Housing Development, Ardagh, Co. Limerick.

Appropriate Assessment Screening Report

May 2022

Project No.: 2021s0339

Limerick City and County Council
Dooradoyle Road,
Dooradoyle,
Limerick,

JBA Project Manager

Bernadette O'Connell
Block 660, Unit 8
Greenogue Business Plaza
Greenogue Business Park
Rathcoole
DUBLIN

Revision History

Revision Ref / Date Issued	Amendments	Issued to
S3-P01 17/09/2021	1st DRAFT	Don Shorten (LCCC)
S3-P02 24/09/2021	2nd DRAFT	Don Shorten (LCCC)
A3-C01 08/11/2021	Final Report	Don Shorten (LCCC)
A3-C02 30/05/2022	Changes to Site Layout	Don Shorten (LCCC)

Contract

This report describes work commissioned by Limerick City and County Council (LCCC), by a letter dated 08 March 2021. Mark Desmond of JBA Consulting carried out this work.

Prepared by .....Mark Desmond BSc (Hons) MSc

.....Assistant Ecologist

Reviewed by .....Patricia Byrne BSc (Hons) PhD MCIEEM

.....Senior Ecologist

Purpose

This document has been prepared as a Final Report for LCCC. JBA Consulting accepts no responsibility or liability for any use that is made of this document other than by the Client for the purposes for which it was originally commissioned and prepared.

JBA Consulting has no liability regarding the use of this report except to LCCC.

Copyright

Carbon Footprint

A printed copy of the main text in this document will result in a carbon footprint of 239g if 100% post-consumer recycled paper is used and 304g if primary-source paper is used. These figures assume the report is printed in black and white on A4 paper and in duplex.

JBA is aiming to reduce its per capita carbon emissions.

Contents

List of Figures

List of Tables

Abbreviations

AA	Appropriate Assessment
CIEEM	Chartered Institute of Ecology and Environmental Management
DEHLG	Department of Environment, Heritage and Local Government
EC	European Communities
EPA	Environmental Protection Agency
EU	European Union
GIS	Geographical Information Systems
GSI	Geographical Survey Ireland
INNS	Invasive Non-native Species
IROPI	Imperative Reasons of Over-riding Public Interest
LCCC	Limerick City and County Council
NBDC	National Biodiversity Data Centre
NPWS	National Parks and Wildlife Service
OPR	Office of the Planning Regulator
PE	Population Equivalent
QI	Qualifying Interest
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SPA	Special Protection Area
WFD	Water Framework Directive
WWTP	Waste Water Treatment Plant
ZoI	Zone of Influence

1 Introduction

1.1 Background

JBA Consulting Engineers and Scientists Ltd. (hereafter JBA) has been commissioned by Limerick City and County Council to prepare an Appropriate Assessment Screening Report for a proposed housing development at O'Connor Park, Ardagh, Co. Limerick (the 'proposed development'). The proposed development consists of 10 no. homes, parking area, and green spaces.

Screening for appropriate assessment is intended to be an initial examination which must be carried out by the planning authority or An Bord Pleanála as the competent authority. However, this screening is completed on behalf of the project proposer to show that likely significant effects have been considered in the project development and design, and where necessary progress with further assessment.

1.2 Legislative Context

Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora, known as the 'Habitats Directive' - provides legal protection for habitats and species of European importance. Article 2 of the Directive requires the maintenance or restoration of habitats and species of European Community interest, at a favourable conservation status. Articles 3 - 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 sites. Natura 2000 sites are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79 / 409 / EEC).

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans or projects affecting Natura 2000 sites. Article 6(3) establishes the requirement for Appropriate Assessment:

"*Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the 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(4) deals with the steps that should be taken when it is determined, as a result of Appropriate Assessment, that a plan/project will adversely affect a European site. Issues dealing with alternative solutions, imperative reasons of overriding public interest and compensatory measures need to be addressed in this case.

Article 6(4) states:

"*If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*

Where the site concerned hosts a priority natural habitat type and / or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."

The requirements of Articles 6(3) and 6(4) of the Habitats Directive have been transposed into Irish legislation by means of interalia the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 / 2011) as amended.

1.3 Appropriate Assessment Process

Guidance on the Appropriate Assessment (AA) process was produced by the European Commission in 2002, which was subsequently developed into guidance specifically for Ireland by the Department of Environment, Heritage and Local Government (DEHLG, 2009). These guidance documents identify a staged approach to conducting an AA, as shown Figure 1-1 in overleaf.

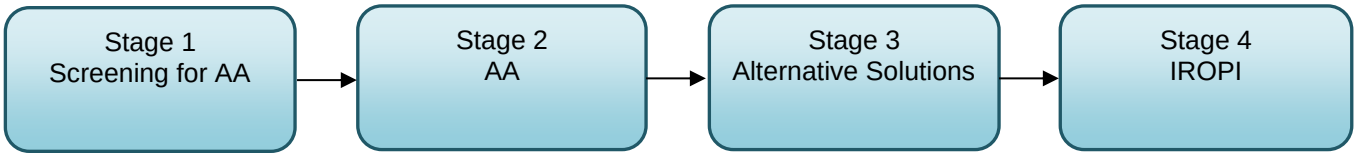


Figure 1-1: The Appropriate Assessment Process (DEHLG, 2009)

1.3.1 Stage 1 - Screening for AA

The initial, screening stage of the Appropriate Assessment is to determine:

whether the proposed plan or project is directly connected with or necessary for the management of the European designated site for nature conservation

if it is likely to have a significant adverse effect on the European designated site, either individually or in combination with other plans or projects

For those sites where, potential adverse impacts are identified, either alone or in combination with other plans or projects, further assessment is necessary to determine if the proposals will have an adverse impact on the integrity of a European designated site, in view of the site's conservation objectives (i.e. the process proceeds to Stage 2).

1.3.2 Stage 2 - AA

This stage requires a more in-depth evaluation of the plan or project, and the potential direct and indirect adverse impacts of them on the integrity and interest features of the European designated site(s), alone and in-combination with other plans and projects, taking into account the site's structure, function, conservation objectives, and best scientific knowledge in the field. Where required, mitigation or avoidance measures will be suggested.

The competent authority can only agree to the plan or project after having ascertained that it will not adversely affect the integrity of the site(s) concerned. If this cannot be determined then alternative solutions will need to be considered (i.e. the process proceeds to Stage 3).

1.3.3 Stage 3 - Alternative Solutions

Where adverse impacts on the integrity of Natura 2000 sites are identified, and mitigation cannot be satisfactorily implemented, alternative ways of achieving the objectives of the plan or project that avoid adverse impacts need to be considered. If none can be found, the process proceeds to Stage 4.

1.3.4 Stage 4 - IROPI

Where adverse impacts of a plan or project on the integrity of Natura 2000 sites are identified and no alternative solutions exist, the plan will only be allowed to progress if imperative reasons of overriding public interest can be demonstrated. In this case compensatory measures will be required.

The process only proceeds through each of the four stages for certain plans or projects. For example, for a plan or project, not connected with management of a site, but where no likely significant impacts are identified, the process stops at stage 1. Throughout the process, the precautionary principle must be applied, so that any uncertainties do not result in adverse impacts on a site.

This report is in support of a Stage 1 Screening for Appropriate Assessment.

1.4 Methodology

The Screening for Appropriate Assessment has been prepared having regard to the Birds and Habitats Directives, the European Communities (Birds and Natural Habitats) Regulations 2011-15 as amended and relevant jurisprudence of the EU and Irish courts. The following documents have also been used to provide guidance for the assessment:

- DEHLG (2009 rev 2010), Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government (DEHLG, 2009).

- Office of the Planning Regulator (2021) OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management (OPR 2021).
- European Communities (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 (European Commission, 2000).
- 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 (European Commission et al., 2002).
- EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission (European Commission, 2007).
- CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater and Coastal, Second Ed. (Chartered Institute of Ecology and Environmental Management, 2016)
- Fossitt, J, (2000). A Guide to Habitats in Ireland. The Heritage Council, Kilkenny (Fossitt, 2000)

1.4.1 Desktop study

A desktop study was conducted of available published and unpublished information, along with a review of data available on the NPWS and National Biodiversity Data Centre (NBDC) web-based databases, in order to identify key habitats and species (including legally protected and species of conservation concern) that may be present within ecologically relevant distances from the project as explained below. A baseline habitat assessment was performed using satellite imagery. The data sources below (accessed August 2021) were consulted for the desktop study:

- Aerial photography available from www.osi.ie and Esri World Imagery.
- NPWS website (www.npws.ie) where site synopses, Natura 2000 data forms and conservation objectives were obtained along with Annex 1 habitat distribution data and status reports.
- River Basin Management Plans (www.wfdireland.ie)
- NBDC Biodiversity Maps (maps.biodiversityireland.ie)
- Catchments (www.catchments.ie)
- Environmental Protection Agency Maps (https://gis.epa.ie/EPAMaps)
- Geological Survey Ireland website (www.gsi.ie)
- Geological Survey Ireland - Groundwater data viewer (https://dcenr.maps.arcgis.com)

1.4.2 In-combination Assessment

The in-combination assessment followed the process for in-combination set out by the DTA Handbook (Tyldesley and Chapman, 2013). The in-combination impacts are considered only after the assessment of the project alone. If the result of this is that the project will have no effect at all on a European site then no in-combination assessment would be necessary. However, where there is no adverse effect on site integrity, but some adverse effect an assessment of this adverse effect in-combination with other plans or projects is carried out. Other plans or projects were searched for using the National Planning Application Database, EIA portal and Myplan.ie databases all accessed online. If no other plans or projects are identified, then the assessment is complete. Where other plans or projects are identified then initially a review is made of its AA screening, or AA, and if the Competent Authority for the plan or project has made a final determination of no effect on the integrity of any European site, either alone or in-combination, this determination is used in this assessment. Where there is not a full AA, or the findings are unclear or out of date, the plan or project documentation is checked for credible evidence of real (not hypothetical) risk to a European site. Where these are identified then a detailed assessment is carried out. A summary of the approach is presented in Figure 1-2

