisure activities, recreational activities; diffuse pollution to surface waters due to household sewage and waste waters; infilling of ditches, dykes, ponds, pools, marshes or pits; and management of aquatic and bank vegetation for drainage purposes. While the main threats and pressures to the downstream Natura 2000 site of Lough Derg (Shannon) SPA (004058) are hunting, leisure fishing, nautical sports and fertilisation.

A screening matrix of unmitigated impacts on the Natura 2000 habitats and species found to be present, or considered possibly present, is presented in **Section 5**. The reasons for decision in the screening matrix are detailed below. Potential impacts on habitats and species not occurring within the zone of impact can be screened out.

There are a few elements associated with the proposed project that may give rise to direct and indirect impacts that have the potential to result in likely significant effects on European sites. The significance of these impacts depends on the scale of the impact as well as the ecological condition and the sensitivities of the qualifying interests. Elements of the proposed development that may give rise to impacts which have been considered with regards to potential likely significant effects to European sites are as follows:

- Release of sediment and pollutants which may be discharged into surface water, particularly during high rainfall events.
- Movement of vehicles and machinery associated with till works and the potential for spillages of oils, fuels or other pollutants which could be transported to the surface water system during rainfall events.
- Increased silt loading, which may stunt aquatic plant growth, limit dissolved oxygen capacity and overall reduce the ecological quality of watercourses, with the most critical period associated with low flow conditions.
- The introduction or spread of invasive alien species due to equipment on site.
- Disturbance to fauna (e.g. through noise from construction activity and/or human presence) resulting in the displacement of affected species.
- Accidental mortality of wildlife from farming machinery.

These potential impacts listed above are associated with the implementation, and not the operational phase.

### 4.2 Determining the Likely Zone of Influence

Guidance on AA of Plans and Projects in Ireland notes that a distance of 15km is recommended in the case of plans, derived from UK guidance. In some cases, the distance could be much less, or much more than 15km, but this must

be evaluated on a case-by-case basis with reference to the nature, size and location of the proposed development, and the sensitivities of the ecological receptors and for the in-combination effects (OPR, 2021).

Using the source-receptor-pathway model an examination of the potential effects of the Proposed Development was undertaken (alone and in-combination with other plans and projects) to identify what European sites, and which of their Qualifying Interests or Special Conservation Interest species were potentially at risk. This examination was used to determine the Zone of Influence (Zoi) for the Proposed Development.

It is vital that an assessment of potential pathways is undertaken to assess potential impact links between the receptor (European sites) and source (proposed development) to establish the risk of any likely significant effects. Additional designated sites including proposed Natural Heritage Areas (pNHA's), Natural Heritage Areas (NHA's) sites were also reviewed, although they do not form part of the AA, they often provide important supporting functions to European sites.

With regards to potential habitat degradation effects associated with the release of sediment and other pollutants to surface water, the Zoi of the Proposed Development is considered to include receiving water bodies adjacent to, or downstream of, the Proposed Development Site during the Construction, Operational and Decommissioning Phases. The distance downstream is associated with the current biological condition of the accepting water body and its capacity to accept and assimilate sediment and other pollutants. The distance downstream is also associated with the sensitivity of the Qualifying Interests of the European Site which is hydrologically connected to the Proposed Development Site.

Noise from construction activities has the potential to cause disturbance to resting, foraging and commuting Qualifying Interest and Special Conservation Interest species. With regards to disturbance effects, the potential Zoi is considered to be in the local vicinity (within 300m) of the Proposed Development during the Construction Phase. The proposed works during the construction phase are anticipated to generate relatively low levels of noise and only during permitted construction hours. In general, machinery will be designed to ensure that the maximum noise level 10m outside the site boundary do not exceed an equivalent continuous sound level beyond what is recommended in the BSI British Standards (BS5228-1:2009+A1:2014). It should be noted, no night works are anticipated.

### 4.3 Identification of Relevant European Sites

The source-receptor-pathway (S-P-R) conceptual model was used to identify a list of 'relevant' European sites (i.e. those which could be potentially affected by the Proposed Development). This conceptual model is a standard tool in environmental assessment (OPR, 2021). In order for an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no likelihood for the effect to occur. In the context of the Proposed Development, the model comprises:

- Source (s) – e.g. Sediment run-off from proposed development works.
- Pathway (s) – e.g. Rivers and drains connecting to a European site.
- Receptor (s) – e.g. Special Conservation Interests (SCI) or Qualifying Interests (QI).

There are currently 16 European sites within 15km of the Proposed Development (**Table 4.1**): River Shannon Callows SAC (000216), Redwood Bog SAC (002353), All Saints Bog and Esker SAC (000566), Ardgraique Bog SAC (002356), Ridge Road, SW of Rapemills SAC (000919); Kilcarren-Firville Bog SAC (000647), Ballyduff/Clonfinane Bog SAC (000641), Arragh More (Derrybreen) SAC (002207), Lough Derg, North-east Shore SAC (002241), Liskeenan Fen SAC (001683), Middle Shannon Callows SPA (004096), River Little Brosna Callows SPA (004086), All Saints Bog SPA (004103), River Suck Callows SPA (004097), Lough Derg (Shannon) SPA (004058), and Dovegrove Callows SPA (004137).

Of these sites, the River Shannon Callows SAC (000216) and Middle Shannon Callows SPA (004096) are considered relevant based on proximity to the proposed development and source-receptor pathway relationships.

Table 4.1: European Sites located within 15 km of the Proposed Development Site.

Designated Site	Site Code	Approximate Distance from Proposed Works (m)
River Shannon Callows SAC	000216	0.00
Redwood Bog SAC	002353	1015.84
All Saints Bog and Esker SAC	000566	6527.97
Ardgraigue Bog SAC	002356	8920.56
Ridge Road, SW of Rapemills SAC	000919	10158.51
Kilcarren-Firville Bog SAC	000647	10392.52
Ballyduff/Clonginane Bog SAC	000641	10570.64
Arragh More (Derrybreen) Bog SAC	002207	10728.84
Lough Derg, North-east Shore SAC	002241	10897.18
Liskeenan Fen SAC	001683	14647.37
Middle Shannon Callows SPA	004096	0.00
River Little Brosna Callows SPA	004086	1252.51
All Saints Bog SPA	004103	6521.17
River Suck Callows SPA	004097	10972.29
Lough Derg (Shannon) SPA	004058	11060.90
Dovegrove Callows SPA	004137	11417.44

Potential impacts and their significance, if any, within the European sites are considered below. Impacts are considered in light of the Conservation Objectives/Special Conservation Interests for which these European sites are designated.

## 4.4 Stage 1: Screening of Relevant European Sites

### 4.4.1 Special Areas of Conservation (SACs)

Natura site(s)	Potential effects to Natura Site	Likely Zone of Impact Determination
<p>River Shannon Callows SAC (000216)</p> <p>0.00m</p>	<p>Yes</p>	<p>The PA is located within the boundary of the European site and there is potential for direct impacts on the following QIs: <b>6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)</b>, <b>6510 Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)</b>, <b>7230 Alkaline fens</b>, <b>8240 Limestone pavements*</b>, <b>91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)*</b>, and <b>1355 Otter (Lutra lutra)</b></p> <p>The boundary of the PA occurs on the border of this designated site and therefore there are potential impacts on the QIs listed above.</p> <p>Based on this rationale, River Shannon Callows SAC (000216) has been screened-in for potential impacts.</p>
<p>Redwood Bog SAC (002353)</p> <p>1015.84m</p>	<p>No</p>	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QIs: <b>7110 Active raised bogs*</b>, <b>7120 Degraded raised bogs still capable of natural regeneration</b>, and <b>7150 Depressions on peat substrates of the Rhynchosporion</b>.</p> <p>There are no pathways (physical or hydrological connections which could act as a route for potential impacts) from the source site and so the Qualifying Interests of this SAC cannot be affected. Therefore, this Natura 2000 cannot be considered a potential receptor.</p> <p>Based on this rationale, Redwood Bog SAC (002353) has been screened-out for potential impacts.</p>

<p>All Saints Bog and Esker SAC (000566)</p> <p>6527.97m</p>	<p>No</p>	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QIs: <b>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites), 7110 Active raised bogs*, 7120 Degraded raised bogs still capable of natural regeneration, 7150 Depressions on peat substrates of the Rhynchosporion, and 91D0 Bog woodland*</b></p> <p>There are no pathways (physical or hydrological connections which could act as a route for potential impacts) from the source site and so the Qualifying Interests of this SAC cannot be affected. Therefore, this Natura 2000 cannot be considered a potential receptor.</p> <p>Based on this rationale, All Saints Bog and Esker SAC (000566) has been screened-out for potential impacts.</p>
<p>Ardgraique Bog SAC (002356)</p> <p>8920.56m</p>	<p>No</p>	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QIs: <b>7110 Active raised bogs*, 7120 Degraded raised bogs still capable of natural regeneration, and 7150 Depression on peat substrates of the Rhynchosporion</b></p> <p>There are no pathways (physical or hydrological connections which could act as a route for potential impacts) from the source site and so the Qualifying Interests of this SAC cannot be affected. Therefore, this Natura 2000 cannot be considered a potential receptor.</p> <p>Based on this rationale, Ardgraique Bog SAC (002356) has been screened-out for potential impacts.</p>
<p>Ridge Road, SW of Rapemills SAC (000919)</p> <p>10158.51m</p>	<p>No</p>	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QIs: <b>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites)</b></p> <p>There are no pathways (physical or hydrological connections which could act as a route for potential impacts) from the source site and so the Qualifying Interests of this SAC cannot be affected. Therefore, this Natura 2000 cannot be considered a potential receptor.</p> <p>Based on this rationale, Ridge Road, SW of Rapemills SAC (000919) has been screened-out for potential impacts.</p>
<p>Kilcareen-Firville Bog SAC (000647)</p> <p>10392.52m</p>	<p>No</p>	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QIs: <b>7110 Active raised bogs*, 7120 Degraded raised bogs still capable of natural regeneration, and 7150 Depressions on peat substrates of the Rhynchosporion.</b></p> <p>There are no pathways (physical or hydrological connections which could act as a route for potential impacts) from the source site and so the Qualifying Interests of this SAC cannot be affected. Therefore, this Natura 2000 cannot be considered a potential receptor.</p>

		Based on this rationale, Kilcareen-Firville SAC (000647) has been screened-out for potential impacts.
Ballyduff/Clonfinane Bog SAC (000641)  10570.64m	No	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QIs: <b>7110 Active raised bogs*</b>, <b>7120 Degraded raised bogs still capable of natural regeneration</b>, <b>7150 Depressions on peat substrates of the Rhynchosporion</b>, and <b>91D0 Bog woodland*</b></p> <p>There are no pathways (physical or hydrological connections which could act as a route for potential impacts) from the source site and so the Qualifying Interests of this SAC cannot be affected. Therefore, this Natura 2000 cannot be considered a potential receptor.</p> <p>Based on this rationale, Ballyduff/Clonfinane SAC (000641) has been screened-out for potential impacts.</p>
Arragh More (Derrybreen) Bog SAC (002207)  10728.84m	No	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QI: <b>7120 Degraded raised bogs still capable of natural regeneration</b>.</p> <p>There are no pathways (physical or hydrological connections which could act as a route for potential impacts) from the source site and so the Qualifying Interests of this SAC cannot be affected. Therefore, this Natura 2000 cannot be considered a potential receptor.</p> <p>Based on this rationale, Arragh More (Derrybreen) SAC (002207) has been screened-out for potential impacts.</p>
Lough Derg, North-east Shore SAC (002241)  10897.18m	Yes	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QIs: <b>5130 Juniperus communis formations on heaths or calcareous grassland</b>, <b>7210 Calcareous fens with Cladium mariscus and species of the Caricion davallianae*</b>, <b>7230 Alkaline fens</b>, <b>8240 Limestone pavements*</b>, <b>91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)*</b>, and <b>91J0 Taxus baccata woods of the British Isles*</b></p> <p>The Lough Derg, North-east Shore SAC (002241) has a hydrological connection approximately 13.7km downstream of the PA. Therefore, there are potential impacts on the QIs listed above.</p> <p>Based on this rationale, Lough Derg, North-east Shore SAC (002241) has been screened-in for potential impacts.</p>
Liskeenan Fen SAC (001683)  14647.37m	No	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QIs: <b>7210 Calcareous fens with Cladium mariscus and species of the Caricion davallianae*</b></p> <p>There are no pathways (physical or hydrological connections which could act as a route for potential impacts) from the</p>



		<p>source site and so the Qualifying Interests of this SAC cannot be affected. Therefore, this Natura 2000 cannot be considered a potential receptor.</p> <p>Based on this rationale, Lough Derg, North-east Shore SAC (002241) has been screened-out for potential impacts.</p>
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## 4.4.2 Special Protection Areas (SPAs)

Natura site(s)	Potential effects to Natura Site	Rationale
<p>Middle Shannon Callows SPA (004096)</p> <p>0.0m</p>	<p>Yes</p>	<p>The PA is located within the boundary of the European site and there is potential for direct impacts on the following QIs: <b>A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>)</b>, <b>A050 Wigeon (<i>Anas penelope</i>)</b>, <b>A140 Golden Plover (<i>Pluvialis apricaria</i>)</b>, <b>A038 Whooper Swan (<i>Cygnus cygnus</i>)</b>, <b>A156 Black-tailed Godwit (<i>Limosa limosa</i>)</b>, <b>A142 Lapwing (<i>Vanellus vanellus</i>)</b>, <b>A122 Corncrake (<i>Crex crex</i>)</b> and <b>Wetlands</b>.</p> <p>The PA occurs on the boundary of this European site and therefore there are potential impacts on the QIs listed above.</p> <p>Based on this rationale, Middle Shannon Callows SPA (004096) has been screened-in for potential impacts.</p>
<p>River Little Brosna Callows SPA (004086)</p> <p>1252.51m</p>	<p>No</p>	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QIs: <b>A395 Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)</b>, <b>A052 Teal (<i>Anas crecca</i>)</b>, <b>A050 Wigeon (<i>Anas penelope</i>)</b>, <b>A056 Shoveler (<i>Anas clypeata</i>)</b>, <b>A038 Whooper Swan (<i>Cygnus cygnus</i>)</b>, <b>A142 Lapwing (<i>Vanellus vanellus</i>)</b>, <b>A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>)</b>, <b>A140 Golden Plover (<i>Pluvialis apricaria</i>)</b>, <b>A156 Black-tailed Godwit (<i>Limosa limosa</i>)</b>, <b>A054 Pintail (<i>Anas acuta</i>)</b> and <b>Wetlands</b></p> <p>The River Little Brosna Callows SPA (004086) is upstream of the PA which acts as a connection between the Natura 2000 site and the PA, however, there is no potential for impacts on the SPA as it is upstream. Therefore, this Natura 2000 cannot be considered a potential receptor.</p> <p>Based on this rationale, River Little Brosna Callows SPA (004086) has been screened-out for potential impacts.</p>

<p>All Saints Bog SPA (004103)</p> <p>6521.17m</p>	<p>No</p>	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QI: <b>A395 Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)</b></p> <p>There are no pathways (physical or hydrological connections which could act as a route for potential impacts) from the source site and so the Qualifying Interests of this SPA cannot be affected. Therefore, this Natura 2000 cannot be considered a potential receptor.</p> <p>Based on this rationale, All Saints Bog SPA (004103) has been screened-out for potential impacts.</p>
<p>River Suck Callows SPA (004097)</p> <p>10972.29m</p>	<p>No</p>	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QI: <b>A395 Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>), A140 Golden Plover (<i>Pluvialis apricaria</i>), A050 Wigeon (<i>Anas penelope</i>), A142 Lapwing (<i>Vanellus vanellus</i>), A038 Whooper Swan (<i>Cygnus cygnus</i>) and wetlands.</b></p> <p>The River Suck Callows SPA (004097) is upstream of the PA which acts as a connection between the Natura 2000 site and the PA, however, there is no potential for impacts on the SPA as it is upstream. Therefore, this Natura 2000 cannot be considered a potential receptor.</p> <p>Based on this rationale, River Suck Callows SPA (004097) has been screened-out for potential impacts.</p>
<p>Lough Derg (Shannon) SPA (004058)</p> <p>11060.90m</p>	<p>Yes</p>	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QIs: <b>A017 Cormorant (<i>Phalacrocorax carbo</i>), A061 Tufted Duck (<i>Aythya fuligula</i>), A067 Goldeneye (<i>Bucephala clangula</i>), A193 Common Tern (<i>Sterna hirundo</i>) and wetlands.</b></p> <p>The Lough Derg (Shannon) SPA (004058) has a hydrological connection approximately 13.7km downstream of the PA. Therefore, there are potential impacts on the QIs listed above.</p> <p>Based on this rationale, Lough Derg (Shannon) SPA (004058) has been screened-in for potential impacts.</p>
<p>Dovegrove Callows SPA (004137)</p> <p>11417.44m</p>	<p>No</p>	<p>The PA is located entirely outside the European site. Therefore, there is no potential for direct impacts on the following QI: <b>A395 Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>).</b></p> <p>There are no pathways (physical or hydrological connections which could act as a route for potential impacts) from the source site and so the Qualifying Interests of this SPA cannot be affected. Therefore, this Natura 2000 cannot be considered a potential receptor.</p> <p>Based on this rationale, Dovegrove Callows SPA (004137) has been screened-out for potential impacts.</p>

The Hydrology map in the Appendices is taken from the EPA website <https://gis.epa.ie/EPAMaps/AAGeoTool>. The watercourse(s) are labelled along with directional flow (See Appendix 1). Where the flow of the watercourses is away from or does not flow into European sites mentioned, no Qualifying Interests have been recorded within 10km/2km\* of the site and/or there is no hydrological connection to the European sites, these sites have been screened out.

European sites (SPA/SAC) downstream with direct hydrological connections, or any European sites within 15km where QIs have been recorded on or within 2km of site have been screened in.

Figure 4.1: European Sites within the proposed development's Zone of Influence using SPR model.

Site Code	Site Name	Qualifying Features / Special Conservation Interest Species	Distance from Study Area	Source-Pathway-Receptor Connectivity
000216	River Shannon Callows SAC	6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) 6510 Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) 7230 Alkaline Fens 8240 Limestone pavements* 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* 1355 Otter (Lutra lutra)	0.00m	The PA is located within the Natura 2000 site and has direct connectivity
002353	Redwood Bog SAC	7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion	1015.84m	No source pathway connectivity via surface water, groundwater or environmental vectors
000566	All Saints Bog and Esker SAC	6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia)(*important orchid sites) 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion 91D0 Bog woodland*	6527.97m	No source pathway connectivity via surface water, groundwater or environmental vectors
002356	Ardgraique Bog SAC	7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion	8920.56m	No source pathway connectivity via surface water, groundwater or environmental vectors
000919	Ridge Road, SW of Rapemills SAC	6210 Semi-natural dry grassland and scrubland facies on calcareous substrates (Festuco-Brometalia)(*important orchid sites)	10158.51m	No source pathway connectivity via surface water, groundwater or environmental vectors
000647	Kilcarren-Firville Bog SAC	7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depression on peat substrates of the Rhynchosporion	10392.52m	No source pathway connectivity via surface water, groundwater or environmental vectors
000641	Ballyduff/Clonfinane Bog SAC	7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion 91D0 Bog woodland*	10570.64m	No source pathway connectivity via surface water, groundwater or environmental vectors
002207	Arragh More (Derrybreen) Bog SAC	7120 Degraded raised bogs still capable of natural regeneration	10728.84m	No source pathway connectivity via surface water, groundwater or environmental vectors
002241	Lough Derg, North-east Shore SAC	5130 Juniperus communis formations on heaths or calcareous grasslands 7210 Calcareous fens with Cladium mariscus and species of the Caricion davallianae* 7230 Alkaline fens 8240 Limestone pavements* 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)*	10897.18m	Located approximately 13.7km downstream of the PA and has indirect connectivity

		91J0 <i>Taxus baccata</i> woods of the British Isles*		
001683	Liskeenan Fen SAC	7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> *	14647.37m	No source pathway connectivity via surface water, groundwater or environmental vectors
004096	Middle Shannon Callows SPA	A179 Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) A050 Wigeon ( <i>Anas penelope</i> ) A140 Golden Plover ( <i>Pluvialis apricaria</i> ) A038 Whooper Swan ( <i>Cygnus cygnus</i> ) A156 Black-tailed Godwit ( <i>Limosa limosa</i> ) A142 Lapwing ( <i>Vanellus vanellus</i> ) A122 Corncrake ( <i>Crex crex</i> ) Wetlands	0.00m	The PA is located within the Natura 2000 site and has direct connectivity
004086	River Little Brosna Callows SPA	A395 Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) A052 Teal ( <i>Anas crecca</i> ) A050 Wigeon ( <i>Anas penelope</i> ) A056 Shoveler ( <i>Anas clypeata</i> ) A038 Whooper Swan ( <i>Cygnus cygnus</i> ) A142 Lapwing ( <i>Vanellus vanellus</i> ) A179 Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) A140 Golden Plover ( <i>Pluvialis apricaria</i> ) A156 Black-tailed Godwit ( <i>Limosa limosa</i> ) A054 Pintail ( <i>Anas acuta</i> ) Wetlands	1252.51m	No source pathway connectivity via surface water, groundwater or environmental vectors
004103	All Saints Bog SPA	A395 Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> )	6521.17m	No source pathway connectivity via surface water, groundwater or environmental vectors
004097	River Suck Callows SPA	A395 Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) A140 Golden Plover ( <i>Pluvialis apricaria</i> ) A050 Wigeon ( <i>Anas penelope</i> ) A142 Lapwing ( <i>Vanellus vanellus</i> ) A038 Whooper Swan ( <i>Cygnus cygnus</i> ) Wetlands	10972.29m	No source pathway connectivity via surface water, groundwater or environmental vectors
004058	Lough Derg (Shannon) SPA	A017 Cormorant ( <i>Phalacrocorax carbo</i> ) A061 Tufted Duck ( <i>Aythya fuligula</i> ) A067 Goldeneye ( <i>Bucephala clangula</i> ) A193 Common Tern ( <i>Sterna hirundo</i> ) Wetlands	11060.90m	Located approximately 13.7km downstream of the PA and has indirect connectivity
004137	Dovegrove Callows SPA	A395 Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> )	11417.44m	No source pathway connectivity via surface water, groundwater or environmental vectors

## 4.5 Nationally Designated Sites

Natural Heritage Areas (NHAs) are sites deemed to be of national ecological importance and are afforded protection under the Wildlife Act 1976 (as amended), with many NHA boundaries overlapping with European sites. There are 12 NHAs within a 15km radius of the proposed development site and 15 proposed Natural Heritage Areas (pNHAs) located within the 15km radius of the proposed development site.

The NHAs located within a 15km radius of the proposed development site includes River Little Brosna Callows NHA (000564), Ballymacegan Bog NHA (000642), Meeneen Bog NHA (000310), Kileen Bog NHA (000648), Arragh More Bog NHA (000640), Lorrha Bog NHA (001684), Capiira/Derrew Bog NHA (001240), Moorfield Bog NHA (001303), Cloonoolish Bog NHA (000249), Eskerboy Bog NHA (001264), Kilnaborris Bog NHA (000284), Suck River Callows NHA (000222).

The pNHAs located within a 15km radius of the proposed development site includes River Shannon Callows pNHA (000216), Redwood Bog pNHA (000654), All Saints Bog and Esker pNHA (000566), Ridge Road, SW of Rapemills pNHA

(000919), Ross and Glens Ekers pNHA (000920), Dovegrove Callows pNHA (000010), Woodville Woods pNHA (000927), Lough Coura pNHA (000909), Grand Canal pNHA (002104), Ballyduff/Clonfinane Bog pNHA (000641), Kilcarren-Firville Bog pNHA (000647), Friar's Lough pNHA (000933), Lough Derg pNHA (000011), Ardgraique Bog pNHA (001224), and Cloonascragh Fen and Black Wood pNHA (001247).

The pNHAs have not been statutorily proposed or designated under the Wildlife Act (as amended), however they are afforded some protection under County Development Plans including such schemes as agri-environment schemes (Rural Environment Protection Scheme (REPS) and Agri Environmental Options Scheme (AEOS)).

In the case of County Galway, the Galway County Council Draft Development Plan includes the following Policy Objectives for Natural Heritage and Biodiversity.

*Protect and where possible enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts) and extend to any additions or alterations to sites that may occur during the lifetime of this plan.*

*Protect and, where possible, enhance the plan and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976 – 2010 and the Flora Protection Order (SI 94 of 1999).*

*Support the protection, conservation and enhancement of natural heritage and biodiversity, including the protection of the integrity of European sites, that form part of the Natura 2000 network, the protection of Natural Heritage Areas, proposed Natural Heritage Areas, Ramsar Sites, Nature Reserves, Wild Fowl Sanctuaries (and other designated sites including any future designations) and the promotion of the development of green/ecological network.*

Table 4.2: Nationally Designated Sites within 15km of the Proposed Development.

Site Name and Code	Approximate Distance from the Proposed Development	Connectivity
<b>Natural Heritage Areas (NHA)</b>		
River Little Brosna Callows NHA 000564	1.4km southeast	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Ballymacegan Bog NHA 000642	1.6km southwest	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Meeneen Bog NHA 000310	3.1km southwest	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Kilnaborris Bog NHA 000284	4.4km northeast	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Moorgield Bog NHA 001303	7.3km northwest	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Lorrha Bog NHA 001684	7.5km south	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Capira/Derrew Bog NHA 001240	8.7km southwest	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.



Cloonoolish Bog NHA 000249	10.4km northwest	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Arragh More Bog NHA 000640	10.8km south	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Suck River Callows NHA 000222	10.9km north	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Killeen Bog NHA 000648	11.7km southeast	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Eskerboy Bog NHA 001264	14.6km northwest	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
<b>Proposed Natural Heritage Areas (pNHA)</b>		
River Shannon Callows pNHA 000216	0.00km	The proposed development site occurs within the boundary of this designated site and therefore potential impacts are possible.
Redwood Bog pNHA 000654	1.4km south	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
All Saints Bog and Esker pNHA 000566	6.7km southeast	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Ardgraique Bog pNHA 001224	8.9km west	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Friar's Lough pNHA 000933	8.9km southwest	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Ridge Road, SW of Rapemills pNHA 000919	10.4km southeast	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Kilcarren-Firville Bog pNHA 000647	10.7km south	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Ballyduff/Clonfinane Bog pNHA 000641	10.9km south	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Grand Canal pNHA 002104	10.9km northeast	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Ross and Glenns Eskers pNHA 000920	11.8km southeast	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Lough Derg pNHA 000011	12.1km southwest	There is direct hydrological connection between the proposed development site and this designated site through environmental vectors. Therefore, potential impacts are possible.
Dovegrove Callows pNHA 000010	12.2km southeast	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.



Woodville Woods pNHA 000927	12.8km southeast	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Cloonascragh Fend and Black Wood pNHA 001247	13.8km northwest	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.
Lough Coura pNHA 000909	14.5km east	There is no source pathway receptor linkage between the proposed development site, and this designated site via environmental vectors, including hydrological or hydrogeological vectors. Therefore, potential impacts are not possible.

## 4.6 Screening Conclusion

The proposed development occurs within the boundaries for River Shannon Callows SAC (000216) and Middle Shannon Callows SPA (004096). The proposed development has a hydrological connection to Lough Derg, North-east Shore SAC (002241) and Lough Derg (Shannon) SPA (004058) which are both located approximately 13.7km downstream.

The proposed development also occurs within the boundary for the pNHA of River Shannon Callows (000216) and has a surface hydrological connection to pNHA Lough Derg (000011) which is located approximately 13.7km downstream of the proposed development area.

Thus, the screening assessment determined that, in view of best scientific knowledge and in the absence of mitigation measures, potential likely significant effects from the Proposed Development cannot be ruled out for the River Shannon Callows SAC (000216), Middle Shannon Callows SPA (004096), Lough Derg, North-east Shore SAC (002241) and Lough Derg (Shannon) SPA (004058) in view of the European sites' conservation objectives. A Stage 2 (Appropriate Assessment) is therefore required to assist the competent authority in undertaking an Appropriate Assessment of the potential for adverse effects from the Proposed Development, alone or in-combination with other plans and projects, on the integrity of these European Sites.

## Section 5: STAGE 2. SCREENED IN EUROPEAN SITES

### 5.1 Conservation Objectives

Conservation objectives for Natura 2000 Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) have to be set for the habitats and species for which the sites are selected. These objectives are used when carrying out appropriate assessments for plans and projects that might impact on these sites.

Site-specific conservation objectives outline attributes with targets, which define favourable condition for a habitat or species at a particular site. They are used for appropriate assessment of plans or projects. In addition, they can provide useful information for conservation management planning. The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

The concept of favourable conservation status is central to the E.U. Habitats Directive. Annex I habitats, Annex II species, and habitats of Annex II species (of the Habitats Directive), as well as the Birds Directive Annex I species and other species designated as Special Conservation Interests must be maintained at or restored to favourable conservation status.

In summary, it is required that the range and areas of the listed habitats, and the range and population of the listed species, should be at least maintained at their status at the time of designation. Site-specific conservation objectives for each European site aim to define favourable conservation conditions for habitats/species of the site.

European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status areas designated as SAC and SPA. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing.
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.
- The conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future.
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The integrity of a European site (referred to in Article 6.3 of the EU Habitats Directive) is determined based on the conservation objectives and of the site. The Qualifying Interests (QI) and Special Conservation Interests (SCI) are obtained through a review of the most recently published (web-published or otherwise) Conservation Objective supporting documents and Site-Specific Conservation Objectives documents (where available) for the European site.

## 5.2 European Site Descriptions

Site descriptions for European Sites within the project Zol are presented below.

### River Shannon Callows SAC (000216)

The River Shannon Callows SAC is a long and diverse site consisting of seasonally flooded, semi-natural, lowland grassland, between the towns of Athlone and Portumna beside and along the river. This SAC is approximately 50km long and averages about 0.75km wide but can be as wide as 1.5km in places. Much of the border of the site contains raised bogs (many of which, but not all are subject to harvesting), esker ridges and limestone-bedrock hills. Soils range from silty-alluvial to peat. This SAC is closely associated with two other SAC containing similar habitats: River Suck Callows and Little Brosna Callows.