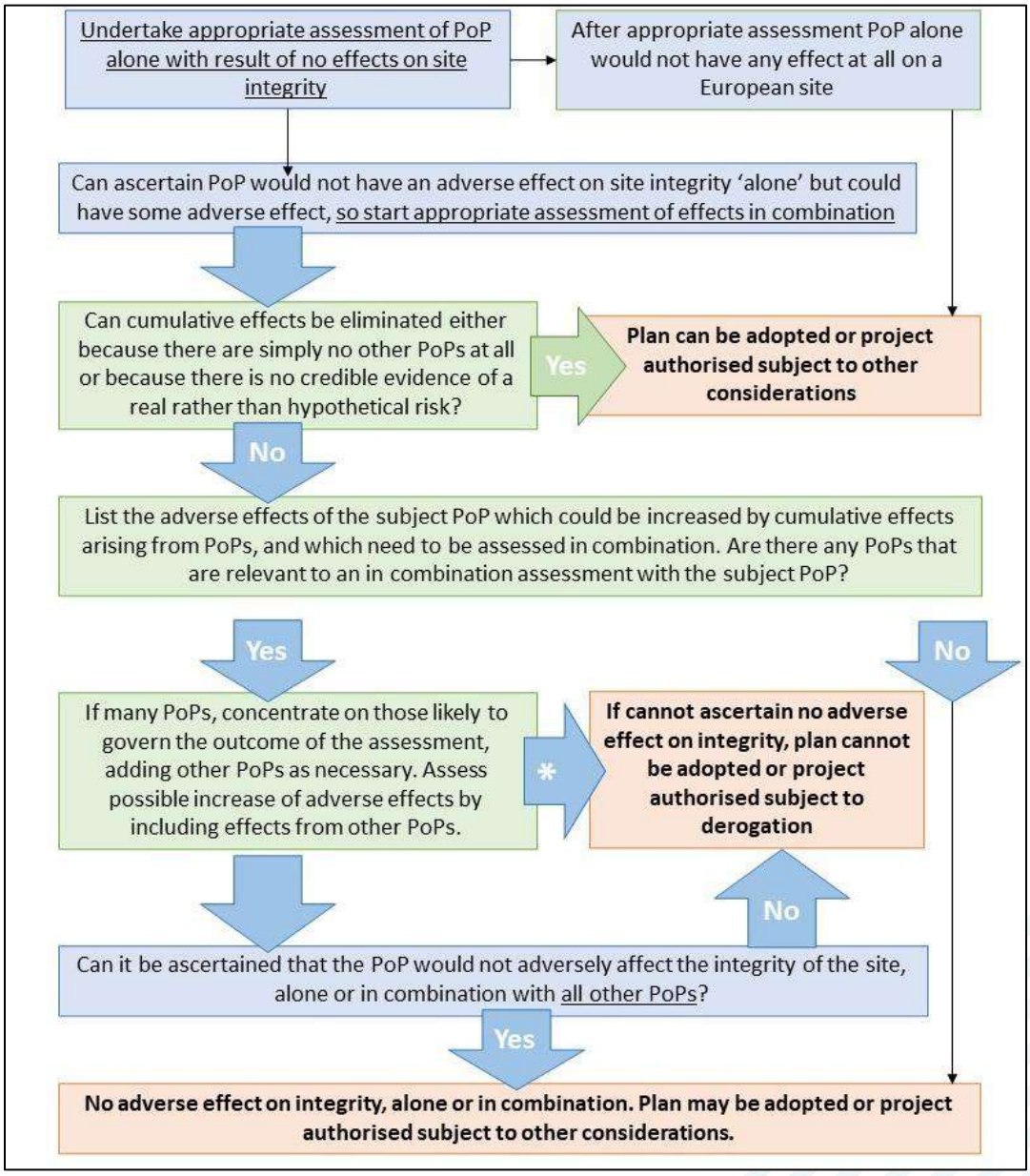


Figure 1-2: Flow diagram of process for in-combination assessment (modified from Chapman & Tyldesley, 2012)

Potential sources of cumulative impacts were identified based on the ecology of valued ecological features only for features where this is a residual or non-significant impact. Potential sources of cumulative impacts were sought within an area where there is the potential for a significant impact on relevant Natura sites identified in Section 4.

1.5 Limitations and constraints

The screening assessment necessarily relies on some assumptions and it was inevitably subject to some limitations. These would not affect the conclusion, but the following points are recorded in order to ensure the basis of the assessment is clear:

- Information on the works and conditions on site are based on current knowledge at the time of writing. Changes to the site since this report was drafted cannot be accounted for
- This assessment is based on the methodology for proposed works as described in this report. Where changes to methodology occur, an ecologist will need to be consulted to determine if the changes need reassessment.

2 Project Description

2.1 The 'Project'

The proposed housing development in O'Connor Park, Ardagh, Co Limerick is not directly connected with or necessary to the management of any Natura 2000 site but may have potential adverse impacts upon the Natura 2000 sites identified in Section 4. Therefore, the proposed Project is subject to the requirements of the Appropriate Assessment process

2.2 Site location

The location for the development is O'Connor Park, Ardagh, Co. Limerick. The proposed housing development will be spread over one plot (Figure 2-1) on an open space site with existing housing to the east and the R521 road to the west. Green fields are to the north and south. The site is approximately 0.60 hectares.

Figure 2-1 Site Location

2.3 Proposed Project

The proposed development comprises of the following spread over a 0.60-hectare site:

- Provision of 10 homes, in the following breakdown:
  - 2 No. 1 Bed (4 person) duplexes (type A1/2)
  - 1 No. 3 Bed (5 person) house (type B)
  - 1 No. 2 Bed (4 person) house (type C)
  - 3 No. 2 Bed (12 person) houses (type D)
  - 1 No. 3 Bed (5 person) house (type E)
  - 2 No. 1 Bed (4 person) duplexes (type F1/2)
- Removal of the western hedgerow and construction of a connecting junction with the R521.

- Footpaths linking into existing pedestrian pathways at O'Connor Park, and the provision of new car parking (19 no. spaces);
- Hard/soft landscaping including front and rear garden walls, tree planting, and grass areas;
- Construction of and/or remedial works to boundaries with adjacent sites;
- Construction of foul and surface water and associated drainage works;

The construction phase of the projected is expected to take 12 months. The operation phase will be permanent, with a Population Equivalence (PE) of 34. A site layout plan is shown in Appendix A.

2.3.1 Water supply and Drainage

The sites water supply, foul water and surface water systems will involve excavation and construction of various connections and drainage lines across the site.

Construction Phase

Surface water will be locally attenuated on site with predefined areas of attenuation placed at the beginning of the project. Construction of the developments' attenuation system will follow best practice guidance i.e., C532 Control of water pollution from construction sites: Guidance for consultants and contractors, and C515 Groundwater control – design and practice, 2nd ed

Operation Phase

Surface water drainage:

The surface water runoff generated from the proposed developments roof and hardstanding drain towards an attenuation tank with hydrocarbon interceptor and flow regulator attached before discharging into the local stormwater sewer towards the east. The attenuation tank has required storage for the 100 year storm event plus 30% allowance for climate change, total volume 259.0 cubic metres. The use of SUDs features such as permeable paving/ porous asphalt and wate butts will provide infiltration and evaporation as much as physical possible and optimise retention time. Water will discharge from site through a series of stormwater sewers which will connect with the existing system immediately to the east of the site. This is an existing local authority storm sewer which runs into O'Connor Park at the 'T' junction) and is a 225mm Ø uPVC service pipe. This stormwater sewer will be extended into the site and each dwelling will connect with the sewer via a 100mm Ø connection. This stormwater will eventually discharge 720m north of the site into the Slewaun Stream, a tributary of the River Deel.

Foul water Drainage:

The proposed foul sewer, fully separated from the proposed storm water drainage, will connect with the existing foul water sewer system in O'Conors Park, which runs next to but separate from the storm water sewer. It is proposed to connect each proposed dwelling into a new 150mm pipe extending from the existing uPVC 150mm Ø foul sewer which is located outside and to the east of the site boundary. 100mm Ø connections will be made at each connection point. The proposed foul sewer is proposed to run through the site (ascending) from east to west, parallel to the proposed 8no. dwellings. The existing foul water sewer system drains to the Ardagh WWTP, after which outfalls to Slewaun Stream and subsequently flows into the River Deel. This WWTP has a PE capacity of 450, and as of 2019 the agglomeration for the site was a PE of 227 (Irish Water, 2020). A connection request has been approved by Irish Water with confirmation of capacity for the development

Water Supply

The water supply to the proposed development will be provided through a new 150ø watermain connection to the existing watermain located south of the site. A bulk water meter will be provided on the service connection to the building. Hydrants will be located in accordance with Technical Guidance Document B of the Building Regulations and as per the Limerick City & County Council Fire Officer's requirement. An Irish Water Pre-Connection Enquiry has been submitted and the site has been deemed suitable by Irish Water.

A water drainage layout plan is shown in Appendix B

2.4 Zone of Influence

The Zone of Influence for the project cannot be drawn by reference to a radius around the project but is based on the potential impact pathways and varies depending on the impact pathway under consideration. For demonstrative purposes a 10km radius ZoI around the site is used as a scale reference but should not be considered a hard boundary for potential impacts. The project will primarily affect the site only, but a wider area of influence is used for impacts relating to noise disturbance (1km), air pollution (10km), ground water (10km), surface water (all Natura 2000 sites downstream of the Ardagh WWTP), and any supporting habitat for SAC/SPA species (5km). This means the final 'Zone of Influence' can be a complex shape not easily defined by a simple distance figure, but in this way the assessment includes all relevant sites whilst avoiding unnecessary inclusion of other sites.

3 Existing environment

3.1 Baseline conditions

Aerial imagery was used to determine the habitats on site. The site is dominated by dry meadows (GA2) with two hedgerows (WL1) running along the site boundaries. Ecological receptors potentially include breeding birds which nest in hedgerows between March and September, commuting bat species which use hedgerows as navigational features and foraging/commuting mammals which shelter in hedgerows and forage within the long grass of the dry meadows. Table 3.1 lists the habitats on site, which are shown in Figure 3.1.

Table 3-1: List of habitats recorded on site

Habitat	Code (Fossitt, 2000)
Hedgerow	WL1
Treeline	WL2
Dry meadows and grassy verges	GS2

Figure 3-1: Habitat map of proposed site.

3.1.1 Flora

National Biodiversity Data Centre (NBDC) records shows no record of any protected flora species being present within site or its immediate vicinity (NBDC, 2021).

3.2 Protected species

Records of protected flora and fauna including amphibians, birds, fish and mammals collated from the NBDC database (NBDC, 2021), present within a 5km radius of the proposed site and within the past 10 years are listed in Appendix C. This table includes the date of the last record of these species within a 5km radius. Of these species, the following are QIs of Natura 2000 sites recorded within the proposed projects ZoI:

- Eurasian Curlew *Numenius arquata*
- Golden Plover *Pluvialis apricaria*
- Greenshank *Tringa nebularia*
- Lapwing *Vanellus vanellus*
- Hen Harrier *Circus cyaneus*

Dry meadow grassland is not a preferred breeding or foraging habitat of Greenshank. Due to the size of the proposed site area and its proximity to existing housing development and road, it is unlikely that the site is used as a nesting or foraging habitat for the other listed species. They are not further considered in this report.

3.3 Invasive species

Records of invasive species collated from the NBDC database (NBDC, 2021) and within a 5km radius of the site have been assessed (see Appendix D). Only one species, the fungoid *Aphanomyces astaci* or commonly known as crayfish plague was recorded. This invasive species is detrimental to the Annex II and V species Whiteclawed Crayfish, *Austropotamobius pallipes* which is a prey species of Otter *Lutra lutra* a QI of the Lower River Shannon SAC. However as the site has no waterbodies within its boundary, the proposed works will not result in translocation, or increased numbers of this species. Invasive species are therefore not considered further in this assessment.

3.4 Water bodies in proximity of the site

The proposed site lies within the Water Framework Directive (WFD) Shannon Estuary South catchment and Deel [Newcastlewest]_SC_040 sub-catchment (EPA, 2021). There are no watercourses within the site boundary; the closest watercourse to the site is the Slewaun Stream (north branch)_010, flowing in a northeasterly direction approximately 470m north of the site boundary (Figure 3-2). The stream does not have a WFD status. The Slewaun Stream is a tributary of the River Deel. The site exists within the Deel[Newcastlewest]_100 subbasin, but the proposed developments surface and foul water is guided to the Slewaun Stream via a sewer and WWTP.