This SAC is composed mainly of lowland wet grassland. Dependent on elevation, and therefore flooding patterns, different plant communities occur. Two Annex I (under the EU Habitats Directive) habitats are well represented within this SAC – Molinia meadows and lowland hay meadows. A further two Annex I habitats, which are both listed as priority habitats, have a minor presence within the SAC. These habitats are alluvial forests and limestone pavements. Small areas of other habitats also occur within the SAC including lowland dry grassland, drainage ditches, freshwater marshes and reedbeds. The dry grassland areas, especially where they exist within hay meadows, are species-rich, and of two main types: calcareous grassland on glacial material, and dry grassland on levees of river alluvium.

The site is an SAC under the EU Habitats Directive for the following habitats and species:

- 6410 Molinia Meadows
- 6510 Lowland Hay Meadows
- 7230 Alkaline Fens
- 8240 Limestone Pavement
- 91E0 Alluvial Forests
- 1355 Otter (*Lutra lutra*)

Opposite-leaved Pondweed (*Groenlandia densa*) and Meadow Barley (*Hordeum secalinum*) occur within the site and are listed under the Flora (Protection) Order, 2015. Green-winged Orchid (*Anacamptis morio*) is found within dry calcareous grasslands within the site and is listed a Red Data Book plant.

Otters are listed on Annex II under the EU Habitats Directive, while Irish Hare (*Lepus timidus*) is listed in the Irish Red Data Book. Both occur within this SAC.

### Middle Shannon Callows SPA (004096)

The Middle Shannon Callows SPA boundaries follow closely to the River Shannon Callows SAC. This site is approximately 50km long from the town of Athlone to the town of Portumna and occurs within Counties Galway, Roscommon, Westmeath, Offaly and Tipperary. On average the site is 0.75km wide but it does increase to 1.5km wide in places. Between Athlone and Portumna the water level is highly dependent on a weir which is located at Meelick. Along both sides of the river there are extensive areas of callow, or seasonally flooded, semi-natural, lowland wet grassland. Smaller habitats occur along the river of lowland dry grassland, freshwater marshes, reedbeds and wet woodland.

The site is an SPA under the Birds Directive for:

- A038 Whooper Swan (*Cygnus cygnus*)
- A050 Wigeon (*Anas penelope*)
- A122 Corncrake (*Crex crex*)
- A140 Golden Plover (*Pluvialis apricaria*)

- A142 Lapwing (*Vanellus vanellus*)
- A156 Black-tailed Godwit (*Limosa limosa*)
- A179 Black-headed Gull (*Chroicocephalus ridibundus*)
- A999 Wetland and waterbirds

This site is also a conservation interest for holding an assemblage of over 20,000 wintering waterbirds (23,656 – four year mean peak for four of the winters between 1995/6 and 1999/2000). Internationally important populations of Whooper Swan (305 – five year mean peak period between 1995/1996 to 1999/2000) are supported on this site along with Black-tailed Godwit (485 – four year mean peak for four of the winters between 1995/6 and 1999/2000). Nationally important populations of Wigeon (3,059), Golden Plover (4,133), Lapwing (13,240) and Black-headed Gull (1,209). All of these species have four year mean peaks for the four winters between 1995/6 and 1999/2000. Other species occur within this area including Mute Swan (407), Teal (88), Tufted Duck (41), Dunlin (335), Curlew (162), Redshank (39) and small numbers of Greenland White-fronted Goose (peak 55 in 1998/9).

This area is also an important site for breeding waders with the total population on the Shannon and Little Brosna Callows being one of three major concentrations in Ireland and Britain in 1987. A study in 2002 recorded the following waders Lapwing (63 pairs), Redshank (116 pairs), Snipe (139 drumming birds) and Curlew (8 pairs). A very rare breeding species in Ireland, the Black-tailed Godwit, nests in small numbers each year within the site. The Shoveler, another rare species, also nests in small numbers each year (12 pairs in 1987).

Corncrake is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species and is found within this site with nationally important numbers. Birds of prey are also observed within the site including Merlin, and wintering Hen Harrier. A variety of passerine species has been observed within the grassland and swamps within the site including Sedge Warbler, Grasshopper Warbler, Skylark, Reed Bunting, Whinchat and Kingfisher.

### Lough Derg, North-east Shore SAC (002241)

Lough Derg is the lowest order lake on the River Shannon and is one of the largest bodies of freshwater in Ireland. This SAC includes only the northern shore of the lake from the mouth of the Cappagh River in the north-west to just below Black Lough at the north-eastern shore.

The site is designated for the following habitats:

- 5130 Juniper Scrub
- 7210 Cladium Fens
- 7230 Alkaline Fens
- 8240 Limestone Pavement
- 91E0 Alluvial Forests
- 91J0 Yew Woodlands

The lake shore geology is primarily limestone and in places it protrudes at the surface in the form of boulders and rubble. A second priority Annex I habitat occurs within the SAC along the lake margins, Cladium fen. While yew woods are mostly confined to the west of the country, a substantial area of yew is located at Cornalack. Juniper occurs across the site in a range of habitats including in association with calcareous grasslands, heath, and limestone outcrops. Deciduous woodlands are also a notable feature of the site with wet woodland frequently occurring along the lake shore and in some places conforms with the EU Annex I habitat, alluvial woodland.

This SAC is the only known site in Ireland for the Red Data Book plant Irish Fleabane (*Inula salicina*) and occurs along the lake shore. This plant is also protected under the Flora (Protection) Order, 1999. Marsh Pea (*Lathyrus palustris*) and Ivy Broomrape (*Orobancha hederarum*) are another two Red Data Book Species that occur within this SAC.

Lough Derg, North-east Shore SAC is also of conservation interest for its fish and freshwater invertebrates including Lampreys which are listed under Annex II of the EU Habitats Directive. There is a land-locked self-sustaining population of Sea Lamprey (*Petromyzon marinus*) occurring within the lake. Brook Lamprey (*Lampetra planeri*) is known to

common within the lower Shannon catchment where all three lamprey species breed. An endangered fish species, Pollan (*Coregonus autumnalis pollan*) is recorded from Lough Derg and is one of only three sites in Ireland and in western Europe. Lough Derg is a well known fishing lake with a good Trout (*Salmo trutta*) fishery and where Atlantic Salmon (*Salmo salar*) spawn. Although this species is fished commercially in Ireland it is considered to be endangered or locally threatened in Europe and is listed under Annex II of the EU Habitats Directive.

Both the otter and badger have been recorded within this SAC and are both species listed in the Irish Red Data Book and are legally protected by the Wildlife Act, 1976.

### Lough Derg (Shannon) SPA (004058)

This SPA occurs within Counties Tipperary, Galway and Clare and is the largest of the River Shannon Lakes being approximately 40km long. The maximum width of the SPA occurs across Scarriff Bay and Youghal Bay and is approximately 13km wide, however, most of the width of this SPA is less than 5km wide. The lake itself is shallow at the northern end and is approximately 6m deep but it does increase to 25m within the middle section of the lake. The maximum depth is 34m.

This area is listed as an SPA for the following QIs:

- A017 Cormorant (*Phalacrocorax carbo*)
- A061 Tufted Duck (*Aythya fuligula*)
- A067 Goldeneye (*Sterna hirundo*)
- A999 Wetland and waterbirds

This site is important for breeding and wintering birds including a nationally important breeding colony of Common Terns (55 pairs recorded in 1995). Historically, large numbers of Black-headed Gulls have bred on the islands that occur within the lake with 2,176 pairs in 1985, however, the recent status of this species is unknown in this area. Cormorants also use the islands within the lake including 167 pairs in 1995 and 113 pairs in 2010. This SPA is also a noted breeding location for Great Crested Grebe (47 pairs in 1995) and Tufted Duck (169 pairs in 1995).

In the winter months, this area is important for waterfowl species including nationally important populations of Tufted Duck (776) and Goldeneye (157). Other species that occur within the winter are Mute Swan (164), Whooper Swan (18), Wigeon (249), Teal (301), Mallard (376), Little Grebe (14), Cormorant (90), Coot (173), Lapwing (922), Curlew (66) and Black-headed Gull (732). Small numbers of Greenland White-fronted Goose (19 geese were recorded near Portumna in 1996/7) were recorded in areas to the north and southwest of Lough Derg. Hen Harrier have also been known to roost in the reedbeds on the margins of the site during the winter.

## 5.3 Supporting Habitats and Species

### River Shannon Callows SAC (000216)

#### Habitats

6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)

6510 Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)

7230 Alkaline fens

8240 Limestone pavements

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

#### Species

1355 Otter (*Lutra lutra*)

The proposed development can impact the SAC through direct habitat loss, however, none of the QIs listed above occur within the proposed project area. Hydrocarbons, sediments and chemicals may enter the nearby watercourse which may in turn adversely impact water quality, potentially impacting aquatic organisms, including otter, and impacting downstream habitats.

The potential impacts on water quality are significant and mitigation measures are described in **Sections 6**.

### *Middle Shannon Callows SPA (004096)*

#### **Species**

A038 Whooper Swan (*Cygnus cygnus*)  
 A050 Wigeon (*Anas Penelope*)  
 A122 Corncrake (*Crex crex*)  
 A140 Golden Plover (*Pluvialis apricaria*)  
 A142 Lapwing (*Vanellus vanellus*)  
 A156 Black-tailed Godwit (*Limosa limosa*)  
 A179 Black-headed Gull (*Chroicocephalus ridibundus*)  
 A999 Wetland and waterbirds

The proposed development can have an impact on the above QIs through direct impacts such as habitat loss. None of the above listed species were observed within the project area. Hydrocarbons, sediments, and chemicals may enter the water during the proposed development work, which may in turn adversely impact water quality, potentially impacting aquatic organisms. The bird species listed above may be impacted as a result of their food supplies and habitats being adversely affected.

The potential impacts on water quality are significant and mitigation measures are described in **Sections 6**.

### *Lough Derg, North-east Shore SAC (002241)*

#### **Habitats**

5130 Juniperus communis formations on heath or calcareous grasslands  
 7210 Calcareous fens with Cladium mariscus and species of the Caricion davallianae  
 7230 Alkaline fens  
 8240 Limestone pavements  
 91E0 Alluvial forests with Alnus Glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)  
 91J0 Taxus baccata woods of the British Isles

This SAC is located roughly 13.7km downstream of the proposed project area. Hydrocarbons, sediments, and chemicals may enter the water during the proposed development work, which may in turn adversely impact water quality, potentially impacting aquatic organisms.

The potential impacts on water quality are significant and mitigation measures are described in **Sections 6**.

### *Lough Derg (Shannon) SPA (004058)*

#### **Species**

A017 Cormorant (*Phalacrocorax carbo*)  
 A061 Tufted Duck (*Aythya fuligula*)  
 A067 Goldeneye (*Bucephala clangula*)  
 A193 Common Tern (*Sterna hirundo*)  
 A999 Wetland and waterbirds

This SPA is located roughly 13.7km downstream of the proposed project area. Hydrocarbons, sediments, and chemicals may enter the water during the proposed development work, which may in turn adversely impact water quality, potentially impacting aquatic organisms. The bird species listed above may be impacted as a result of their food supplies and habitats being adversely affected downstream.

The potential impacts on water quality are significant and mitigation measures are described in **Sections 6**.

## 5.4 Threats and Pressures

### *River Shannon Callows SAC (000216)*

Threats and pressures published for River Shannon Callows SAC are presented in **Table 5.1**.

Table 5.1: Negative Threats, Pressures and Activities for River Shannon Callows SAC.

River Shannon Callows SAC (000216)			
Threat Code1	Threat Type	Rank2	i (inside) / o (outside) / b (both)
A04.03	Abandonment of pastoral systems, lack of grazing	L	i
A04	Grazing	H	i
E01	Urbanised areas, human habitation	H	o
D01.01	Paths, tracks, cycling tracks	L	i
D01.05	Bridge, viaduct	H	i
G01.01	Nautical sports	H	i
A08	Fertilisation	M	o
A08	Fertilisation	L	i
G01.02	Walking, horse riding, and non-motorised vehicles	M	i
F03.01	Hunting	L	i
F02.03	Leisure fishing	M	i

### *Middle Shannon Callows SPA (004096)*

Threats and pressures published for Middle Shannon Callows SPA are presented in **Table 5.2**.

1 Threat codes sourced from Natura 2000 data form and follow reference list provided on threats, pressures and activities for European Sites  
[http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/standarddataforms/notes\\_en.pdf](http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/standarddataforms/notes_en.pdf)

2 H – High, M – Medium, L – Low



Table 5.2: Negative Threats, Pressures and Activities for Middle Shannon Callows SPA.

Middle Shannon Callows SPA (004096)			
Threat Code3	Threat Type	Rank4	i (inside) / o (outside) / b (both)
A04.03	Abandonment of pastoral systems, lack of grazing	L	i
A04	Grazing	H	i
E01	Urbanised areas, human habitation	H	o
D01.01	Paths, tracks, cycling tracks	L	i
D01.05	Bridge, viaduct	H	i
G01.01	Nautical sports	H	i
A08	Fertilisation	M	o
A08	Fertilisation	L	i
G01.02	Walking, horse riding, and non-motorised vehicles	M	i
F03.01	Hunting	L	i
F02.03	Leisure fishing	M	i

### Lough Derg, North-east Shore SAC (002241)

Threats and pressures published for Lough Derg, North-east Shore SAC are presented in **Table 5.3**.

Table 5.3: Negative Threats, Pressures and Activities for Lough Derg, North-east Shore SAC.

Lough Derg, North-east Shore SAC (002241)			
Threat Code5	Threat Type	Rank6	i (inside) / o (outside) / b (both)
D01.01	Paths, tracks, cycling tracks	H	i
D03.01.02	Piers/tourist harbours or recreational piers	H	i
H01	Pollution to surface waters (limnic, terrestrial, marine and brackish)	H	b
I01	Invasive non-native species	H	b
K02.03	Eutrophication (natural)	H	i
A04.01	Intensive grazing	L	i
A10.01	Removal of hedges and copses or scrub	L	i
I02	Problematic native species	L	i
J02	Human induced changes in hydraulic conditions	L	i
K02.01	Species composition change (succession)	L	i
M01.01	Temperature changes (e.g. rise of temperature and extremes)	L	i
M01.02	Droughts and less precipitations	L	i
M01.03	Flooding and rising precipitations	L	i
A08	Fertilisation	M	b
C01	Mining and quarrying	M	i
G01	Outdoor sports and leisure activities, recreational activities	M	i
H01.08	Diffuse pollution to surface waters due to household sewage and waste waters	M	i

3 Threat codes sourced from Natura 2000 data form and follow reference list provided on threats, pressures and activities for European Sites  
[http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/standarddataforms/notes\\_en.pdf](http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/standarddataforms/notes_en.pdf)

4 H – High, M – Medium, L – Low

5 Threat codes sourced from Natura 2000 data form and follow reference list provided on threats, pressures and activities for European Sites  
[http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/standarddataforms/notes\\_en.pdf](http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/standarddataforms/notes_en.pdf)

6 H – High, M – Medium, L – Low

Lough Derg, North-east Shore SAC (002241)			
Threat Code <sup>5</sup>	Threat Type	Rank <sup>6</sup>	i (inside) / o (outside) / b (both)
J02.01.03	Infilling of ditches, dykes, ponds, pools marshes or pits	M	i
J02.10	Management of aquatic and bank vegetation for drainage purposes	M	i

### Lough Derg (Shannon) SPA (004058)

Threats and pressures published for Lough Derg (Shannon) SPA are presented in **Table 5.4**.

Table 5.4: Negative Threats, Pressures and Activities for Lough Derg (Shannon) SPA.

Lough Derg (Shannon) SPA (004058)			
Threat Code <sup>7</sup>	Threat Type	Rank <sup>8</sup>	i (inside) / o (outside) / b (both)
F03.01	Hunting	M	i
F02.03	Leisure fishing	M	i
G01.01	Nautical sports	H	i
A08	Fertilisation	H	o

## 5.5 Potential Impacts from the Proposed Development

Potential effects associated with the proposed development to the Qualifying Habitats and Species of European Sites within the project Zone of Influence are as follows:

Table 5.5: Impact Source – Pathway and Zone of Influence for the proposed project

Source of Potential Effect	Description of Pathway	Potential Zone of Influence of the Effect
<b>Implementation Phase</b>		
Noise, vibration; Lighting; Human presence; and Movements of vehicles associated with implementation activities.	Terrestrial - contact (direct contact with personnel or machinery during site works), air (through its ability to transmit noise effects), visibility (on site presence of personnel)	The Zone of Influence varies by the affected habitat and reliant species. This can be assessed within 500m of the proposed development footprint for wintering birds (see Madsen, 1985; Smit & Visser, 1993; and Rees et al., 2005). However, distance can be significantly lower (e.g. 150 m for otter underground sites (NRA, 2006), or higher for other species).
Earthworks including the application of herbicide; Plough to depth of 15 inches and tilling the soil with a power harrow;	Hydrological pathways; i.e. drainage channel, streams and rivers which could provide connectivity with the site to the Shannon River oxbow channel.	The Zone of Influence of the potential effects associated with this source is related with the nature of the potential contaminant (e.g. silt, hydrocarbons, and herbicide). The worst case Zone of Influence is considered to be the whole length of the aquatic pathway (i.e. from the proposed project site to the further downstream Natura 2000 sites).
<b>Operational Phase</b>		

<sup>7</sup> Threat codes sourced from Natura 2000 data form and follow reference list provided on threats, pressures and activities for European Sites [http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/standarddataforms/notes\\_en.pdf](http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/standarddataforms/notes_en.pdf)

<sup>8</sup> H – High, M – Medium, L – Low

Movement of people, soils, and vehicles in association with farming activities; Grazing	Terrestrial - contact (direct contact with operational personnel or machinery during site works), air (through its ability to transmit noise effects), visibility (on site presence of personnel)	The Zone of Influence varies by the affected habitat and reliant species. This can be assessed within 500m of the proposed development footprint for wintering birds (see Madsen, 1985; Smit & Visser, 1993; and Rees et al., 2005). However, distance can be significantly lower (e.g. 150 m for otter underground sites (NRA, 2006), or higher for other species.
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### 5.5.1 Habitat loss, disturbance and fragmentation

Habitats will be disturbed and lost under the proposed development footprint. Habitats adjacent to and surrounding the proposed development site primarily consist of improved agricultural grassland, which is a habitat of low botanical diversity and of low biodiversity value and low ecosystem functionality. In the long-term, the habitat will not change for this site location and will remain as improved agricultural grassland once the new seeds have been established. The alteration to the proposed project area will be temporary in the form of tilling the soil in order to increase the likelihood for the establishment of the sown seeds.

### 5.5.2 Non-native and invasive plant species

No high impact invasive plant species (as listed by NBDC) were recorded during the site visits at the proposed project site. Likewise, there were no plant species recorded on Third Schedule applying to non-native species subject to restrictions under Regulations 49 of S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011 within the proposed development site or its immediate environs.

### 5.5.3 Disturbance to fauna

Disturbance to fauna will primarily be realised during the implementation phase of the proposed development. Temporary earthworks will be conducted in the form of ploughing and tilling the soil in order to help the seeds establish. This work will occur entirely within improved agricultural grassland habitat, and will not change the habitat in the long-term. This habitat has low botanical value and of little ecological importance to fauna. These habitats are unsuitable to support important breeding or resting habitats for fauna. Therefore, the proposed development is unlikely to contribute direct impacts to fauna.

The operational phase works of the proposed development are not anticipated to contribute significant disturbance impacts to fauna. Operational phase works will mostly comprise of grazing from livestock (including sheep and cows) and general checks using the access roads in the area by farming staff.

### 5.5.4 Avifauna

The bird surveys carried out at the site have established that the proposed development site supports a bird community characterised by small passerine and corvid species typical of open farmland and adjoining linear hedgerow and treeline habitats. The proposed development will involve short-term impacts to overturning the soil in order to help the seeds establish.

The field and surrounding area of the site are generally of low to moderate value for nesting, roosting and feeding passerine birds. There are both managed and unmanaged hedgerows throughout the site which tend to be gappy in nature.

Most birds recorded at the site were either large mobile species, observed mainly within the River Shannon oxbow channel or were species associated with areas of better vegetative cover afforded by adjoining lands, or treelines/hedgerows such as that borders the improved grassland areas. The number and diversity of birds associated with the internal hedgerow network was relatively low.

Three red-listed bird species was observed during the site visit, Lapwing (*Vanellus vanellus*), Black-headed Gull (*Larus ridibundus*), and Grey Wagtail (*Motacilla cinerea*). The bird community recorded at the site is likely to continue to breed in areas that adjoin or are closely adjacent to the proposed development site.

Once the seeds are sown, a gas powered bird scarer will be used temporarily to deter birds from consuming the seeds. This will only be used until the seeds can establish and is considered a temporary measure. The operational phase works of the proposed development are not anticipated to contribute significant disturbance impacts to avifauna. Operational phase works will mostly comprise of grazing from livestock (including sheep and cows) and general checks using the access roads in the area by farming staff.

### 5.5.5 Bats

The linear treelines and hedgerows on the periphery of proposed development site provide suitable foraging habitat for bats. No roosts were recorded on site nor were any bat species recorded within the 2km x 2km grid square (NBDC, 2022). Therefore, potential impacts to foraging or roosting bats as a result of the proposed project are unlikely.

There will be no lighting of the proposed development site during the project implementation or operation phases. Therefore, there will be no direct or indirect impacts as a result of artificial lighting to bats within the proposed development site and the surrounding locality.

### 5.5.6 Badgers

The site walkover survey did not identify badger activity within the proposed development site. No setts or other evidence or breeding or residing badger was identified within the proposed project area. Badgers were historically observed within the 2km x 2km grid square that makes up the site. Therefore, it cannot be ruled out that the proposed development site and its wider surrounds provide suitable badger foraging and commuting habitat. The impacts to the proposed project site are considered temporary and the long-term habitat found within the site will not change, it is not considered to impact the badgers that may use the area.

### 5.5.7 Receiving and downstream watercourses

In consideration of the site location, site layout and existing topography at the proposed site, the primary potential water pollution receptors are the River Shannon oxbow watercourse that is located adjacent to the southern boundary of the site and the underlying groundwater aquifer. No other receptors such as turloughs or sinkholes were identified or are mapped within or in the immediate the vicinity of the site.

Implementation phase activities have the potential to contribute surface water impacts to the receiving and surrounding environment, in the absence of mitigation. Such impacts include the risk of pollution from herbicide application, the siltation or release of particulate matter, and potential for equipment spillages or leakages. These have the potential to lead to impacts causing the contamination of surface water run-off and the degradation of water quality in the vicinity of the site, consequently impacting the habitats and species present in any affected waterbody.

Without mitigation, the application of herbicides, and the ploughing and tillage of soil increases the risk of material being washed into watercourses during periods of heavy and prolonged rainfall or flood events, with potential impacts on water quality through increased turbidity levels and sedimentation, as well as the potential mobilisation of a variety of substances that may be contained within the soils. Implementation operations also have the potential to cause

alterations to localised groundwater levels and surface water flows through extraction activities, dewatering and discharge of water.

## 5.6 Potential Adverse Effects & Proposed Mitigation

The conservation objectives for River Shannon Callows SAC (000216), Middle Shannon Callows SPA (004096), Lough Derg, North-east Shore SAC (002241) and Lough Derg (Shannon) SPA (004058) are provided in **Appendix 3**.

The QIs listed for River Shannon Callows SAC (000216) are: 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caeruleae*), 6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*), 7230 Alkaline fens, 8240 Limestone pavements, 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae), and 1355 Otter (*Lutra lutra*). These QIs have the potential to be indirectly impacted through hydrological connections. None of these habitat QIs have been recorded within Big Island, however there is an area of Molinia meadows west of the proposed project area across the River Shannon oxbow channel. No historical records of Otter were observed within the 2km x 2km grid square that makes up the site, however there are historical records within the 10km x 10km grid square. Precautionary measures for the site include maintaining water quality and ensuring no materials enter the River Shannon oxbow channel to cause any impacts downstream. Work near the watercourse should be carried out in dry weather to prevent siltation and run off as well as a setback distance of 15m from the watercourse.

The QIs listed for the Middle Shannon Callows SPA (004096) are: A038 Whooper swan (*Cygnus cygnus*), A050 Wigeon (*Anas Penelope*), A122 Corncrake (*Crex crex*), A140 Golden Plover (*Pluvialis apricaria*), A142 Lapwing (*Vanellus vanellus*), A156 Black-tailed Godwit (*Limosa limosa*), A179 Black-headed Gull (*Chroicocephalus ridibundus*), and A999 Wetland and waterbirds. Both the Lapwing and Black-headed gull were observed during the field visit, and Lapwing have been historically observed within the 2km x 2km grid square. All of the QI species were historically observed within the 10km x 10km grid square that makes up the site. Precautionary measures for the site include maintaining water quality and ensuring no materials enter the River Shannon oxbow channel to cause any impacts downstream. Work near the watercourse should be carried out in dry weather to prevent siltation and run off as well as a setback distance of 15m from the watercourse.

The QIs listed for Lough Derg, North-east Shore SAC (002241) are: 5130 Juniperus communis formation on heath or calcareous grasslands, 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae, 7230 Alkaline fens, 8240 Limestone pavements, 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae), and 91J0 Taxus Baccata woods of the British Isles. None of these QI habitats are recorded within the vicinity of the proposed project area. Precautionary measures for the site include maintaining water quality and ensuring no materials enter the River Shannon oxbow channel to cause any impacts downstream. Work near the watercourse should be carried out in dry weather to prevent siltation and run off as well as a setback distance of 15m from the watercourse.

The QIs for the Lough Derg (Shannon) SPA (004058) are: A017 Cormorant (*Phalacrocorax carbo*), A061 Tufted Duck (*Aythya fuligula*), A067 Goldeneye (*Bucephala clangula*), A193 Common Tern (*Sterna hirundo*), and A999 Wetland and waterbirds. None of these QI listed species were observed during the field visit and none of these species have been recorded historically within the 2km x 2km grid square that makes up the site. Cormorant, and Tufted Duck were both historically observed within the 10km x 10km grid square that makes up the site. Precautionary measures for the site include maintaining water quality and ensuring no materials enter the River Shannon oxbow channel to cause any impacts downstream. Work near the watercourse should be carried out in dry weather to prevent siltation and run off as well as a setback distance of 15m from the watercourse.

## 5.7 Summary of potential Impacts

The assessment of the potential for adverse effects on the qualifying interests of the River Shannon Callows SAC, Middle Shannon Callows SPA, Lough Derg, North-east Shore SAC, and Lough Derg (Shannon) SPA using the source-receptor-pathway model, identified qualifying interests at risk of potential adverse effects associated with the proposed development works in the absence of any mitigation measures.

The proposed project area occurs within the boundaries of the River Shannon Callows SAC and the Middle Shannon Callows SPA and there is a surface water pathway connection that exists between the proposed project area and the Lough Derg, North-east Shore SAC and Lough Derg (Shannon) SPA. Due to the area currently being improved agricultural grassland, and the long-term habitat for this area remaining the same, there are no direct impacts on any of the QIs listed in the River Shannon Callows SAC and the Middle Shannon Callows SPA. During the implementation phase, contaminated surface water runoff and/or an accidental spillage or a pollution event into the relevant water courses has the potential to have a significant negative effect on the water quality. The effects of frequent and/or prolonged pollution events in a river system can be extensive and far-reaching and can have significant long-term effects. The proposed works, unless adequately mitigated, could potentially negatively impact the QIs of the Natura 2000 sites listed above.

In light of the foregoing, it cannot be presumed that no adverse effects will result from this project (in the absence of suitable mitigation measures).

Provided adherence to the overarching policies and objectives of the plans and programmes and best practice and mitigation measures are implemented for individual projects, there is no potential for the mentioned plans and projects to have a cumulative impact to features of biodiversity interest, in combination with the proposed development.

All proposed developments considered in the Zone of Influence of the proposed development are subject to the statutory planning process and where required are accompanied by the requisite planning and environmental assessment documentation, including Appropriate Assessment, Ecological Impact Assessment. To that end, other projects, programmes and plans within the project zone of influence have been developed under the consideration of potential impacts and effects to their receiving and surrounding environment and are tasked with avoiding and minimising such impacts, through the Appropriate Assessment and Environmental Impact Assessment processes.

## Section 6: PROTECTIVE MITIGATION MEASURES

This section presents the mitigation measures that will be implemented during the implementation and operation of the proposed development to avoid or reduce the potential impacts of the reseeding of an agricultural field on the Natura 2000 sites of River Shannon Callows SAC, Middle Shannon Callows SPA, Lough Derg, North-east Shore SAC, and Lough Derg (Shannon) SPA.

### 6.1 Mitigation

As the impact from the proposed development is minimal, the recommended mitigation measures are not extensive. All of the mitigation measures to be implemented in full and are best practice, tried and tested, effective control measures to protect the receiving environment. A setback distance of 15m from the River Shannon oxbow channel will be implemented during the implementation phase of the project to reduce the possibility of substances or particulates from entering the watercourse. Effort will be made to conduct the ploughing and tilling during dry conditions to reduce the run off potential into the nearby River Shannon oxbow channel.

Due to the small scale of the project and short timeline of the project, further reports are not required for this work including a Construction Environmental Management Plan (CEMP) or a Biodiversity Management Plan (BMP).



## Section 7: RESIDUAL EFFECT

After assessing the impacts of the proposed project all attempts should be made to avoid and mitigate ecological impacts. The proposed development will not result in any loss or fragmentation of habitats for which the SACs or SPAs are designated. Care will be taken to avoid any contamination of the River Shannon oxbow channel through siltation or herbicides.

Potential negative impacts on the Natura 2000 sites QIs exist through the contamination of the River Shannon oxbow channel. These potential impacts will be avoided by mitigation measures to reduce the likelihood of particulates or herbicides from entering the watercourse. Any such negative impacts on the key QIs could have a negative impact on the integrity of the Natura 2000 sites and on the Conservation Objectives for the sites.

Upon completion of all mitigation measures there is little concern for any significant residual effects for the River Shannon Callows SAC, Middle Shannon Callows SPA, Lough Derg, North-east Shore SAC, and Lough Derg (Shannon) SPA from the proposed project.

Provided that the recommended mitigation measures set out in **Sections 6** are implemented in full, it is not expected that significant impacts will result to the qualifying features identified for appraisal in this NIS and thus it is not expected that the proposed works will have an adverse impact on the integrity of Natura 2000 sites or Natural Heritage Areas. Significant impacts to designated sites, habitats, flora or fauna have not been identified as a result of the proposed reseedling of the agricultural field.

The NIS has examined and analysed in the light of the best scientific knowledge with respect to the River Shannon Callows SAC, Middle Shannon Callows SPA, Lough Derg, North-east Shore SAC and Lough Derg (Shannon) SPA, the potential impact sources and pathways, how these could impact on the site's conservation objectives and whether the predicated impacts would adversely affect the integrity of the said European site.