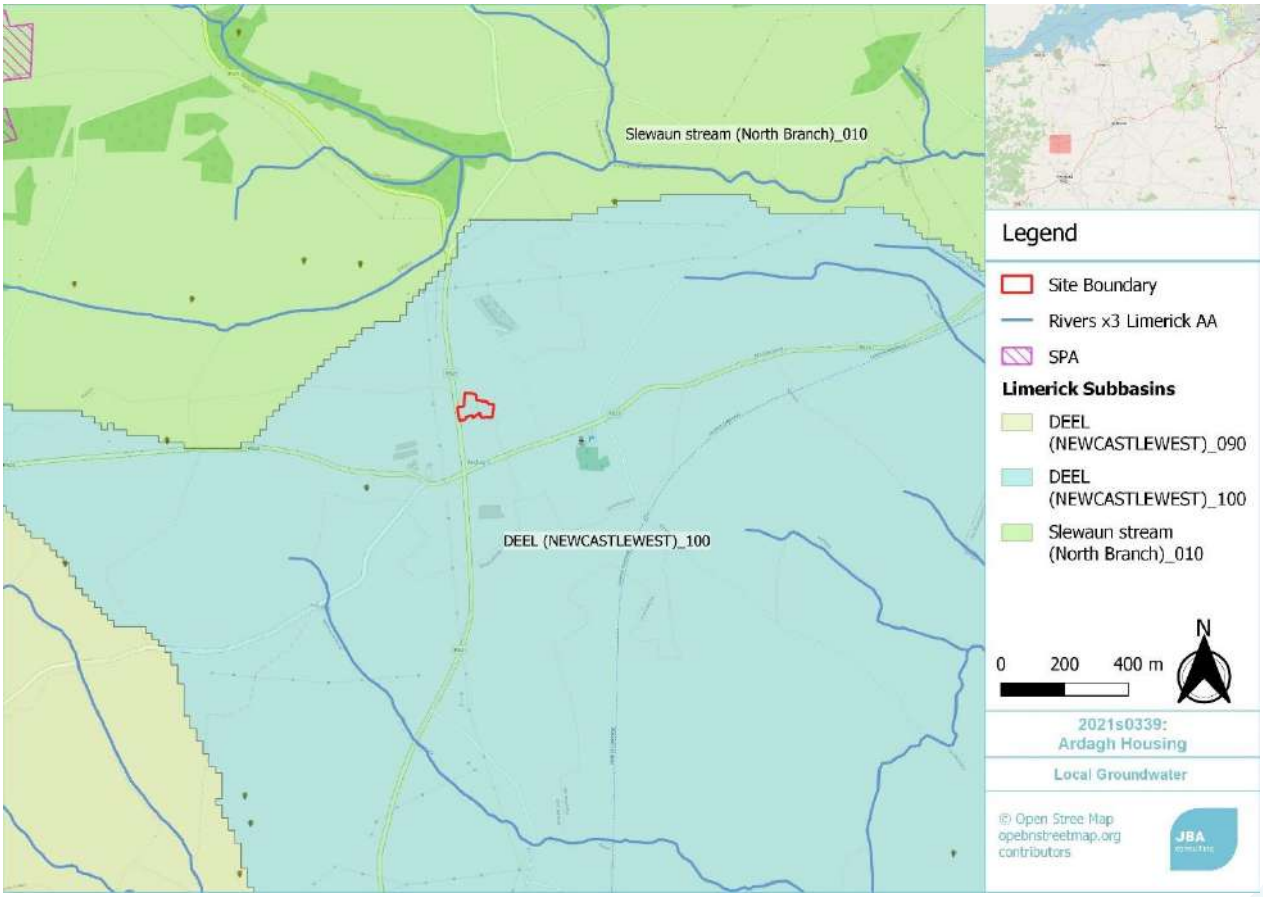


Figure 3-2: Surface water network in vicinity (EPA, 2021)

3.5 Groundwater

The groundwater body, Charleville - IE_SH_G_203, underlying the site (Figure 3-3) is Good status and under Review. Groundwater vulnerability, a measure of the likelihood of groundwater contamination occurring, within the site varies from 'Extreme' to 'High' (Figure 3-4), as classified by the Geological Survey Ireland (GSI, 2021).

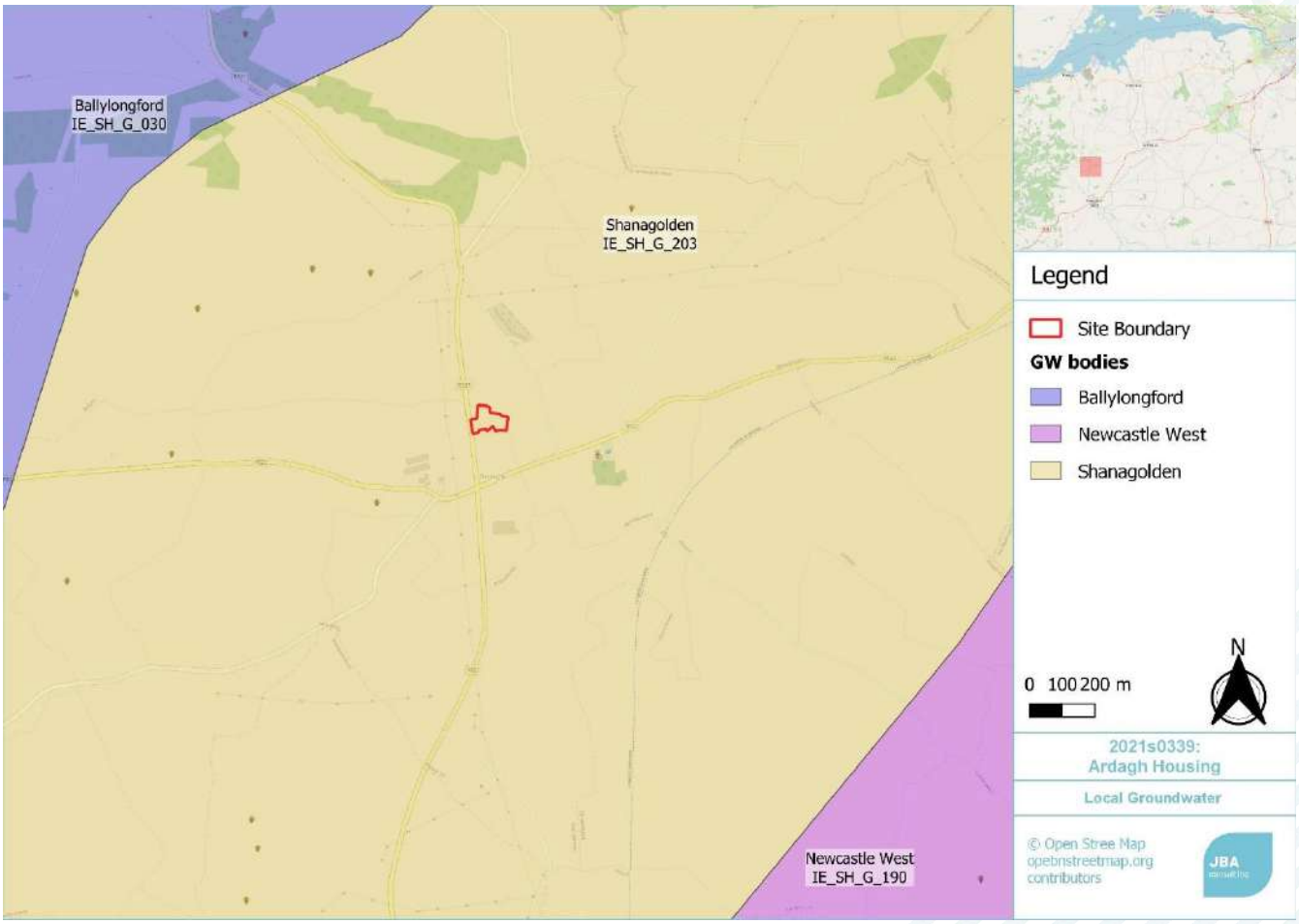


Figure 3-3: Groundwater within proximity of the site (GSI, 2021)

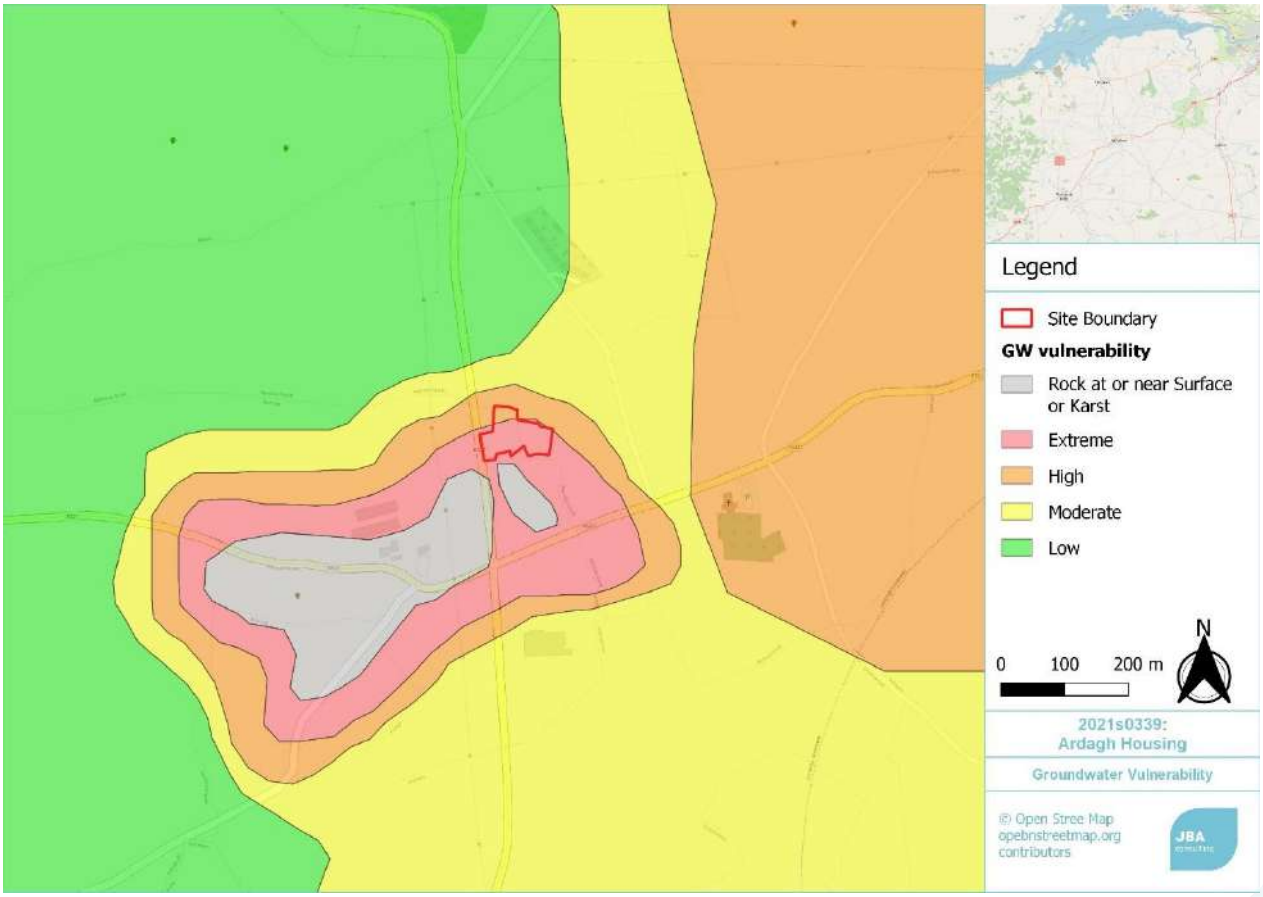


Figure 3-4: Groundwater vulnerability within proximity of the site (GSI, 2021)

4 Natura 2000 sites

The DEHLG (2009) guidance identifies that Screening for Appropriate Assessment of a Plan or Project should consider the following Natura 2000 sites:

- Any Natura 2000 sites within or adjacent to the plan or project area
- Any Natura 2000 sites within the likely zone of impact of the Plan or Project. This is dependent on the nature and scale of the plan, with 15km generally recommended for Plans, but potentially much less for Projects
- Any Natura 2000 sites that are more than 15km from the Plan or Project area, but may potentially be impacted upon, for example, through a hydrological connection

As the scale of proposed works are considered of 'Project' status, and using the source-pathway receptor framework, only Natura 2000 sites within a 5km range of the proposed area were examined, extended to 7km for transitional waterbodies (i.e. where the project ZoI is at, or close to, the coast). on the basis that there was no source, pathway receptors identified outside these ranges. The Natura 2000 sites within the ranges are listed in Table 4-1 below and their locations are shown in Figure 4-1.

Table 4-1 Natura 2000 sites located within the 10km ZoI, extended downstream of the Ardagh WWTP

Natura 2000 site	Site Code	Approximate direct distance from site (closest point)	Distance via nearest watercourse (approx.)
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	004161	1.5 km	Not connected
Lower River Shannon SAC	002165	8.6 km	25.0 km
River Shannon and River Fergus Estuaries SPA	004077	11.1 km	23.2 km

There are no sites designated under the EU Habitats Directive and EU Birds Directive, i.e. SACs and SPAs, located within the footprint of the proposed works. The nearest designated site is the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA at 1.5km direct distance. The proposed project is a small housing development and will only have a local impact. The development will connect into the Ardagh drainage network which processes waste water for the area of Ardagh and there is therefore a surface water pathway between the development and the following Natura 2000 sites:

- Lower River Shannon SAC 002165
- River Shannon and River Fergus Estuaries SPA 004077

The Natura 2000 sites that are within a 10km ZOI and potentially at risk from air pollution are:

- Stack's to Mullaghareirk Mountains,
  West Limerick Hills and Mount Eagle SPA 004161
- Lower River Shannon SAC 002165

The Natura 2000 sites that are within 1km potentially at risk from noise pollution are:

- No sites

Details of the Qualifying Interests and project-relevant threats /pressures and their impacts and sources in relation to the Natura 2000 sites within the 10km ZoI and/or with a hydrological connection that are listed above are given in Table 4-2

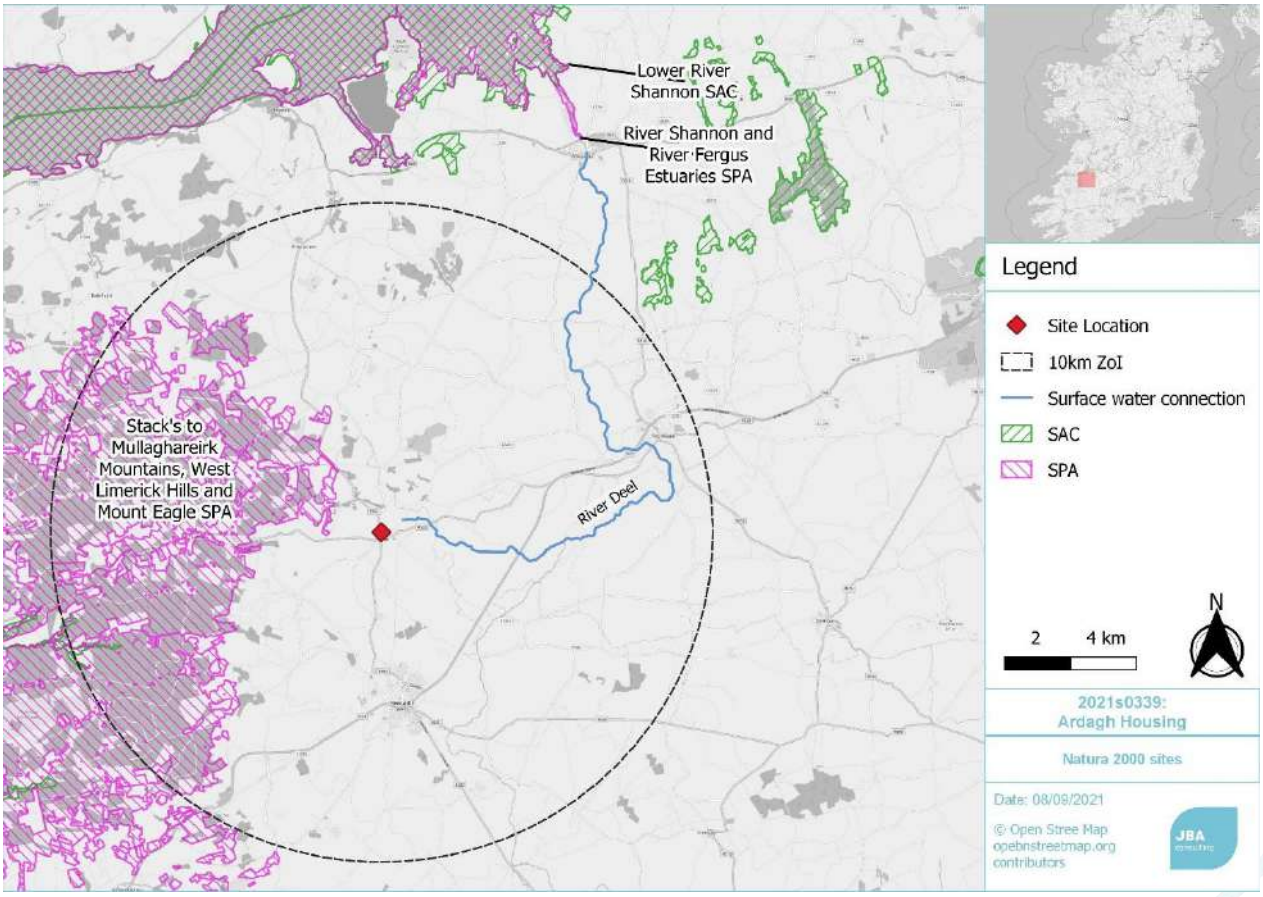


Figure 4 1: Natura 2000 sites within the 15km ZoI, and/or with a 17km hydrological connection (EPA, 2021; NPWS, 2021)

Table 4-2 Natura 2000 sites, QIs and threats/pressures within the ZoI, and connected via a foul water drainage system

Site Name	Brief	Qualifying Interests	Project Relevant Threats / Pressures: Impact (Source)
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	A very large upland site comprising of various valleys and hillls reaching no more that 451m high at Knockhefa. Comprises of upland habitats though almost half (45%) are afforested. A substantial part (28%) of the site is unplanted blanket bog and heath, with both wet and dry heath present. The remainder of the site is largely rough grassland that is used for hill farming. Some areas of scrub and deciduous woodland occur, especially within the river valleys. The site supports approximately 21% of the all-Ireland population of Hen Harrier *Circus cyaneus,* the largest concentration in the country. The sites habitat is excellent for foraging and nesting purposes. Short eared owl *Asio flammeus*, a rare breeding bird in Ireland, has nested in the past and has been recorded intermittently in recent years. Merlin *Falco columbarius* has a presence though the size of the population is unknown. (NPWS 2018a)	- Hen Harrier (*Circus cyaneus*) [A082] (NPWS, 2021b)	- Roads, paths and railroads: Low, Inside - Dispersed habitation: Low, inside (NPWS, 2018a)
Lower River Shannon SAC	A very large, long site approximately 14 km wide and 120 km long, encompassing: the drained river valley which forms the River Shannon estuary; the broader River Fergus estuary, plus a number of smaller estuaries e.g. Poulnasherry Bay; the freshwater lower reaches of the Shannon River, between Killaloe and Limerick, plus the freshwater stretches of much of the Feale and Mulkear catchments; a marine area at the mouth of the Shannon estuary with high rocky cliffs to the north and south; ericaceous heath on Kerry Head and Loop Head; and several lagoons. The site contains many Annexed habitats, including the most extensive area of estuarine habitat in Ireland. A good range of Annexed species are also present, including the only known resident population of *Tursiops truncatus* in Ireland, all three Irish species of lamprey, and a good population of *Salmo salar*. A number of birds listed on the EU Birds Directive either winter or breed in	- Sandbanks which are slightly covered by sea water all the time [1110] - Estuaries [1130] - Mudflats and sandflats not covered by seawater at low tide [1140] - Coastal lagoons [1150] - Large shallow inlets and bays [1160] - Reefs [1170] - Perennial vegetation of stony banks [1220]	- Discharges: Medium, inside/outside - Hunting: Low, inside # - Air pollution: Medium, outside - Invasive non-native species: Low, inside - Urbanisation: Medium, outside (NPWS, 2020)

	the site. The site is internationally important for waterfowl with more than 50,000 individuals occurring in winter. Several species listed in the Irish Red Data Book are present, perhaps most notably the only known Irish populations of *Scirpus triqueter.* (NPWS, 2020)	- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] - *Salicornia* and other annuals colonising mud and sand [1310] - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] - Mediterranean salt meadows (*Juncetalia maritimi*) [1410] - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] - Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] - *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] - *Petromyzon marinus* (Sea Lamprey) [1095] - *Lampetra planeri* (Brook Lamprey) [1096] - *Lampetra fluviatilis* (River Lamprey) [1099] - *Salmo salar* (Salmon) [1106] - *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] - *Lutra lutra* (Otter) [1355] (NPWS, 2012a)	

River Shannon and River Fergus Estuaries SPA	The River Shannon and River Fergus Estuaries form the largest estuarine complex in Ireland. The site comprises all of the estuarine habitat west from Limerick City and south from Ennis, extending west as far as Killadysert and Foynes on the north and south shores of the Shannon respectively (a distance of some 25 km from east to west). Also included are several areas in the outer Shannon estuary, notably Clonderalaw Bay and Poulnasherry Bay. The site has vast expanses of intertidal flats. The main macro-invertebrate community is a *Macoma-Scrobicularia-Nereis* community which provides a rich food resource for the wintering birds. Eelgrass (*Zostera* spp.) is present in places. The intertidal flats are often fringed with salt marsh vegetation, areas which provide important high tide roost sites for the birds. In the innermost parts of the estuaries, the tidal channels or creeks are fringed with species such as *Phragmites australis* and *Scirpus* spp. *Spartina anglica* is frequent in parts. This is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl. It has internationally important populations of *Calidris alpina*, *Limosa limosa* and *Tringa totanus*. A further 16 species have populations of national importance. The site is particularly significant *for Calidris alpina* (11% of national total), *Pluvialis squatarola* (7.5% of total), *Vanellus vanellus* (6.5% of total), *Tringa totanus* (6.1% of total) and *Tadorna tadorna* (6.0% of total). It has *Cygnus cygnus, Pluvialis apricaria* and *Limosa lapponica* in significant numbers. The site provides both feeding and roosting areas for the wintering birds and habitat quality for most of the estuarine habitats is good. (NPWS, 2018b)	- Cormorant (*Phalacrocorax carbo*) [A017] - Whooper Swan (*Cygnus cygnus*) [A038] - Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Shelduck (*Tadorna tadorna*) [A048] - Wigeon (*Anas penelope*) [A050] - Teal (*Anas crecca*) [A052] - Pintail (*Anas acuta*) [A054] - Shoveler (*Anas clypeata*) [A056] - Scaup (*Aythya m*arila) [A062] - Ringed Plover (*Charadrius hiaticula*) [A137] - Golden Plover (*Pluvialis apricaria*) [A140] - Grey Plover (*Pluvialis squatarola*) [A141] - Lapwing (*Vanellus vanellus*) [A142] - Knot (*Calidris canutus*) [A143] - Dunlin (*Calidris alpina*) [A149] - Black-tailed Godwit (*Limosa limosa*) [A156] - Bar-tailed Godwit (*Limosa lapponica*) [A157] - Curlew (*Numenius arquata*) [A160] - Redshank (*Tringa totanus)* [A162] - Greenshank (*Tringa nebularia*) [A164]	- Discharges: High, inside - Urbanisation: High, outside (NPWS, 2018b)

		- Black-headed Gull (*Chroicocephalus ridibundus*) [A179] - Wetland and Waterbirds [A999] (NPWS, 2012b)	

* = priority Annex I habitat

= indirect threat via the increase in the local populace and recreational activities as a result of the development.