There is no other European site at risk of effects from the proposed development. It has been objectively concluded, following an examination, analysis and evaluation of the relevant information, including the nature of the predicted impact from the proposed development, that the proposed development will not adversely affect ( either directly or indirectly) the integrity of the River Shannon Callows SAC, Middle Shannon Callows SPA, Lough Derg, North-east Shore SAC or Lough Derg (Shannon) SPa or any other European site, or the integrity of the pNHA or any other Natural Heritage Site, either alone or in combination with other plans or projects , and there is no reasonable scientific doubt in relation to this conclusion.

## Section 8: IN-COMBINATION EFFECT

The proposed development was considered in combination with other plans and projects in the locality that could result in cumulative / in-combination effects on European Sites.

### 8.1 County Development Plan

The purpose of the Development Plan is to guide the future development of the county. Currently, the following section of the Draft Galway County Council Development Plan 2022 – 2028 applies:

#### **Chapter 4 Rural Living and Development**

##### **4.2 Strategic Aims**

*Galway County Council shall ensure that developments in rural areas are provided in accordance with the following strategic aims:*

- *To harness a pride of place among rural communities and to assist rural communities to promote their cultural and natural resources;*
- *To reinforce the vitality and future of rural villages and the open countryside and to recognise the roles that they play in the wider social and economic context;*
- *To encourage and support the social and economic development of rural parts of the Country;*
- *To support local rural economies and facilitate the diversification of local rural enterprises;*
- *To maintain and support into the future the County's rural/coastal communities including the traditional family farm;*
- *To help foster 'green growth/management practices' (including food security, quality and diversity) in primary food production methods within the agri-food, fisheries and forestry sectors within the County;*
- *To support and promote the sustainable social and economic development of rural areas;*
- *To protect and enhance the visual qualities of rural areas through the sensitive design of associated development*

### 8.2 Cumulative Impact Assessment

The proposed development was considered in combination with other plans and projects in the locality that could result in cumulative / in-combination effects on the relevant European Sites. Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated within an area or location. Cumulative effects can occur where a proposed development results in impacts that when considered in-combination with impacts caused by other proposed or permitted projects and plans may result in a cumulative effect. Plans or Projects Which Might Act in Combination Article 6(3) of the Habitats Directive requires that, any plan or project not directly connected with or necessary to the management of the European site(s) 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(s) in view of the site's conservation objectives.

A search of the Galway County Council planning enquiry system

(<https://galwaycoco.maps.arcgis.com/apps/webappviewer/index.html?id=3570e45b0e354cf0b740ecbc7505adb2>)

was carried out on the 5<sup>th</sup> of December 2022. Finalised applications lodged within the vicinity of the proposed project area within the last 5 years were examined. There are no such developments within Big Island and therefore, there are no possible in-combination effects with other projects. Of the projects within the surrounding lands, the majority of these are older than the 5 year period and include residential developments and are unlikely to create in-combination effects with the proposed project.

### 8.3 Summary of Cumulative Impact Assessment

There are no other developments occurring in the last 5 years within Big Island and therefore there are no potential in-combination effects possible. Provided adherence to the recommended mitigation measures are implemented for this proposed project, it is unlikely there to be any impacts to the receiving environment.

Any future proposed developments within the Zone of Influence of the proposed project area are subject to the statutory planning process and where required are accompanied by the requisite planning and environmental assessment documentation, including Appropriate Assessment, Ecological Impact Assessment and Environmental Impact Assessment reporting.

Therefore, other future projects, programmes and plans within the project zone of influence will be developed under the consideration of potential impacts and effects to their receiving and surrounding environment and are tasked with avoiding and minimising such impacts, through the Appropriate Assessment and Environmental Impact Assessment processes.

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## Section 9: NIS CONCLUSION

The AA Screening (see **Section 4**) found that it could not be excluded, on the basis of objective scientific information that the proposed works, individually or in combination with other plans or projects, would not have a potential contributory effect on a European site without the implementation of best practice measures being implemented during the project construction phase. Therefore, an NIS (presented in **Section 5**) was undertaken to ascertain whether the proposed works would have an adverse effect on the integrity of European sites within the project ZOI.

Best practice and mitigation measures (as outlined within **Section 6**) have been identified to ensure that potential pollutant sources and disturbance effects are not released from the proposed development site to the receiving and surrounding environment such that there will be no risk of adverse effects on the Qualifying Features of European sites within this project's ZOI.

With the implementation of construction best practice and mitigation measures, there will be no significant effects which would adversely affect the Qualifying Interests or Conservation Objectives of the European Sites under consideration with regard to the favourable conservation condition of the considered habitats and species of Qualifying Interest.

The provisions of Article 6 of the 'Habitats' Directive 92/43/EC (2000) defines integrity as the 'coherence of the sites ecological structure and function, across its whole area, or the habitats, complex of habitats and/or population of species for which the site is classified'. It is clear that, given the application of prescribed protective measures for the avoidance of impacts and the implementation of the required mitigation measures, the proposed works will not give rise to adverse effects on the integrity of any of the identified European sites evaluated herein.

It has been concluded that the development of the proposed development will not adversely affect the integrity of a European site, and there is no reasonable scientific doubt in relation to this conclusion.

## Section 10: DECLARATION

It can be objectively concluded that, when the above mitigation(s) are implemented, there will be no direct, indirect or in-combination effects on the Qualifying Interests of River Shannon Callows SAC (000216), Middle Shannon Callows SPA (004096), Lough Derg, North-east Shore SAC (002241), and Lough Derg (Shannon) SPA (004058).

Therefore, in keeping with Regulation 42(16) of the European Communities (Birds & Natural Habitats) Regulation 2011 (as amended) & based on objective information, I/we declare that the project, either individually or in-combination with other plans or projects, will not adversely affect the integrity of any European site.

I/We declare that this Natura Impact Statement accurately reports on the scientific examination of the project within the context of any relevant Natura site(s), & on the findings of that scientific examination.

**Author  
name(s): 1.**  
xxxxxxxxxxxxxxxx

**Signature:**

**Date:**  
06/12/2022

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Figure 12.1: Proposed Project area map





Figure 12.2: Overall Project Map and Site Location



Figure 12.3: Habitats located within the proposed project area

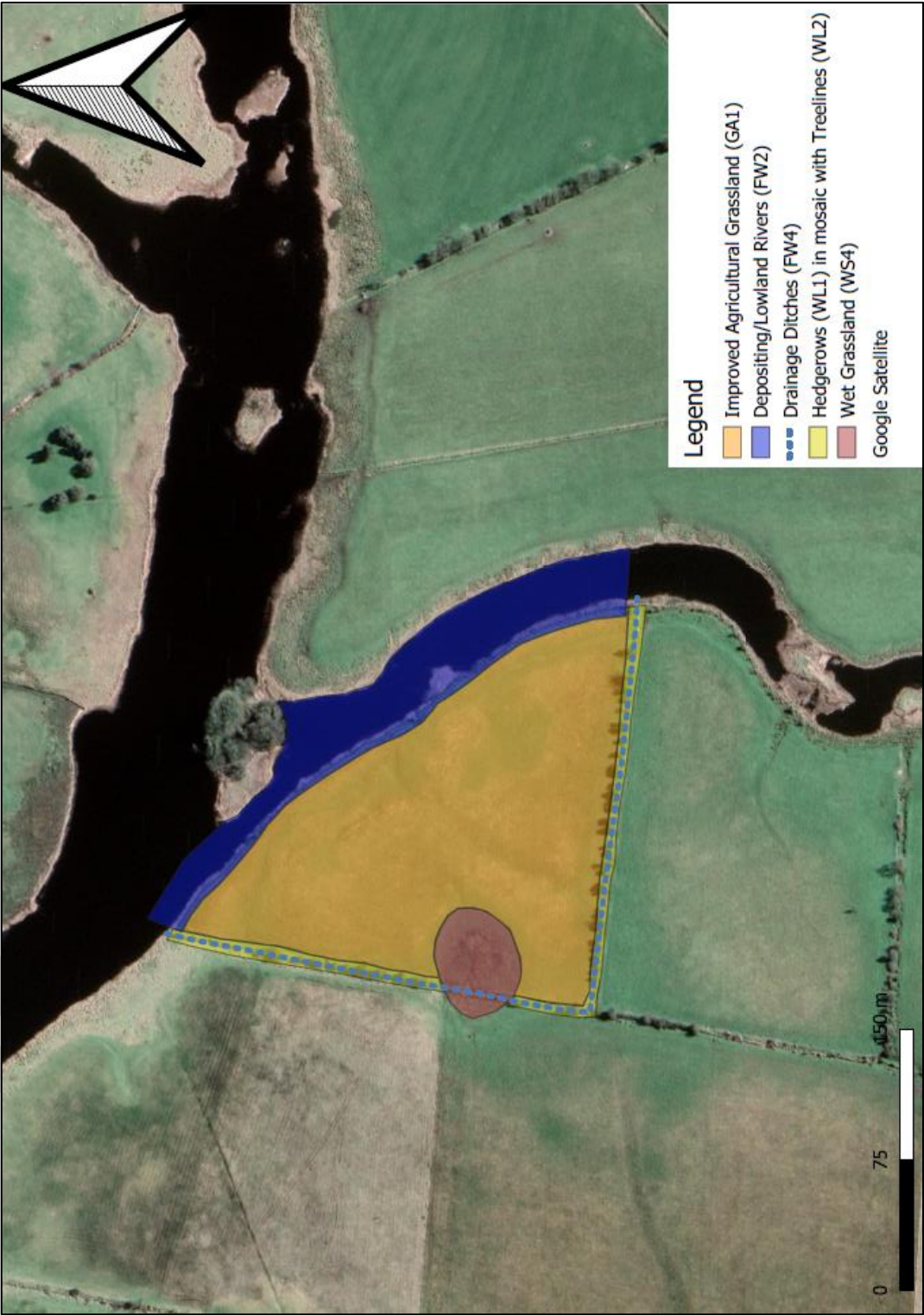




Figure 12.4: River and Waterbody Network in the vicinity of Project Area (EPA 2022).



Figure 12.5: Soil Profile National Soils (EPA 2022).





Figure 12.6: Subsoil Profile (EPA 2022).



Figure 12.7: GSI Bedrock Aquifer (EPA 2022).

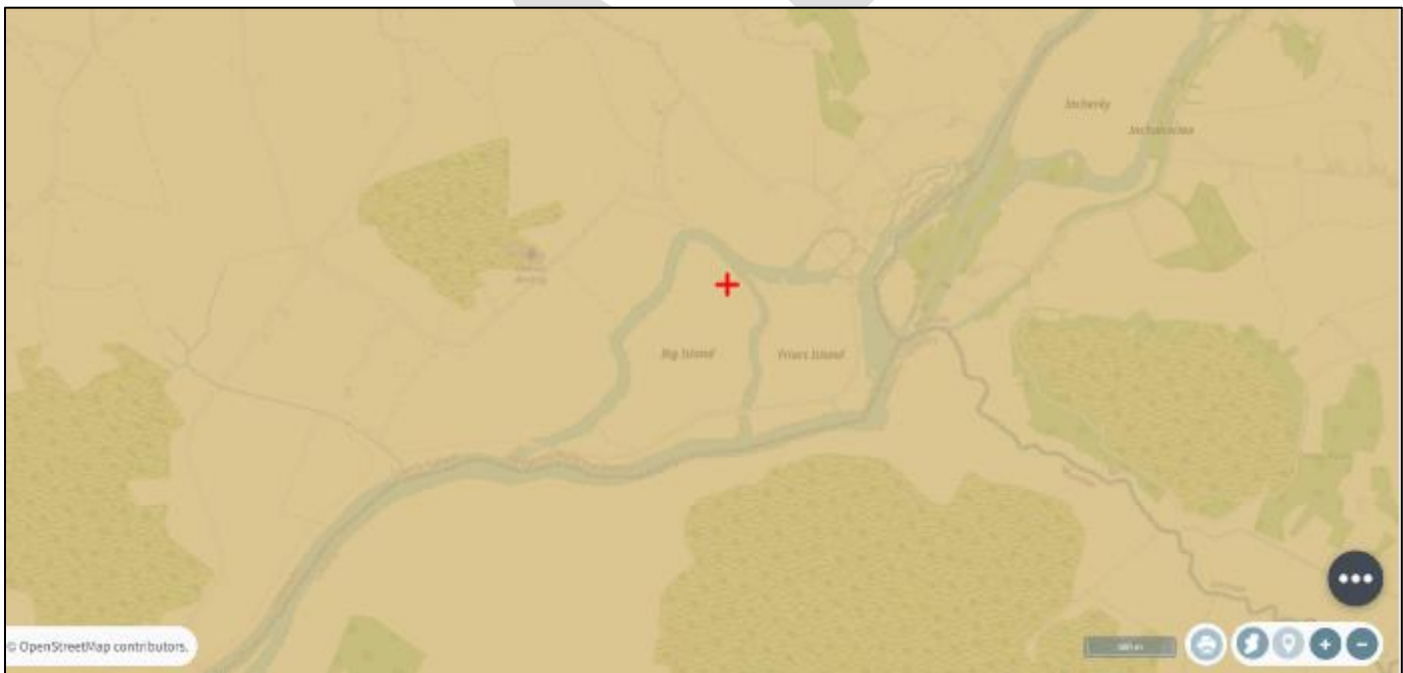


Figure 12.8: GSI Bedrock Geology 1:100,000 (EPA, 2022).



Figure 12.9: Natura 2000 map within 15km (EPA, 2022).