5 Other Relevant Plans and Projects

Potential sources of cumulative impacts were identified based on the ecology of valued ecological features. Potential sources of cumulative impacts were sought within an area where there is the potential for a significant impact on identified ecological features.

The following Plans and Projects were identified as potential sources of cumulative impacts:

- Limerick City and County Council Development Plan 2022 - 2028
- River Basin Management Plan for Ireland 2018-2021
- Planning Applications (retrieved from Data.gov.ie - Planning Application Sites, August 2021)

5.1.1 Limerick City and County Council Development Plan 2022 - 2028

The Draft LCCC Development Plan - Stage 2 (LCCC, 2021) sets out an overall strategy for the proper planning and sustainable development of the City and County. The Draft Development Plan envisages Limerick as the principal focus within the region, with the potential to generate and be the focus of significant employment and housing growth. The strategic objectives include a transition to an environmentally sustainable carbon neutral economy, an objective to ensure new residential development is of the highest quality, enabling life cycle choices and physical, community, recreation and amenity infrastructure are provided in tandem, to create sustainable, healthy, inclusive and resilient communities. Further objectives seek to protect, enhance and ensure the sustainable use of Limerick's key infrastructure, including water supplies and wastewater treatment facilities, energy supply including renewables, broadband and transportation. They also aim to protect and connect areas of natural heritage, green infrastructure and open space for the benefits of quality of life, biodiversity, protected species and habitats, while having the potential to facilitate climate change adaptation and flood risk measures.

Objectives for the town of Ardagh include capacity to develop tourism and amenities to support the Limerick Greenway, having regard to its location. There is an indicated capacity for residential development within the area. Water supply to the village is supplied from the Newcastle West scheme, there are constraints in terms of the supply from this scheme. In terms of wastewater treatment, it is envisaged that there is sufficient capacity to cater for development within the lifetime of the plan.

All Natura 2000 sites within the considered zone of influence of the Plan, must be assessed for potential to be impacted by the Plan and for there to potentially be in combination impacts as a result of the Plan. The County Development Plan is designed to be taken in conjunction with other similar plans and programmes, to have the overall effect of strengthening the management of and enhancing the protection and conservation of Natura 2000 sites. Specific statements, policies and objectives are formulated within the Plan to allow the Council to take appropriate steps to avoid the deterioration of Natura 2000 sites.

Prior to any works commencing on a project that may impact the Natura 2000 network, the project shall be subject to a full Natura Impact Assessment in accordance with the requirements of Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC). This requirement is made explicit in the Plan.

5.1.2 River Basin Management Plan for Ireland 2018-2021 (RBMP, 2018)

The River Basin Management Plan (RBMP) for Ireland 2018-2021 sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2021 (DoHPLG, 2018a). Changes from previous River Basin Management Plans is that all River Basin Districts are merged as one national River Basin District. The Plan provides a more coordinated framework for improving the quality of our waters — to protect public health, the environment, water amenities and to sustain water-intensive industries, including agri-food and tourism, particularly in rural Ireland.

The River Basin Management Plan for Ireland (2018-2021) is the second planning cycle, and outlines the new approach that Ireland will take to protect our waters over the period to 2021. It builds on lessons learned from the first planning cycle in a number of areas:

- stronger and more effective delivery structures have been put in place to build the foundations and momentum for long-term improvements to water quality

- a new governance structure, which brings the policy, technical and implementation actors together with public and representative organisations. This will ensure the effective and coordinated delivery of measures.

The River Basin Management Plan for Ireland 2018-2021 is not anticipated to contribute to cumulative or in-combination effects.

Ireland's third River Basin Management Plan 2022-2027 is due to be published in December 2021. The 3rd cycle draft Catchment Reports were published in August 2021. The draft Catchment Reports provides a summary of the water quality assessment outcomes for respective catchment, including status and risk categories, significant threats and pressures, details on protected areas and a comparison between cycle 2 and cycle 3.

The Shannon Estuary South Catchment (24) includes 95 river water bodies, 48 of which are at risk of not meeting their WFD objectives. The main significant issue is nutrient pollution followed by organic pollution, morphological impacts, hydrological impacts and sediment. The main significant pressure is agriculture, followed by hydromorphological changes, domestic waste water, forestry, urban waste water, mines, quarries and urban run-off. The main impacts driving changes between cycle 2 and cycle 3 are nutrient load largely associated with agriculture.

5.1.3 Other Projects

Other projects dated back three years are included overleaf (Table 5-1), which are not retention applications, home extensions and/or internal alterations, have been granted planning permission in the locality (approx. 2km) of the proposed site.

Table 5-1: Projects granted planning permission since August 2018 in the vicinity of proposed site, which are not retention applications, change of use/internal modifications or single dwelling extensions.

Application Reference	Description of Works	Address	Decision	Decision Date
18844	Description: the refurbishment of the existing house, the construction of a 2-storey extension to the rear of the house, a porch to the front of the house, and a wastewater treatment system and polishing filter and all ancillary site works	Reerasta, Ardagh, Co. Limerick	Grant permission	12-Oct-2018
191063	Description: a two-storey dwelling house, detached domestic garage, new entrance walls, installation of mechanical aeration unit with polishing filter system with all associated site works.	Ardvone, Ardagh, Co. Limerick	Grant permission	18-Dec-2019
20190	Description: construction of dwelling house, detached garage and new entrance, together with all associated site works.	Cross, Ardagh, Co. Limerick	Grant permission	11-Jun-2020

5.2 Summary

The Limerick City and County Council Development Plan 2022 - 2028, RBMP (2018), and projects near the proposed project are considered in combination with the currently proposed project in the Screening Assessment section below.

6 Screening assessment

6.1 Introduction

This screening exercise will focus on assessing any likely adverse effects of the project on the conservation objectives of the Qualifying Interests of any of the Natura 2000 sites identified in Section 4 above.

This section identifies the potential impacts which may arise as result of the proposed project. It then goes on to identify how these impacts could potentially impact on the Natura 2000 sites. The significance of potential impacts is also assessed, with any potential in-combination effects also identified.

The Natura 2000 sites to be assessed, with distances from the proposed project, are:

- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. 1.5 km
- Lower River Shannon SAC . 8.6 km
- River Shannon and River Fergus Estuaries SPA . 11.1 km

6.2 Assessment criteria

Potential adverse impacts that could cause a likely significant effect on the qualifying interests of the Natura 2000 sites, or the sites as a whole, during the construction and operational phases of the project, are considered using three main pathways; surface water, groundwater and land and air pathways. Surface water pathways can result in impacts where material entering the surface water drainage are carried in this water to sites that are connected downstream and can therefore impact surface water bodies themselves, and surface water dependent species and habitats that rely on them. Groundwater pathways can transmit impacts where there is contamination of water entering the groundwater body which is then discharged (sometimes over periods of several decades) and impacts groundwater dependent habitats and species that rely on them. Land pathways are related to physical disturbance of habitats or species and generally only occur over short physical distances. Air pathways relate to the transport of material, generally dust and atmospheric pollution, via air movements that are subsequently deposited on habitats and species in or connected to the Natura 2000 sites.

The proposed project is not anticipated to impact on the qualifying interests of any of the identified SACs or SPAs due to the absence of pathways or distance between any potential source of impact and receiving environment in the case of the Natura 2000 sites. The rationale for excluding impacts via the main pathways is given in more detail in the following section.

6.2.1 Surface water pathways

The proposed site lies within the and Deel [Newcastlewest]_SC_040 sub-catchment (EPA, 2021) and Deel[Newcastlewest]_100 subbasin. All foul and surface water from the site is guided to the Ardagh WWTP to the north of the site within the Slewaun Stream (north branch)_010 subbasin, The Slewaun Stream is a tributary of the River Deel, and which flows into the River Shannon Estuary 23.2km downstream of the site. The River Shannon and River Fergus Estuaries SPA and the Lower River Shannon SAC are located at the mouth of the River Deel.

During construction:

Works will entail excavation of topsoil and within the site boundary, to accommodate construction of the sites surface and foul water network, services and building foundations. Any potential runoff from the site will be contained within the site boundary until the drainage system is installed.

It is intended that works with follow best practice guidelines ie. C532 Control of water pollution from construction sites: Guidance for consultants and contractors, and C515 Groundwater control – design and practice, 2nd ed.

The nearest watercourse is over 400m from the site so any pollutant from the site is unlikely to enter a watercourse. In the unlikely event that this did happen, the pollutant would be diluted by the approx. 23km of watercourse downstream of the site before reaching the nearest connected Natura 2000 site. Due to the projects scale, it is unlikely to result in pollutants that will impact on any potential QIs found upstream of the listed Natura 2000 sites.

During operation:

Surface water:

Surface water on site will be guided into the developments sustainable urban drainage system (SUDS), which subsequently connects with the nearby storm water sewer. The storm water system is fitted with a hydro brake and petrol interceptor, as well as sumps that will trap sediment. This system will trap pollutants before they enter the local stormwater system. In the unlikely event that a pollutant were to enter this system and eventually into the River Deel, it would be diluted over approximately 23km of watercourse before reaching a Natura 2000 site. Due to the projects scale, it is unlikely to result in pollutants that will impact on any potential QIs found upstream of the listed Natura 2000 sites

Foul water connection:

All foul water discharge from the proposed site will connect to the existing local authority foul water drainage system to the east of the site, which is Ardagh WWTP to the north. This WWTP has capacity for 450 PE and has capacity for further residential developments (EPA, 2021 and LCCC, 2021). Foul water from the site will be safely processed in accordance with EPA standards, before it is released into the River Deel. In an unlikely event that a pollutant was to enter the stream from this WWTP, it would be diluted over approximately 23km of watercourse before reaching a Natura 2000 site. Due to the projects scale, it is unlikely to result in pollutants that will impact on any potential QIs found upstream of the listed Natura 2000 sites

The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA, is not connected via surface water to the site, is at a higher elevation and over 1km from the site, therefore it or any of its QIs will not be impact by the site from a surface water connection.

Therefore, the proposed project is not anticipated to have any impact on the QIs of any listed Natura 2000 site in Table 4-1 via a surface water pathway. Table 6-1 provides a summary of the screening rationale for the surface water pathway. Surface water pathways to Natura 2000 sites are seen in Figure 6-1.

Table 6-1: Surface water pathway screening summary for Natura 2000 sites

Natura 2000 Sites	Screening outcome for Surface Water Pathway	Rationale
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	No significant effect (Screened out)	No surface water connection, at a higher elevation and considered upstream of site.
- Lower River Shannon SAC - River Shannon and River Fergus Estuaries SPA	No significant effect (Screened out)	400m from nearest watercourse, and 23km of subsequent diluting watercourse before reaching the closest Natura 2000 site. Appropriate surface and foul water drainage systems. Relatively small project with low opportunity for pollution events to occur.

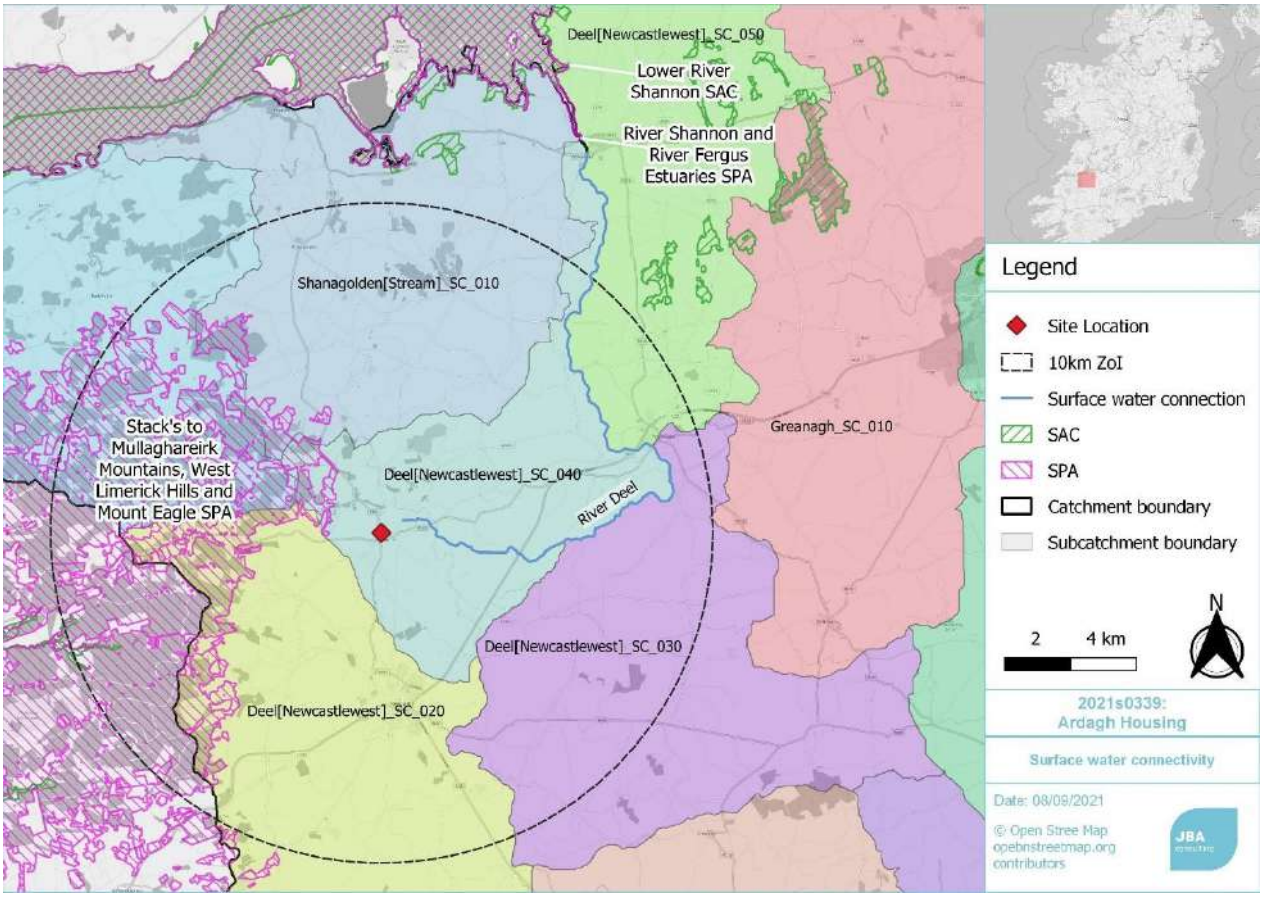


Figure 6-1: Site location and Natura 2000 sites, with surface water connectivity (EPA 2021; NPWS, 2021)

6.2.2 Groundwater pathways

The proposed site is located within the Shangolden - IE_SH_G_203 groundwater body and the bedrock underlying the proposed site location is part of the Visean Limestones formation of Dinantian upper impure limestone. The Aquifer vulnerability (Figure 3-3) at the site is classified by GSI as 'Extreme' to 'High', which means groundwater is likely to be encountered below 3m. The maximum depth of excavation during development is expected to be no more than 1.0m. The aquifer underlying the site is considered: Locally important aquifer which is moderately productive only in local zones (LI) with flow paths are either confined or only travel between 10 and 30m (GSI, 2021). Throughout the groundwater body, water is expected to remain in the local aquifer or find its way to nearby streams during high rainfall, resulting in a groundwater to surface water connection which is assessed as per section 6.2.1.

Due to the nature of the proposed project and the expected excavation depth it is unlikely groundwater will be encountered during the construction phase of the project. Boreholes were dug within the site to survey for groundwater, with no groundwater encountered between ground level and 4m depth. Construction will follow best practice guidelines C515 Groundwater control – design and practice, 2nd ed. If a pollutant were to renter the groundwater, it would be either locally retained or it would discharge to one of the local headwater streams of the River Deel, subsequently following a surface water pathway as described in section 6.2.1.

The nearest Natura 2000 site to the proposed project is the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA which lies 1.5km to the west. This site is within a separate groundwater body and is outside the expected range that water would travel within the underlying aquifer. The Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA are outside of the 10km ZoI for Groundwater pathways.

Adverse impacts via a groundwater pathway are not expected for any of the listed Natura 2000 sites in Table 4-1, or their QIs as a result of the proposed project. Table 6-2 gives a summary of the screening rationale for the groundwater pathway.

Table 6-2: Ground water pathway screening summary for Natura 2000 sites

Natura 2000 Sites	Screening outcome for Ground Water Pathway	Rationale
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	No significant effect (Screened out)	Construction phase and excavation will not reach aquifer and groundwater below. Appropriate operational surface and foul water treatment systems during operational phase Pollutants unlikely to travel 1.5km distance between aquifer under the site and the Natura 2000 site
- Lower River Shannon SAC - River Shannon and River Fergus Estuaries SPA	No significant effect (Screened out)	More than 10km away, and outside the ZoI for impacts via a groundwater pathway.

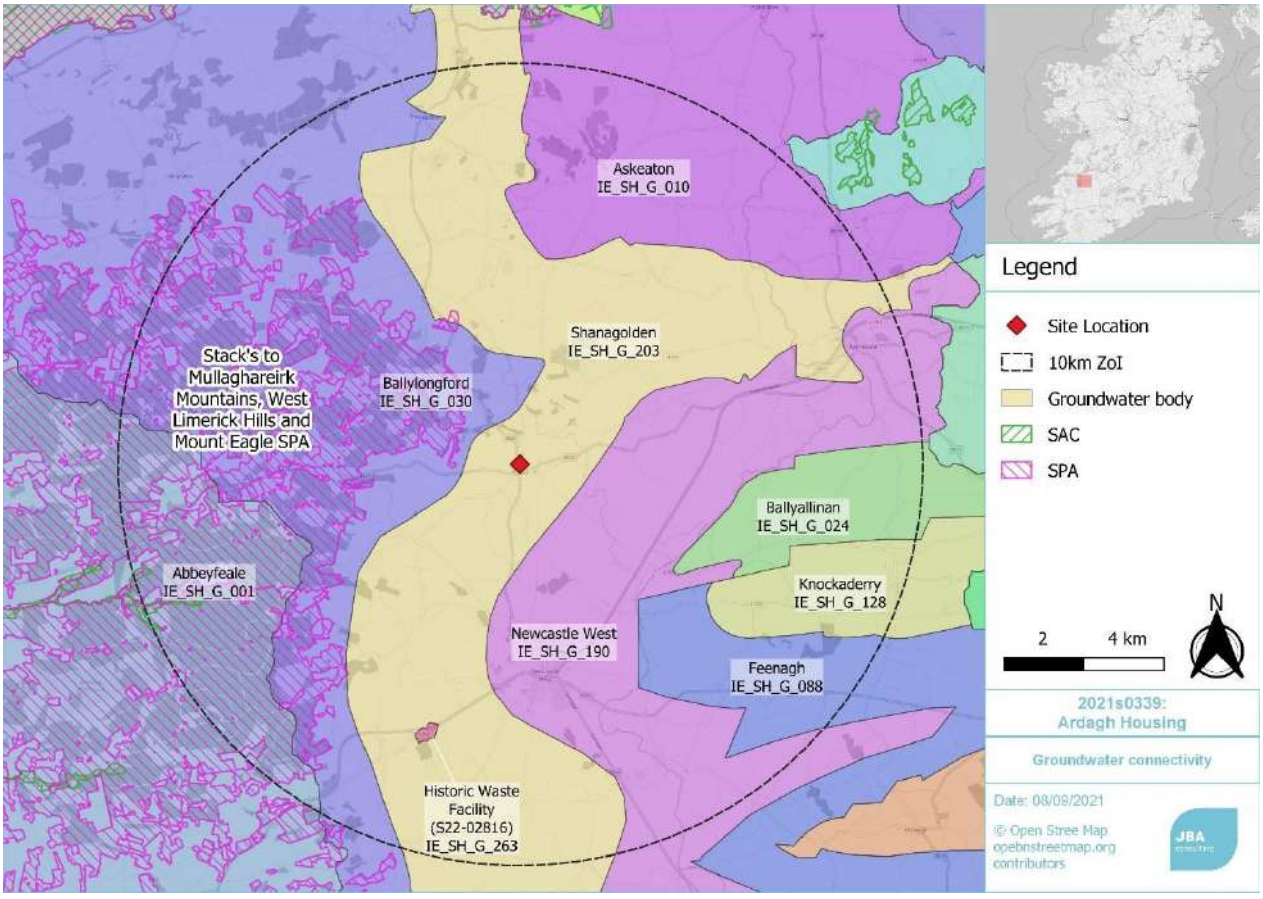


Figure 6-2: Site location and Natura 2000 sites, with groundwater connectivity (EPA 2021; NPWS, 2021)

6.2.3 Land and Air pathways

The loss or degradation of supporting habitats outside the identified Natura 2000 sites via land- and air-based impacts could have potential adverse impacts on a number of the QIs associated with these Natura 2000 sites.

Land (physical on-site and noise disturbance)

Direct physical impacts and indirect impacts, such as land take, visual and noise impacts, have the potential to physically disturb habitats as well as the floral and faunal species within them. This development will not result in any physical land-take or disturbance to the Natura 2000 sites within the ZoI, nor will it result in any visual or noise disturbance to the QIs due to the distances between the site and the Natura 2000 sites. The agricultural field on site is not deemed as locally important for breeding or foraging for the listed QI, 'Hen Harrier' of the nearest Natura 2000 site Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. Foraging Hen Harrier utilise open bog and moorland, young conifer plantations and hill farmland (NPWS, 2015), which is widespread within the extensive SPA. Hen harrier will use linear features such as hedges to forage when more suitable habitat is not present. As there is a number of hedgerows, scrub and moorland nearby, the removal of the section of hedgerow on site is unlikely to significantly impact the foraging activity of this QI.