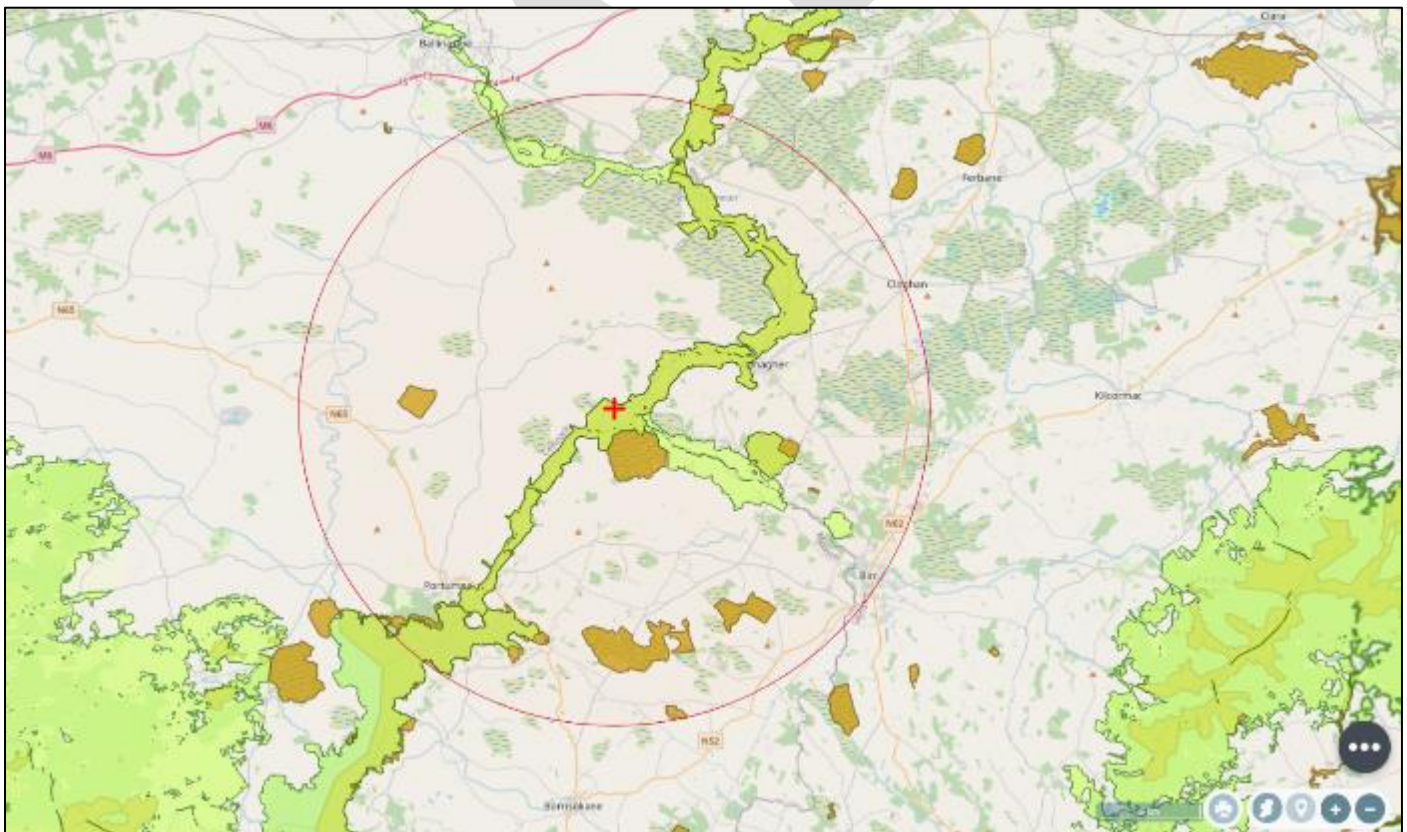




Figure 12.10: Natura 2000 designated lands within the Proposed development site (EPA, 2022).

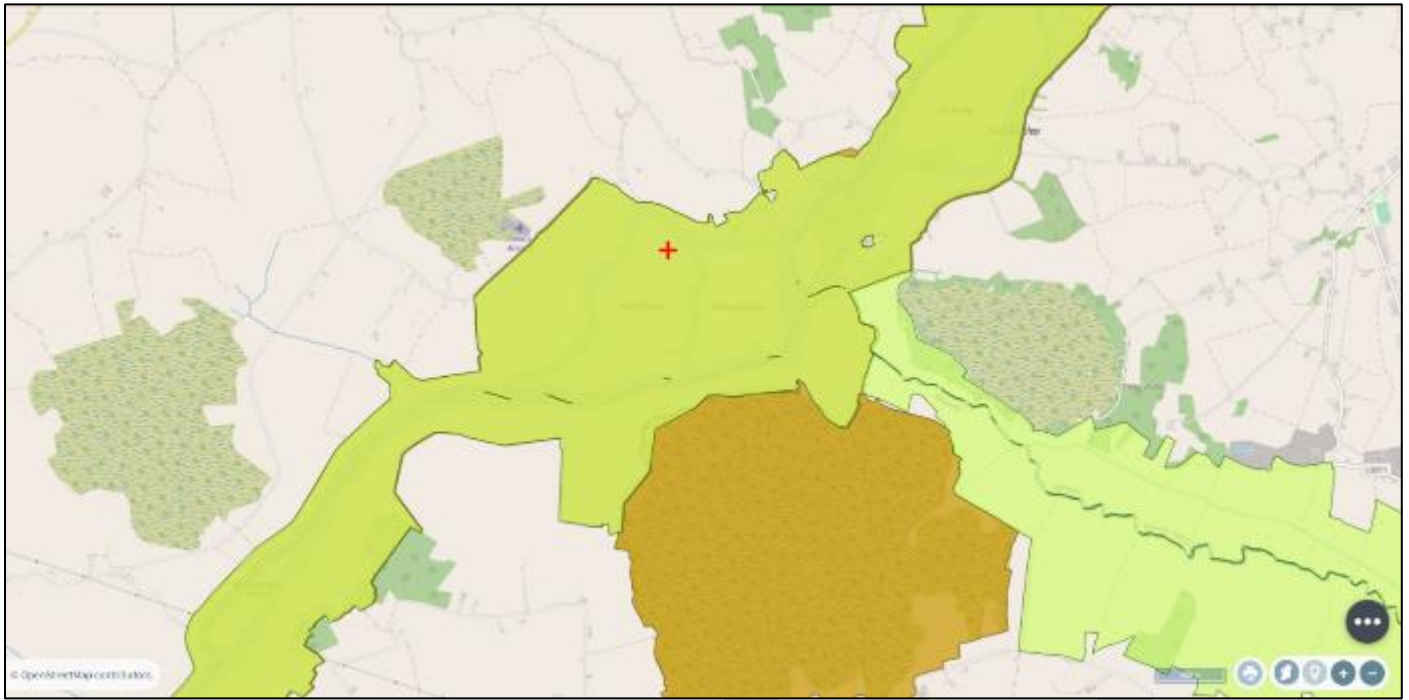


Figure 12.11: 10km x 10km Grid Square M91 (NBDC 2022).



Figure 12.12: 2km x 2km Grid Square M91G (NBDC 2022).



Figure 12.13: Map of local past flood events and high probability flood zone (OPW, 2022).





Figure 12.14: Lower Shannon WFD Catchment (ID 25B) (EPA 2022).

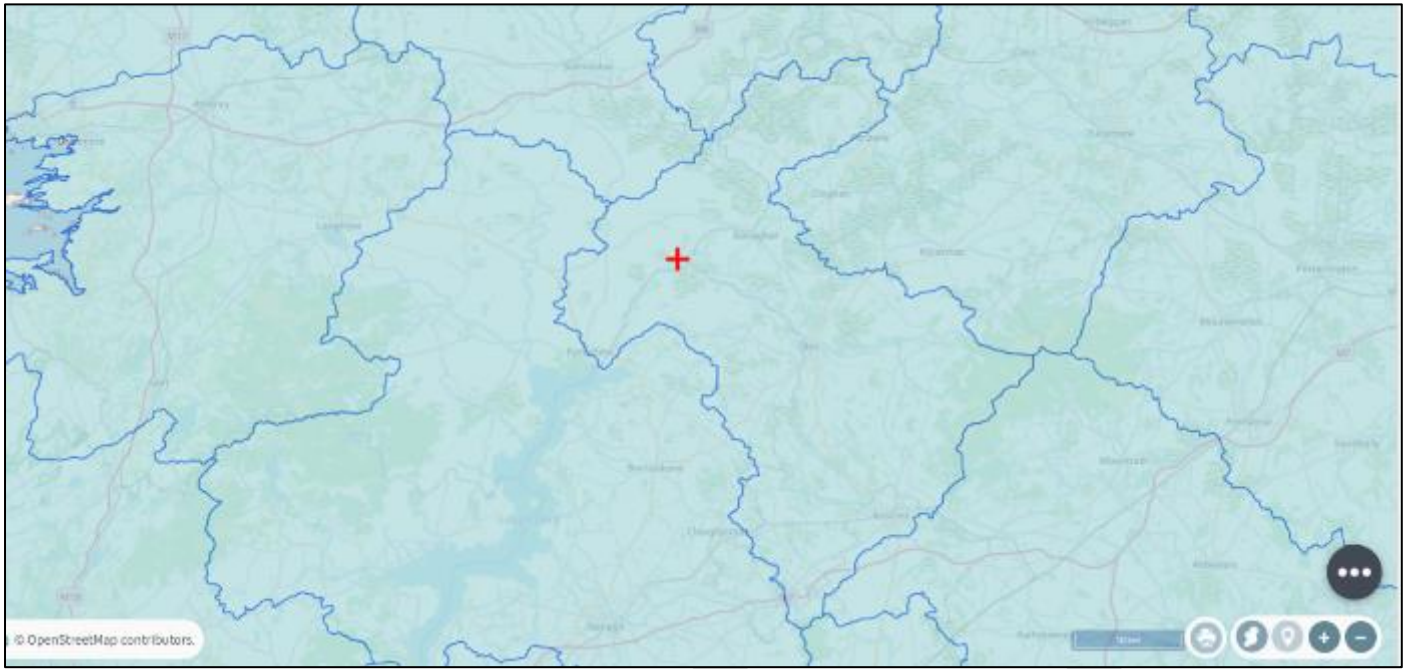


Figure 12.15: Shannon[Lower]\_SC\_050 Sub catchment (ID 25B\_4) (EPA 2022).

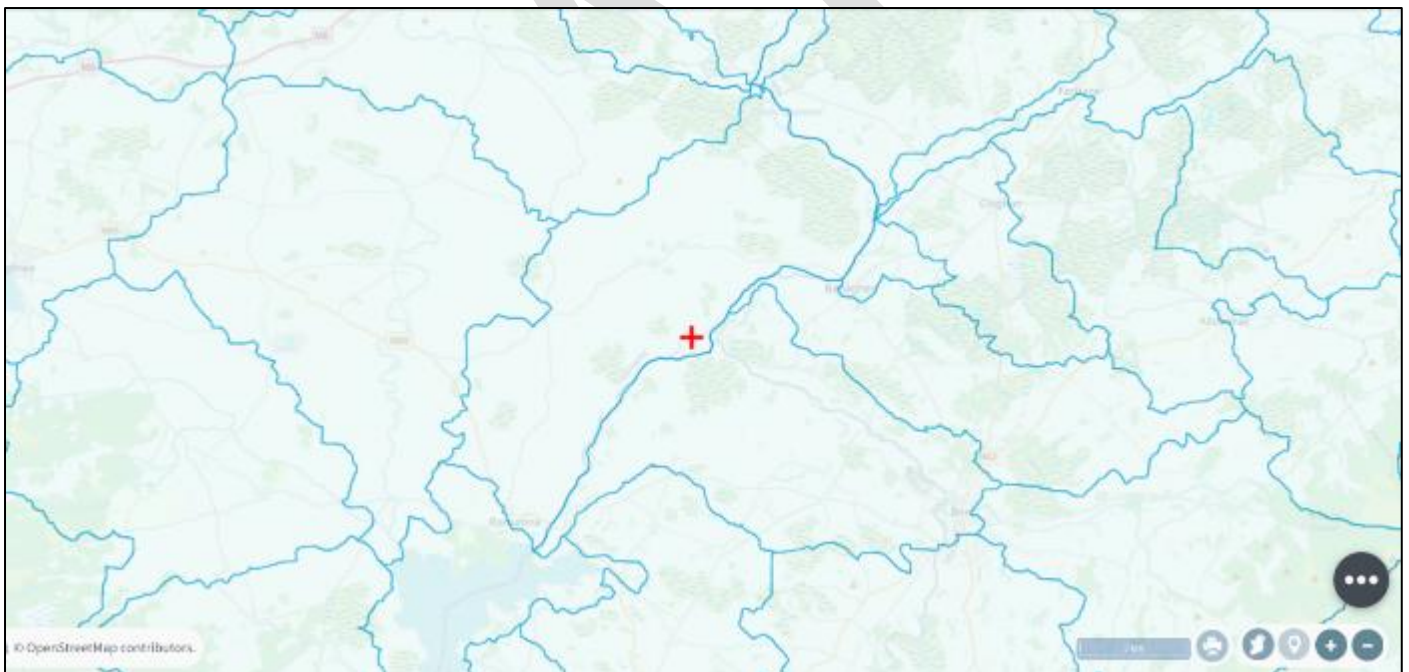


Figure 12.16: Shannon(Lower)\_030 WFD River Sub basin (EPA 2022).





## Appendix 2. ECOLOGICAL SURVEYS & INVESTIGATIONS

### 1. Introduction

This phase 1 habitat survey report has been undertaken by Veon Ecology. The site walkover survey was carried out on the 24<sup>th</sup> November 2022 by xxxxxxxxxxxxxxxxxxxxxxxx (Hons) in Wildlife Biology from MTU, QCIEEM. The proposed site is located south of Eyrecourt, on Big Island Co. Galway (Lat: 53.169181°, Long: -8.095262°)

#### 1.1 Objective

The Phase 1 Habitat Survey is conducted at early-stage planning and is the core element of a Preliminary Ecological Appraisal. The survey determines whether there is a requirement for additional species-specific surveys. If such a requirement exists, then an extended Phase 1/2 Habitat Survey will be conducted to encompass additional habitat preservation and/or protected species.

The primary objective of the phase 1 habitat survey is to record the biodiversity and habitat types present within the site. This ecological report will be used to assess the sites potential habitat suitability for the proposed project. This report gives a summary of the biodiversity and habitat types observed and recorded during the walkover surveys

#### 1.2 Phase One habitat Surveys

The survey identified a variety of different Macro habitat types across the proposed development site, each supporting a variety of different flora and fauna species within them. It should be noted that due to the timing of the survey, the results provide details of the site's current ecological situation and not all species may have been visible for observation.

This phase one habitat and ecological report has been prepared in accordance with the current guidance (Heritage Council, 2011). The purpose of the phase one habitat survey is to designate the site in terms of conservation status, habitat classification, and to identify any potential Annex I habitats or Annex II species present on site and/or identify the sites suitability for Annex II species. Through the application of the precautionary principle, Annex I habitats may still be defined using indicator species which may not be present at the time of surveys. The results of the survey will inform the subsequent relative reports.

The following research has been carried out to inform this report:

1. Ecological data search
2. Phase 1 habitat survey
3. Site specific Habitat mapping

#### 1.3 Survey Methodology

A phase 1 habitat survey was carried out to determine the types of vegetation present, species composition, their extent, and location. Site boundaries within and around the survey area were mapped and their structure (hedge, drain, etc) recorded.

The results of the survey are presented in accordance with the standard Phase 1 habitat survey format with habitat descriptions and mapping provided. In addition, information gathered relating to recorded species, habitat type and structure are also presented in this report.

### Desk study

An ecological data search for the survey site and the surrounding area was reviewed through the NBDC and biodiversity Ireland. In addition, aerial mapping and ordnance survey maps were reviewed to identify any features of interest within and surrounding the survey site (e.g. large ponds).

### Field surveys

The phase 1 habitat survey follows the methodology given in “Handbook for Phase 1 Habitat Survey” (JNCC, 2003). Plant species were recorded using the DAFOR scale for abundance scoring: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare. The vegetation communities and habitats present are described to level three using Fossitt (2000).

### Faunal Surveys

Faunal species were recorded during the habitat survey, including inter alia; birds, mammals and amphibians, observed or heard. Specific attention was also given to the presence of any protected or invasive species.

## 2. Site Overview

The study area has been mapped in detail, following a phase 1 habitat survey, and was cross referenced with ‘A Guide to Habitats in Ireland’ (Fossitt, 2000). The findings of the Phase 1 habitat survey are described below, while habitat maps and photographs showing the extent of habitats within the proposed development site are presented in **Appendix 2 and 4**.

The majority of the site of the proposed development site is pastureland, which is classified as **GA1 (Improved agricultural grassland)**. The vegetation is dominated by common grass species, mainly rye grass (*Lolium sp.*) and Yorkshire fog (*Holcus lanatus*). Other species observed within the area include Creeping Bent (*Agrostis stolonifera*), Meadow Foxtail (*Alopecurus pratensis*), and Sweet Vernal Grass (*Anthoxanthum odoratum*). Common agricultural weeds can also be found within this habitat including creeping thistle (*Cirsium arvense*), spear thistle (*Cirsium vulgare*), ragwort (*Senecio jacobaea*), dock (*Rumex obtusifolius*), clover (*Trifolium sp.*), and creeping buttercup (*Ranunculus repens*). This is of low biodiversity value.