Air Pollution

Regarding adverse air-based impacts, the release of dust and vehicle emissions can travel up to 10km. This development is located approximately 1.5 km from the nearest Natura 2000 site, the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. Due to the scale and nature of the project, it is unlikely that emissions from the site will be of a significant level to negatively impact the habitat of the sites QIs. The prevailing wind within the area comes from the south west and will carry emissions away from the Natura 2000 site. The other listed Natura 2000 sites in Table 4.1 are outside the ZoI of the project for air-based impacts. Therefore, this

development will not result in any adverse air based impacts on any Natura 2000 sites, nor will it result in disturbance to any QIs or there supporting habitat due to the scale of nature of the project.

Table 6.3 summarises the screening rationale for Land and Air pathways.

Table 6.3: Land and air pathway screening summary for Natura 2000 sites

Natura 2000 sites	Screening outcome for Land and Air Pathway	Rationale
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	No significant effect (**Screened out)**	Habitat on site is not considered locally important for breeding or foraging, and is not deemed a supporting habitat. The scale and nature of the project will not result in significant levels of air-based emissions. The prevailing wind will carry any air based emissions away from the SPA.
- Lower River Shannon SAC - River Shannon and River Fergus Estuaries SPA	No significant effect (**Screened out)**	No physical, visual or noise disturbance due to the distances between the site and the Natura 2000 sites.

6.2.4 Cumulative Impact

The plans and projects described in section 5 have been subject to Stage 1 Appropriate Assessment Screening, with some having been subject to Stage 2 Appropriate Assessment. The conclusion from these assessments is that the projects will have a negligible impact on the QIs/Species of Conservation Interests (SCI) of any Natura 2000 site, with the implementation of proposed mitigation measures for those projects that involved a Stage 2 Appropriate Assessment and Natura Impact Statement. As the proposed development is unlikely to affect the QIs/SCIs or conservation objectives of any European site, there is no potential for other plans or projects to act in combination with it to result in likely significant effects on European sites

6.3 Summary

Due to the location of the proposed site, the nature of the construction works, associated underlying geology and its distance to the Natura 2000 sites within the ZoI, impacts via surface water, groundwater (to surface water) and land and air pathways to the SACs or SPAs are not anticipated.

6.3.1 Description of likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 sites

Project Elements	Comment			
Size and scale	The proposed development comprises of the following spread over a 0.60 hectare site: Provision of 10 homes, in the following breakdown: - 2 No. 1 Bed (4 person) duplexes (type A1/2) - 2 No. 1 Bed (4 person) duplexes (type F1/2) - 1 No. 3 Bed (5 person) house - 1 No. 2 Bed (4 person) house (type C) - 3 No. 2 Bed (12 person) house (type D) - 1 No. 3 Bed (5 person) house Footpaths linking into existing pedestrian pathways at O'Connor Park, and the provision of new car parking (19 no. spaces); Hard and soft landscaping including front and rear garden walls, tree planting, and grass areas; Construction of and/or remedial works to boundaries with adjacent sites; Construction of foul and surface water and associated drainage works; All associated site works. The construction phase of the projected is expected to take 12 months. The operation phase will be permanent, with a Population Equivalence (PE) of 34			
Land-take	There will be no direct land take from any of Natura 2000 sites.			
Distance (via watercourse and direct distance) from Natura 2000 site or key features of the site	Natura 2000 site name	Site code	Direct Distance	Distance via Watercourse
	Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	004161	1.5 km	Not connected
	Lower River Shannon SAC	002165	8.6 km	25.0 km
	River Shannon and River Fergus Estuaries SPA	004077	11.1 km	23.2 km
Resource requirements (water abstraction etc.)	There will be no water abstraction requirements.			
Emissions (disposal to land, water or air)	Construction Phase: Surface water-based construction emissions are not anticipated to affect any Natura 2000 site given the distance to the nearest watercourse (450m) and the subsequent level of dilution by the watercourse between the proposed site and the nearest Natura 2000 site (23.2 km via watercourse). Operation phase: The foul water from the site will be connected with the nearby foul water sewers, which are subsequently guided to the Ardagh WWTP, where water is treated before entering the River Deel. Storm water on site will be retained in an			

	attenuation tank and will pass through sumps and petrol interceptors before being released from site. There will be a small increase in traffic during the construction and operational phase of the development which has been accounted for in the Draft Limerick City and County Council Development Plan 2022 -2028 (LCCC, 2021). Parking will be provided by the development.
Excavation requirements	Excavation depths are not expected to exceed 1.0m
Transportation requirements	Temporary Impacts: There will be small increases in traffic during the construction phase as construction vehicles transport supplies to the site. Permanent Impacts: Negligible increase in car and traffic during operational phase of the development, which has been provided for in the Limerick City and County Development Plan. Higher parking demands will be catered for by the development.
Duration of construction, operation, decommissioning etc.	Construction will last for approximately 12 months. Operation will be permanent, and no decommissioning is anticipated.
Other	None

6.3.2 Description of likely changes to the Natura 2000 sites

Potential Impact	Comments
Reduction of habitat area	There will be no temporary or permanent reduction in habitat area for any of the Natura 2000 sites.
Disturbance to key species	There will be no disturbance to any QIs within any of the Natura 2000 sites.
Habitat or species fragmentation	There will be no temporary or permanent habitat or species fragmentation within any of the Natura 2000 sites.
Reduction in species density	There will be no temporary or permanent reduction in species density within any of the Natura 2000 sites, or any QIs of these sites.
Changes in key indicators of conservation value (water quality etc.)	There will be no temporary or permanent changes in key indicators of conservation value (surface water, groundwater and air quality).
Climate change	N/A

6.3.3 Description of likely impacts on the Natura 2000 sites as a whole

Potential Impact	Comments
Interference with the key relationships that define the structure of the site	Interference with the key relationships that define the structure of the sites are not anticipated
Interference with key relationships that define the function of the site	Interference with the key relationships that define the function of the sites are not anticipated

Provide indicators of significance as a result of the identification of effects set out above in terms of:

Potential Impact	Indicators
Loss (Estimated percentage of lost area of habitat)	No Natura 2000 sites will experience a direct loss in habitat area.
Fragmentation	Fragmentation of habitat and/or species is not anticipated.
Disruption & disturbance	Disruption and/ or disturbance is not anticipated.
Change to key elements of the site (e.g. water quality etc.)	Potential temporary changes to key elements (i.e. water quality) of the site are not anticipated.

6.3.4 Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is unknown

Based upon best scientific judgement, no significant effects are expected from the elements mentioned above; and that no significant gaps in knowledge of the scale or magnitude of potential impacts from the proposed site exist.

6.4 Concluding Statement

In carrying out this AA screening, mitigation measures have not been taken into account. Standard best practice construction measures which could have the effect of mitigating any effects on any European Sites have similarly not been taken into account.

Following this initial screening of a proposed housing development at O'Connor Park, Ardagh, Co. Limerick, it can be concluded that the possibility of significant effects, whether arising from the project itself or in combination with other plans and projects, can be excluded beyond a reasonable scientific doubt on the basis of the best scientific knowledge available, on the following Natura 2000 sites:

- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA 004161
- Lower River Shannon SAC 002165
- River Shannon and River Fergus Estuaries SPA 004077

If any changes occur in the design of these works, a new Screening for Appropriate Assessment is required

Appendices:

A Site Layout:

SITE LAYOUT PLAN

SCALE - 1/250@A1

L:\FN_Housing\Infrastructure_01\New Build Local Authority Houses (DD-3.2-PROADV)\(014) 19000 Projects\NB14_19122 SHIP Ardagh\Project Stages\19122 CAD\2. Issued Drawings (Title Blocks)\Title Blocks\19122-102.dwg

DO NOT SCALE from this drawing. Use figured dimensions. Contractor to check all dimensions on site prior to commencement of works. Any discrepancies are to be referred to the ARCHITECT.

LEGEND:

- BOUNDARY OF PROPOSED LCCC SITE SHOWN IN RED
- BOUNDARY LINE SHOWING EXTENT OF LANDS OWNED BY LIMERICK CITY AND COUNTY COUNCIL
- GRASSED LANDSCAPED AREAS
- CAR PARKING SPACES - PERMEABLE PAVING
- PUBLIC FOOTPATH AREAS - PERMEABLE PAVING
- PUBLIC ROAD AREAS - PERMEABLE PAVING
- PROPOSED NEW HOUSES / UNITS
- PRIVATE REAR GARDEN AREAS - GRASS FINISH
- PRIVATE REAR & SIDE AREAS - PAVED FINISH
- PRIVATE FRONT & SIDE AREAS - PERMEABLE PAVING SETTS / GRAVEL FINISH
- EXISTING HOUSING UNITS
- EXISTING TREES TO BE RETAINED / PROTECTED
- EXISTING HEDGING TO BE RETAINED / PROTECTED
- SITE NOTICE LOCATION

SCHEDULE OF UNITS

UNIT TYPE	NO. BEDROOMS	NO. UNITS
TYPE A1/2	1 BED DUPLEX	2 NO.
TYPE B	3 BED HOUSE	1 NO.
TYPE C	2 BED HOUSE	1 NO.
TYPE D	2 BED HOUSE	3 NO.
TYPE E	3 BED HOUSE	1 NO.
TYPE F1/2	1 BED DUPLEX	2 NO.
TOTAL UNITS		10 NO.

REVISIONS

DATE	REV.	BY.	CHECKED	DESCRIPTION
-	-	-	-	-

Comhairle Cathrach & Contae Luimnigh
Limerick City & County Council

Limerick City and County Council
Design & Delivery Services
Merchants Quay
Limerick

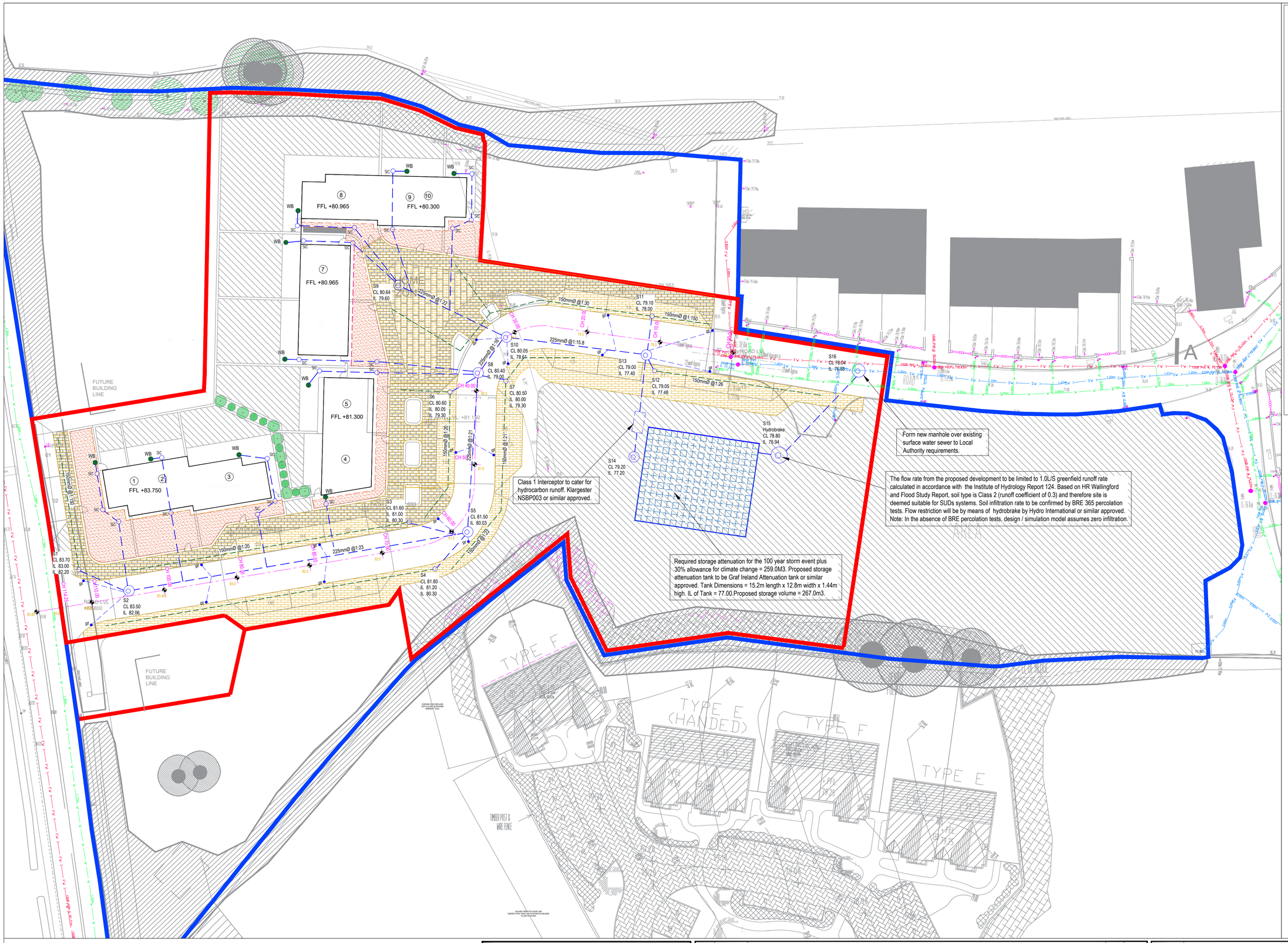
PROJECT:
O'CONNOR PARK, ARDAGH, COUNTY LIMERICK.