Hedgerows **WL1** and Treelines **WL2** are located along the southern and western edges of the proposed project field. The species found in these habitats included Hawthorn (*Crataegus monogyna*), Bramble (*Rubus fruticosus*), Holly (*Ilex aquifolium*), Gorse (*Ulex europaeus*), Ivy (*Hedera helix*), Bracken (*Pteridium aquilinum*), nettles (*Urtica dioica*), Ash (*Fraxinus excelsior*), Birch (*Betula pendula*) and Sycamore (*Acer pseudoplatanus*).

There are no built or artificial surfaces within the vicinity of the proposed project area, including houses, structures or roads, however there are access roads which are classified as **ED3 (Recolonising Bare Ground)**. Here common species include ragwort (*Senecio jacobaea*), willow herbs (*Epilobium sp.*), dandelion (*Taxacum sp.*), dock (*Rumex obtusifolius*), creeping thistle (*Cirsium arvense*), clover (*Trifolium sp.*) and bryophytes.

The proposed project area is adjacent to an oxbow channel of the Shannon River which is classified as **FW2 (Depositing/Lowland Rivers)**. This oxbow channel occurs along the eastern and northern boundaries of the proposed project area and connects into the Shannon River south of the proposed project area. There are Drainage Ditches **FW4** within the field of the proposed project area.

There is a low-lying area within the field that contained standing water at the time of the survey (November 24th, 2022). The habitat near this area is classified as **Wet Grassland (GS4)**. Common species here include hard rush (*Juncus inflexus*), cuckooflower (*Cardamine pratensis*), common rush (*Juncus effusus*), black bog rush (*Schoenus nigricans*), grasses such as Yorkshire-fog (*Holcus lanatus*), Creeping Bent (*Agrostis stolonifera*) and Marsh Foxtail (*Alopecurus*

*geniculatus*) and creeping thistle (*Cirsium arvense*). Within the scrub species including gorse (*Ulex europaeus*), willow (*Salix sp.*), bramble (*Rubus fruticosus*), and birch (*Betula pendula*).

### 3. Habitat & Vegetation Description

The habitats identified within and in close proximity to the survey area are outlined below:

#### **Disturbed ground (ED)**

Recolonising bare ground (ED3)

#### **Linear woodland/scrub (WL)**

Hedgerows (WL1)

Treelines (WL2)

#### **Watercourses (FW)**

Depositing Lowland River (FW2)

Drainage Ditches (FW4)

#### **Improved Grassland (GA)**

Improved Agricultural Grassland (GA1)

#### **Semi-natural grassland (GS)**

Wet grassland (GS4)

The features of these habitats and associated micro-habitats are described below with their suitability for biodiversity conservation within the context of the project. Photographs of the individual macro-habitats identified within the survey site are included in **Appendix 4** for illustration purposes.

#### 3.1 Watercourses (FW)

##### Lowland/Depositing River (FW2)

River Shannon (EPA Code: IE\_SH\_25S012350) occurs to the south of the proposed project area. This river system has an oxbow system that flows around Big Island and occurs to the east and north of the proposed project area. River Shannon is an ecologically important part of the landscape and is classified as an SAC and SPA. There is also hydrological connection to further Natura 2000 sites downstream. This River is within the Lower Shannon River catchment.

##### Drainage Ditches (FW4)

The field boundaries to the west and south within the proposed project area site contain drainage channels which connect to the oxbow channel to the north and the east. These channels do support flowing water, particularly during periods or immediately following periods of heavy rainfall.

Vegetation along these drainage ditches is consistent with GA1 Agricultural Grassland and Wet Grassland with species including common grass species, mainly rye grass (*Lolium sp.*) and Yorkshire fog (*Holcus lanatus*), creeping thistle (*Cirsium arvense*), spear thistle (*Cirsium vulgare*), ragwort (*Senecio jacobaea*), dock (*Rumex obtusifolius*), clover (*Trifolium sp.*), creeping buttercup (*Ranunculus repens*), common rush (*Juncus effusus*) and black bog rush (*Schoenus nigricans*)

## 3.2 Improved grassland (GA)

### Improved Agricultural Grassland (GA1)

The proposed development footprint of the substation will primarily be located upon improved agricultural grassland habitats (GA1). At present, these habitats support beef farming and are intensively managed for grazing and silage harvesting purposes. This is a species poor habitat and includes abundant to frequent perennial rye grass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), creeping bent (*Agrostis stolonifera*), meadow foxtail (*Alopecurus pratensis*), sweet vernal grass (*Anthoxanthum odoratum*), creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*), dandelion (*Taxacum sp.*), creeping thistle (*Cirsium palustre*), nettles (*Urtica dioica*), and broadleaved dock (*Rumex obtusifolius*).

## 3.3 Semi-natural grassland (GS)

### Wet grassland (GS4)

A flooded area within the proposed project area supports grassland and marsh, specifically wet grassland, that is comparably poorer draining and lower lying than the remainder of the site.

Plant species composition within this improved wet grassland mosaic includes locally frequent hard rush (*Juncus inflexus*), occasional common rush (*Juncus effusus*), meadow foxtail (*Alopecurus pratensis*) and creeping bent (*Agrostis stolonifera*). The grass species, within this habitat mainly consist of rye grass (*Lolium sp.*) and Yorkshire fog (*Holcus lanatus*), with common agricultural weeds, such as creeping thistle (*Cirsium arvense*), spear thistle (*Cirsium vulgare*), ragwort (*Senecio jacobaea*), soft rush (*Juncus effusus*) and dock (*Rumex obtusifolius*) frequent throughout.

## 3.4 Linear woodland (WL)

### Hedgerows (WL1)

Hedgerow habitat occurs along the western border and southern border neighbouring the next fields. This habitat occurs as a broken and gappy habitat in mosaic with treelines. This habitat occurs along the drainage ditches that flow into the River Shannon oxbow. Some areas of the hedgerows have not been maintained and are now overgrown. A fence line occurs within the field before the hedgerows to prevent livestock from crossing through the area. Hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) are the predominant hedgerow species, while some internal hedgerows near the centre of the site comprise gorse (*Ulex europaeus*). In addition to hawthorn, species such as birch (*Betula pendula*) are occasional with localised young and semi-mature ash (*Fraxinus excelsior*) and Sycamore (*Acer pseudoplatanus*) overtopping some of the hedgerow structures. The hedgerow ground flora is mainly comprised of bramble (*Rubus fruticosus* agg.), nettle (*Urtica dioica*) and occasional bracken (*Pteridium aquilinum*) establishing and spreading from the base of the hedgerows.

Other species within this habitat include Bramble (*Rubus fruticosus*), Holly (*Ilex aquifolium*), Gorse (*Ulex europaeus*), Ivy (*Hedera helix*), Bracken (*Pteridium aquilinum*), nettles (*Urtica dioica*), Ash (*Fraxinus excelsior*), Birch (*Betula pendula*) and Sycamore (*Acer pseudoplatanus*).

### Treelines (WL2)

The treelines within this proposed project area occur within mosaic of the hedgerows along the western and southern borders of the field. Treeline habitat support species such as ash (*Fraxinus excelsior*), Sycamore (*Acer pseudoplatanus*) and Birch (*Betula pendula*).

### 3.5 Disturbed Ground (ED)

#### Recolonising Bare Ground (ED3)

An access road provides access to the fields within Big Island but is only within proximity to the proposed project area. The access road stops before the proposed project area field and does not occur within the boundaries or the directly adjacent area. Species within this habitat can include ragwort (*Senecio jacobaea*), willow herbs (*Epilobium* sp.), dandelion (*Taxacum* sp.), doc (*Rumex obtusifolius*), creeping thistle (*Cirsium arvense*), clover (*Trifolium* sp.) and bryophytes.

## 4. Ecological Appraisal & Species Recorded

The subsequent list of species is based on recordings made during the walkover survey of the site undertaken on 24<sup>th</sup> of November 2022. A multi-disciplinary ecological survey approach was taken during the walkover survey. The walkover survey was used to record the presence, or likely presence, of a range of protected species, including bats, non-volant mammals, amphibians, and birds. Potential suitable habitats were investigated for any signs of faunal presence. As part of this report the relevant historic records from the National Biodiversity Data Centre (NBDC) will be accessed and the findings included as part of the overall biodiversity summary of a site.

### 4.1 Volant & Non-Volant Mammals

Historic NBDC records for protected volant and non-volant mammals were reviewed within the 10km and 2km grid squares surrounding the proposed development site and tabulated below in Further Appendices.

#### Bat Habitat Appraisal

The walkover survey of the site was carried out during daylight hours. Relevant features on the site were visually assessed for potential foraging and roosting habitats for bats. Trees on site were surveyed at ground level through exterior inspections.

#### Results:

No bat species were recorded within the 2km x 2km grid square (M91G) that makes up the site, however, Daubenton's Bat (*Myotis daubentonii*), Lesser Noctule (*Nyctalus leisleri*), Pipistrelle (*Pipistrellus pipistrellus sensu lato*), and Soprano Pipistrelle (*Pipistrellus pygmaeus*) were all historically observed within the 10km x 10km grid square that makes up the site (M91). The overall suitability of the area for bat activity was high (32.44). The habitat suitability index for 'All bats' and for each individual species of bat is presented below (**See Table 9.1 below**). The index ranges from 0 to 100, with 100 being most suitable for bats.

The linear woodland habitats provide the greatest foraging and commuting potential for bats. However, the treelines within the boundaries for the proposed project area do not contain suitable trees for roosting and is considered poor foraging habitat for bat species. The majority of trees within these habitats were young or semi-mature. These trees did not support large crevices, apertures or dense ivy growth that could provide suitable roosting habitat for bats.

Table 9.1: Bat Suitability Index for the site and its surrounding area (NBDC, 2022).

Suitability index for different bat species:		
Common Name	Scientific Name	Suitability Score
Soprano pipistrelle	Pipistrellus pygmaeus	40
Brown long-eared bat	Plecotus auritus	43
Common pipistrelle	Pipistrellus pipistrellus	45
Lesser horseshoe bat	Rhinolophus hipposideros	2
Leisler's bat	Nyctalus leisleri	40
Whiskered bat	Myotis mystacinus	40
Daubenton's bat	Myotis daubentonii	33
Nathusius' pipistrelle	Pipistrellus nathusii	3
Natterer's bat	Myotis nattereri	46
Total Score for All Bat Species		32.44

### Eurasian Badger (*Meles meles*)

Badgers were recorded within the 2km x 2km grid square on which the site is located. No evidence of badger breeding or dwelling sites (including sett complexes or latrines) or foraging (prints, guard hairs etc.) were identified within the proposed development site during the ecology walkover on 24<sup>th</sup> November 2022. However, due to the suitable habitats surrounding the survey area, and previous survey results, it cannot be ruled out that badgers may use the site for foraging and/or passageway between sites.

### Otter (*Lutra lutra*)

Otters were not recorded within the 2km x 2km grid square but were recorded within the 10km x 10km grid square on which the site is located. No evidence or signs of Otter were identified within the proposed development site during the site walkover survey. The drainage channels on site and nearby watercourses provide poor suitability to support otter commuting, foraging and feeding and it is unlikely that otter would use this site or its associated drainage channels. However, suitable habitats for these species are frequent in the larger geographic area. It is likely that the species is using the River Shannon and it therefore cannot be ruled out that the species may use the River Shannon oxbow channel and the site for foraging and/or passageway between areas.

### Red Fox (*Vulpes vulpes*)

Red Fox were not recorded within the 2km x 2km grid square but were recorded within the 10km x 10km grid square that makes up the site. No evidence of red fox was observed during the field visit, including foraging signs, prints, scats, and scent markings. No dwelling sites (dens) were observed onsite. However, it is both possible that foxes use the site for foraging and/or passage, based on the suitable habitats of the surrounding lands and within the purposed project area.

### Pine Marten (*Martes martes*)

Pine marten were not historically observed within the 2km x 2km grid square but were observed within the 10km x 10km grid square that the site is located within. No evidence or signs of pine marten were identified within the proposed development site during the site walkover survey. However, due to the suitable habitat within the surrounding lands it cannot be ruled out that pine marten may use the site for foraging and/or passageway between sites.



## Other non-volant mammals

Other protected mammal species including Eurasian Pygmy Shrew (*Sorex minutus*) and Irish Hare (*Lepus timidus subsp. hibernicus*) have been observed historically within the 2km x 2km grid square that makes up the site. No evidence of these species or other protected mammal species was observed during the field visit. However due to the suitable habitat in the surrounding lands it cannot be ruled out that these species use this site for foraging and/or passageway between sites.

## 4.2 Amphibians

No amphibians have been historically observed within the 2km x 2km grid square, however, Common Frog (*Rana temporaria*) have been historically observed within the 10km x 10km grid square. No amphibians were identified during the site walkover surveys. It cannot be ruled out that amphibians utilise the flooded area within the field or the drainage channels that occur within the west and southern boundaries as well as the greater surrounding area. During the walkover survey no incidental signs of amphibians were recorded.

## 4.3 Reptiles

The Common Lizard (*Zootoca vivipara*) was recorded within the 10km x 10km grid square but was not recorded within the 2km x 2km grid square that makes up the site. No observations of reptiles were recorded during the site walkover.

## 4.4 Birds/Avifauna

Bird activity within the proposed development site and its surrounding environs was typical for the habitat assemblages present i.e. areas comprising of improved grassland and linear hedgerow habitats and drainage channels. To that end, the greatest levels of breeding bird activity was associated with habitats affording suitable cover, i.e. hedgerows and adjacent areas of treelines. The open areas of improved grassland, which surrounds the majority of the proposed development footprint, are largely unsuitable for breeding passerine birds and ground nesting waders and wildfowl.

The following bird species were seen or heard in low numbers along the field boundaries: Northern Lapwing (*Vanellus vanellus*), Black-billed Magpie (*Pica pica*), Black-headed Gull (*Larus ridibundus*), Blue Tit (*Cyanistes caeruleus*), Chaffinch (*Fringilla coelebs*), Common Blackbird (*Turdus merula*), Common Snipe (*Gallinago gallinago*), Common Starling (*Sturnus vulgaris*), European Robin (*Erithacus rubecula*), Grey Heron (*Ardea cinerea*), Grey Wagtail (*Motacilla cinerea*), Hooded Crow (*Corvus cornix*), Mallard (*Anas platyrhynchos*), and Sky Lark (*Alauda arvensis*).

Species of interest of conservation concern such as hen harrier (*Circus cyaneus*) has been recorded within the 10km x 10km grid square (NBDC, 2022). Other species of conservation interest, and for which the SPA was designated, have also been observed within the 10km x 10km grid square (M91) such as Whooper Swan (*Cygnus cygnus*), Corncrake (*Crex crex*), Golden Plover (*Pluvialis apricaria*), Lapwing (*Vanellus vanellus*), Black-tailed Godwit (*Limosa limosa*), and Black-headed Gull (*Larus ridibundus*).

Protected birds recorded in the NBDC 10km grid square which may utilise the site, wider site, or adjacent habitats are listed below in **Section 8: Further Appendices**.

Table 9.2: Bird species observed and recorded during the phase 1 habitat survey site visit.

Bird species recorded during the phase 1 habitat survey		
Common Name	Scientific Name	Designations/Conservation Status
Northern Lapwing	<i>Vanellus vanellus</i>	Red List
Black-billed Magpie	<i>Pica pica</i>	Green List
Black-headed Gull	<i>Larus ridibundus</i>	Red List
Blue Tit	<i>Cyanistes caeruleus</i>	Green List
Chaffinch	<i>Fringilla coelebs</i>	Green List
Common Snipe	<i>Gallinago gallinago</i>	Amber List
Common Blackbird	<i>Turdus merula</i>	Green List
Grey Heron	<i>Ardea cinerea</i>	Green List
Grey Wagtail	<i>Motacilla cinerea</i>	Red List
Hooded Crow	<i>Corvus cornix</i>	Green List
Robin	<i>Erithacus rubecula</i>	Green List
Starling	<i>Sturnus vulgaris</i>	Amber List
Mallard	<i>Anas platyrhynchos</i>	Green List
Sky Lark	<i>Alauda arvensis</i>	Amber List

## 4.5 Other Relevant Species

### Freshwater Fauna Species

*Sea Lamprey (Petromyzon marinus), Brook Lamprey (Lamprita planeri), and River Lamprey (Lamprita fluviatilis)*

Sea Lamprey, Brook Lamprey and River Lamprey have not been recorded within the 10km and 2km grid squares. No evidence of Sea Lamprey, Brook Lamprey and River Lamprey was observed onsite during the ecology walkover.

*Twaite Shad (Alosa fallax fallax) and Allis shad (Alosa fallax)*

Twaite shad have not been recorded within the 10km and 2km grid squares. No evidence of Twaite Shad was observed onsite during the ecology walkover.

*European Eel (Anguilla anguilla).*

European Eel (*Anguilla anguilla*) are not recorded within 10km or 2km of the site (NBDC 2022). None were observed during the ecology walkover.

*Salmon (Salmo salar)*

Salmon have not been recorded within the 10km or 2km grid squares. No evidence of Salmon was observed onsite during the ecology walkover.

### Freshwater White-clawed Crayfish (*Austropotamobius pallipes*)

Freshwater White-clawed Crayfish (*Austropotamobius pallipes*) have not been recorded within the 2km grid square but have been historically observed within the 10km grid square. No evidence of Freshwater White-clawed Crayfish was observed onsite during the ecology walkover.

## 5. Discussion & Conclusion

The Phase 1 habitat survey was conducted on the 24<sup>th</sup> of November 2022 in mild weather conditions (Dry with low cloud cover).

The majority of the site of the proposed development site is pastureland, which is classified as **GA1 (Improved agricultural grassland)**. The vegetation is dominated by common grass species, mainly rye grass (*Lolium sp.*) and Yorkshire fog (*Holcus lanatus*). Other species observed within the area include Creeping Bent (*Agrostis stolonifera*), Meadow Foxtail (*Alopecurus pratensis*), and Sweet Vernal Grass (*Anthoxanthum odoratum*). Common agricultural weeds can also be found within this habitat including creeping thistle (*Cirsium arvense*), spear thistle (*Cirsium vulgare*), ragwort (*Senecio jacobaea*), dock (*Rumex obtusifolius*), clover (*Trifolium sp.*), and creeping buttercup (*Ranunculus repens*). This is of low biodiversity value.

While there is some hedgerows and treelines present surrounding the proposed project area, these remain gappy and unmaintained and do not provide a continuous path for wildlife to be used as corridors.

There are no Annex I habitats listed under the EU Habitats Directive present within the site boundary or within the immediate vicinity. No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded on the site. In addition, no invasive species were observed within the proposed development site.

The proposed project area occurs within the boundaries for the River Shannon Callows SAC (000216), Middle Shannon Callows SPA (004096) and has a hydrological connection to the Lough Derg, North-east Shore SAC (002241) and Lough Derg (Shannon) SPA (004058). There is a section of the River Shannon oxbow channel which connects to the River Shannon south of the proposed project area.

The site lacks suitable habitat or watercourses for aquatic faunal species within its boundary lines. No significant evidence of protected Irish mammal species under the Irish Wildlife Act 1976-2018, were recorded during the walkover survey. No significant habitat for protected bat species will be lost as part of the proposed project. No significant habitat for protected bird species, comprising wintering and/or breeding habitat for Annex I or Birds of Conservation Concern Ireland (BoCCI) red listed species, occurs within the proposed development site.

Regarding the precautionary principle, and in consideration of the above information set out in this report, it can be concluded that the proposed project will not result in the loss of ecologically significant habitats or species and will not have any significant effects on the wider ecology in the surrounding area.

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## 8. Further Appendices

Table 9.3: Protected bird species recorded in 10km x 10km grid surrounding the site (NBDC, 2022).

Protected Bird species recorded in 10km x 10km grid square		
Common Name	Scientific Name	Designations/Conservation Status
Barn Owl	<i>Tyto alba</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Barn Swallow	<i>Hirundo rustica</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Barnacle Goose	<i>Branta leucopsis</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bar-tailed Godwit	<i>Limosa lapponica</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bewick's Swan	<i>Cygnus columbianus subsp. bewickii</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Black-headed Gull	<i>Larus ridibundus</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Black-tailed Godwit	<i>Limosa limosa</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Coot	<i>Fulica atra</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section II Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Grasshopper Warbler	<i>Locustella naevia</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kestrel	<i>Falco tinnunculus</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kingfisher	<i>Alcedo atthis</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Linnet	<i>Carduelis cannabina</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Pheasant	<i>Phasianus colchicus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Common Pochard	<i>Aythya ferina</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section II Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Quail	<i>Coturnix coturnix</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Common Redshank	<i>Tringa totanus</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Common Sandpiper	<i>Actitis hypoleucos</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Snipe	<i>Gallinago gallinago</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section III Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Starling	<i>Sturnus vulgaris</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Swift	<i>Apus apus</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Wood Pigeon	<i>Columba palumbus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Corn Crane	<i>Crex crex</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Dunlin	<i>Calidris alpina</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List



Eurasian Curlew	<i>Numenius arquata</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section II Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Eurasian Teal	<i>Anas crecca</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section II Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Eurasian Wigeon	<i>Anas penelope</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section II Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Eurasian Woodcock	<i>Scolopax rusticola</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section III Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
European Golden Plover	<i>Pluvialis apricaria</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Protected Species: EU Birds Directive >> Annex II, Section II Bird Species    Protected Species: EU Birds Directive >> Annex III, Section III Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Gadwall	<i>Anas strepera</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Garganey	<i>Anas querquedula</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Black-backed Gull	<i>Larus marinus</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Cormorant	<i>Phalacrocorax carbo</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Crested Grebe	<i>Podiceps cristatus</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Greater Scaup	<i>Aythya marila</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section II Bird Species    Protected Species: EU Birds Directive >> Annex III, Section III Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Greater White-fronted Goose	<i>Anser albifrons</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Protected Species: EU Birds Directive >> Annex II, Section II Bird Species    Protected Species: EU Birds Directive >> Annex III, Section III Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Grey Partridge	<i>Perdix perdix</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Hen Harrier	<i>Circus cyaneus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Herring Gull	<i>Larus argentatus</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
House Martin	<i>Delichon urbicum</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
House Sparrow	<i>Passer domesticus</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Jack Snipe	<i>Lymnocyrtus minimus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section III Bird Species
Lesser Black-backed Gull	<i>Larus fuscus</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Little Egret	<i>Egretta garzetta</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species
Little Grebe	<i>Tachybaptus ruficollis</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mallard	<i>Anas platyrhynchos</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Merlin	<i>Falco columbarius</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mute Swan	<i>Cygnus olor</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Northern Lapwing	<i>Vanellus vanellus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section II Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List



Norther Pintail	<i>Anas acuta</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section II Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Norther Shoveler	<i>Anas clypeata</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section III Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Peregrine Falcon	<i>Falco peregrinus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species
Pink-footed Goose	<i>Anser brachyrhynchus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section II Bird Species
Red Grouse	<i>Lagopus lagopus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Red-breasted Merganser	<i>Mergus serrator</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section II Bird Species
Red-footed Falcon	<i>Falco tinnunculus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species
Ringed Plover	<i>Charadrius hiaticula</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Rock Pigeon	<i>Columba livia</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Ruff	<i>Philomachus pugnax</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Sand Martin	<i>Riparia riparia</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Short-eared Owl	<i>Asio flammeus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Sky Lark	<i>Alauda arvensis</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Spotted Crake	<i>Porzana porzana</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Spotted Flycatcher	<i>Muscicapa striata</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Stock Pigeon	<i>Columba oenas</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Tufted Duck	<i>Aythya fuligula</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section II Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Water Rail	<i>Rallus aquaticus</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Whinchat	<i>Saxicola rubetra</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
White-tailed Eagle	<i>Haliaeetus albicilla</i>	Protected Species: Wildlife Acts
Whooper Swan	<i>Cygnus cygnus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex I Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Yellowhammer	<i>Emberiza citrinella</i>	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

Table 9.4: Protected bird species recorded in 2km x 2km grid surrounding the site (NBDC, 2022).

Protected Bird species recorded in 2km x 2km grid square		
Common Name	Scientific Name	Designations/Conservation Status
Northern Lapwing	<i>Vanellus vanellus</i>	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section II Bird Species    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

Table 9.5: Protected Mammal species recorded in 10km x 10km grid surrounding the site (NBDC, 2022).

Protected Mammal species recorded in 10km x 10km grid square		
Common Name	Scientific Name	Designations/Conservation Status
Daubenton's Bat	<i>(Myotis daubentonii)</i>	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex IV    Protected Species: Wildlife Acts
Eurasian Badger	<i>(Meles meles)</i>	Protected Species: Wildlife Acts
Eurasian Pygmy Shrew	<i>Sorex minutus</i>	Protected Species: Wildlife Acts
Eurasian Red Squirrel	<i>(Sciurus vulgaris)</i>	Protected Species: Wildlife Acts
European Otter	<i>(Lutra lutra)</i>	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex II    Protected Species: EU Habitats Directive >> Annex IV    Protected Species: Wildlife Acts
Lesser Noctule	<i>(Nyctalus leisleri)</i>	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex IV    Protected Species: Wildlife Acts
Pine Marten	<i>(Martes martes)</i>	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex V    Protected Species: Wildlife Acts
Pipistrelle	<i>(Pipistrellus pipistrellus sensu lato)</i>	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex IV    Protected Species: Wildlife Acts
Red Deer	<i>Cervus elaphus</i>	Protected Species: Wildlife Acts
Soprano Pipistrelle	<i>(Pipistrellus pygmaeus)</i>	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex IV    Protected Species: Wildlife Acts
West European Hedgehog	<i>(Erinaceus europaeus)</i>	Protected Species: Wildlife Acts

Table 9.6: Protected Mammal species recorded in 2km x 2km grids surrounding the site (NBDC, 2022).

Protected Mammal species recorded in 2km x 2km grid square		
Common Name	Scientific Name	Designations/Conservation Status
Eurasian Badger	<i>(Meles meles)</i>	Protected Species: Wildlife Acts
Eurasian Pygmy Shrew	<i>Sorex minutus</i>	Protected Species: Wildlife Acts

Table 9.7: Protected amphibian species recorded in 10km x 10km grid surrounding the site (NBDC, 2022).

Protected Amphibian species recorded in 10km x 10km grid square		
Common Name	Scientific Name	Designations/Conservation Status
Common Frog	<i>(Rana temporaria)</i>	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex V    Protected Species: Wildlife Acts

Table 9.8: Protected freshwater species recorded in 10km x 10km grids surrounding the site (NBDC, 2022).

Protected Freshwater species recorded in 10km x 10km grid square		
Common Name	Scientific Name	Designations/Conservation Status
Freshwater White-clawed Crayfish	<i>(Austropotamobius pallipes)</i>	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex II    Protected Species: EU Habitats Directive >> Annex V    Protected Species: Wildlife Acts

## Appendix 3. CONSERVATION OBJECTIVES

### River Shannon Callows SAC (000216)

#### Qualifying Interests

*\* indicates a priority habitat under the Habitats Directive*

000216	River Shannon Callows SAC
1355	Otter <i>Lutra lutra</i>
6410	<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> )
6510	Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> )
7230	Alkaline fens
8240	Limestone pavements*
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, <i>Salicion albae</i> )*

Please note that this SAC overlaps with Middle Shannon Callows SPA (004096) and is adjacent to Pilgrim's Road Esker SAC (001776), Lough Derg, North-East Shore SAC (002241), Redwood Bog SAC (002353), Lough Derg (Shannon) SPA (004058), River Little Brosna Callows SPA (004086) and River Suck Callows SPA (004097). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping and adjacent sites as appropriate.



## Middle Shannon Callows SPA (004096)

### Qualifying Interests

\* indicates a priority habitat under the Habitats Directive

004096	Middle Shannon Callows SPA
A038	Whooper Swan <i>Cygnus cygnus</i>
A050	Wigeon <i>Anas penelope</i>
A122	Corncrake <i>Crex crex</i>
A140	Golden Plover <i>Pluvialis apricaria</i>
A142	Lapwing <i>Vanellus vanellus</i>
A156	Black-tailed Godwit <i>Limosa limosa</i>
A179	Black-headed Gull <i>Chroicocephalus ridibundus</i>
A999	Wetlands

Please note that this SPA overlaps with or is adjacent to Lough Derg (Shannon) SPA (004058), River Little Brosna Callows SPA (004086), River Suck Callows SPA (004097), River Shannon Callows SAC (000216), Pilgrim's Road Esker SAC (001776), Lough Derg, North-east Shore SAC (002241) and Redwood Bog SAC (002353). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping sites as appropriate.



## Lough Derg, North-east Shore SAC (002241)

### Qualifying Interests

\* indicates a priority habitat under the Habitats Directive

002241	Lough Derg, North-east Shore SAC
5130	<i>Juniperus communis</i> formations on heaths or calcareous grasslands
7210	Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion davallianae*
7230	Alkaline fens
8240	Limestone pavements*
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)*
91J0	<i>Taxus baccata</i> woods of the British Isles*

Please note that this SAC overlaps with Lough Derg (Shannon) SPA (004058) and Middle Shannon Callows SPA (004096) and is adjacent to River Shannon Callows SAC (000216) and Barroughter Bog SAC (000231). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping and adjacent sites as appropriate.

DK

## Lough Derg, North-east Shore SAC (004058)

### Conservation objectives for Lough Derg (Shannon) SPA (004058)

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

**Objective:** To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

Bird Code	Common Name	Scientific Name
A017	Cormorant	<i>Phalacrocorax carbo</i>
A061	Tufted Duck	<i>Aythya fuligula</i>
A067	Goldeneye	<i>Bucephala clangula</i>
A193	Common Tern	<i>Sterna hirundo</i>



## Appendix 4. PHOTOGRAPHS



*Photograph 9.1: GA1 habitat present within the proposed development site.*



*Photograph 9.2: ED3 Recolonising bare ground habitat of the access road south of the proposed project area*



*Photograph 9.3: GS4 wet grassland habitat and flooded area within the proposed project area.*



*Photograph 9.4: FW4 drainage ditches within the proposed development area*





*Photograph 9.5: WL2 Treeline within the proposed development area*





*Photograph 9.6: WL1 unmanaged hedgerows located within the proposed development site*



*Photograph 9.7: FW2 Depositing/Lowland rivers habitat within proximity of the proposed development area*