STAGE:
2B - PART 8 PLANNING

DRAWING TITLE:
SITE LAYOUT PLAN

DATE:	MAY 2022	DRAWING NO:	
SCALE:	1:250@A1	102	
DRAWN:	TG		
CHECKED:	DS	SHEET SIZE:	REVISION:
JOB NO:	19122	A1	01
FILE NAME:	-		

B Water layout plan



LEGEND

1. EXISTING STORM SEWER
2. PROPOSED STORM SEWER
3. PROPOSED ROAD GULLY
4. PROPOSED STORM INSPECTION CHAMBER — SIC
5. PROPOSED MANHOLE REFERENCE NUMBER COVER AND INVERT LEVEL
6. PROPOSED PIPE / DRAIN DIAMETER AND GRADIENT — 225mmØ @1:23
7. PROPOSED PERMEABLE PAVEMENT
8. PROPOSED GRAVEL/PERMEABLE PAVEMENT
9. PROPOSED STORAGE ATTENUATION TANK
10. PLANNING APPLICATION SITE BOUNDARY
11. LANDS IN THE OWNERSHIP OF APPLICANT

NOTES

1. For setting out refer to Architect's drawings.
2. This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
3. DO NOT SCALE THIS DRAWING. Use figured dimensions only.
4. No part of this document may be reproduced or transmitted in any form or stored in any retrieval system of any nature without the written permission as copyright holder except as agreed for use on the project for which the document was originally issued.
5. Ordnance Survey Ireland Licence Number EN 0074012

Rev. No.	Date	REVISION NOTE	Drn. By	Chkd. By
P1	24/05/2022	ISSUED FOR PLANNING	DF	COR

Client	Limerick City & County Council
Project	O'Connor Park, Ardagh, Co.Limerick.
Title	Surface Water Network and SUDs Layout Plan

Drn by	Chkd by	Aprvd by	Dwg. No.	Revision
DF	COR	GC	L099L-002	P1
Date 22/05/2022	Scale 1:250, 1:50			

Cronin Sutton Cotter
45 O'Connell Street, Limerick, Co. Limerick
T: +353 (0) 61 594988
E: info@csconsulting.ie
W: www.csconsulting.ie

NSAI Certified
Quality I.S. EN ISO 9001:2008
Environment I.S. EN ISO 14001:2004
Energy I.S. EN ISO 50001:2011
Health & Safety OHSAS 18001:2007

C Protected species recorded within a 5km radius of the site over the last 10 years (NBDC, 2021)

Species group	Common name	Latin Name	Date of last record	Title of dataset	Designation
Amphibian	Common Frog	*Rana temporaria*	30/03/2020	Amphibians and reptiles of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Amphibian	Smooth Newt	*Lissotriton vulgaris*	30/07/2012	Newt Survey 2010-2014	Protected Species: Wildlife Acts
Bird	Barn Owl	*Tyto alba*	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Barn Swallow	*Hirundo rustica*	28/08/2017	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Black-headed Gull	*Larus ridibundus*	04/02/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

Bird	Common Grasshopper Warbler	*Locustella naevia*	26/04/2015	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Common Greenshank	*Tringa nebularia*	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Common Kestrel	*Falco tinnunculus*	09/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Common Kingfisher	*Alcedo atthis*	31/12/2011	Bird Atlas 2007 - 2011	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
Bird	Common Linnet	*Carduelis cannabina*	07/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Bird	Common Pheasant	*Phasianus colchicus*	31/12/2011	Bird Atlas 2007 - 2011	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
Bird	Common Snipe	*Gallinago gallinago*	31/12/2011	Bird Atlas 2007 - 2011	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
Bird	Common Starling	*Sturnus vulgaris*	09/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Common Swift	*Apus apus*	08/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Bird	Common Wood Pigeon	*Columba palumbus*	28/08/2017	Birds of Ireland	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
Bird	Eurasian Curlew	*Numenius arquata*	31/12/2011	Bird Atlas 2007 - 2011	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

Bird	European Golden Plover	*Pluvialis apricaria*	31/12/2011	Bird Atlas 2007 - 2011	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

Bird	Hen Harrier	*Circus cyaneus*	11/05/2016	Birds of Ireland	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
Bird	House Martin	*Delichon urbicum*	08/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	House Sparrow	*Passer domesticus*	09/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Mallard	*Anas platyrhynchos*	11/09/2016	Birds of Ireland	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
Bird	Mute Swan	*Cygnus olor*	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Bird	Northern Lapwing	*Vanellus vanellus*	31/12/2011	Bird Atlas 2007 - 2011	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
Bird	Northern Wheatear	*Oenanthe oenanthe*	29/08/2017	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Red Grouse	*Lagopus lagopus*	26/04/2015	Birds of Ireland	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
Bird	Sky Lark	*Alauda arvensis*	26/04/2015	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Bird	Spotted Flycatcher	*Muscicapa striata*	09/05/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Insect - butterfly	Large Heath	*Coenonympha tullia*	05/07/2013	Butterflies of Ireland	Threatened Species: Vulnerable
Insect - butterfly	Marsh Fritillary	*Euphydryas aurinia*	18/09/2017	Butterflies of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Threatened Species: Vulnerable
Insect - hymenopteran	Gipsy Cuckoo Bee	*Bombus (Psithyrus) bohemicus*	07/05/2020	Bees of Ireland	Threatened Species: Near threatened
Insect - hymenopteran	Large Red Tailed Bumble Bee	*Bombus (Melanobombus) lapidarius*	25/04/2020	Bees of Ireland	Threatened Species: Near threatened
Reptile	Common Lizard	*Zootoca vivipara*	26/07/2013	Amphibians and reptiles of Ireland	Protected Species: Wildlife Acts
Terrestrial mammal	Bank Vole	*Myodes glareolus*	16/03/2011	Atlas of Mammals in Ireland 2010-2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Terrestrial mammal	Eurasian Badger	*Meles meles*	31/12/2015	Badger Setts of Ireland Database	Protected Species: Wildlife Acts
Terrestrial mammal	Eurasian Pygmy Shrew	*Sorex minutus*	17/03/2011	Atlas of Mammals in Ireland 2010-2015	Protected Species: Wildlife Acts

Terrestrial mammal	Eurasian Red Squirrel	*Sciurus vulgaris*	31/12/2015	Atlas of Mammals in Ireland 2010-2015	Protected Species: Wildlife Acts
Terrestrial mammal	European Otter	*Lutra lutra*	20/08/2015	Atlas of Mammals in Ireland 2010-2015	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Terrestrial mammal	Lesser Horseshoe Bat	*Rhinolophus hipposideros*	22/01/2014	National Lesser Horseshoe Bat Database	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Terrestrial mammal	Lesser Noctule	*Nyctalus leisleri*	22/08/2014	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Terrestrial mammal	Pipistrelle	*Pipistrellus pipistrellus sensu lato*	22/08/2014	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Terrestrial mammal	Soprano Pipistrelle	*Pipistrellus pygmaeus*	22/08/2014	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Terrestrial mammal	West European Hedgehog	*Erinaceus europaeus*	13/08/2020	Hedgehogs of Ireland	Protected Species: Wildlife Acts

D Invasive species recorded within a 5km radius of the site over the last 10 years (NBDC, 2021)

Species group	Common name	Latin Name	Date of last record	Title of dataset	Designation
Flowering plant	Butterfly-bush	*Buddleja davidii*	04/07/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Flowering plant	Evergreen Oak	*Quercus ilex*	30/03/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Flowering plant	Himalayan Honeysuckle	*Leycesteria formosa*	20/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Flowering plant	Indian Balsam	*Impatiens glandulifera*	01/12/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Flowering plant	Japanese Knotweed	*Fallopia japonica*	06/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Flowering plant	Sycamore	*Acer pseudoplatanus*	19/11/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species

Flowering plant	Three-cornered Garlic	*Allium triquetrum*	13/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Fungoid	Crayfish plague	*Aphanomyces astaci*	08/10/2017	National Invasive Species Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species

References

Catchments, 2021. EPA Catchments.Ie [online], Catchments.ie, Available online at: https://www.catchments.ie/maps/

DEHLG (2009, rev 2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities., Department of the Environment, Heritage and Local Government, available: http://www.wicklow.ie/sites/default/files/Manager's%20report%20on%20submissions%20to%20the%20Proposed%20Amendments.pdf [accessed 12 Jan 2017].

DoHPLG, 2018a. 'River Basin Management Plan for Ireland 2018-2021'. Available online at: https://www.housing.gov.ie/sites/default/files/publications/files/rbmp_report_english_web_version_final_0.pdf

EPA, 2021. EPA Maps [online], Next Generation EPA Maps, Available online at: https://gis.epa.ie/EPAMaps/

European Commission (Ed.) (2000) 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 (2007) 'Guidance document on Article 6 (4) of the "Habitats Directive" 92/43/EEC - Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission.'

European Commission, Directorate-General for the Environment, Oxford Brookes University, Impacts Assessment Unit (Eds.) (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, EUR-OP: Luxembourg.

Fossitt, J.A., 2000. A Guide to Habitats in Ireland, Heritage Council of Ireland series, Heritage Council/Chomhairle Oidhreachta: Kilkenny.

GSI, 2017 A description of Irish Aquifer Categories, Version 1.1 Groundwater Programme, Geological Survey Ireland. Available online at: https://www.gsi.ie/documents/GSI%20Aquifer%20Category%20Descriptions.pdf

GSI, 2021, Geological Survey Ireland Spatial Resources, Map viewer Available online at: https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228

Irish Water, 2020. Capacity Status of irish Water WWTP in Limerick County, found in *Replies to questions - Question submitted by Councillor Liam Galvin*, LCCC May Council meeting, 20th May 2021, Available online at: https://www.limerick.ie/sites/default/files/media/documents/2021-05/replies-to-questions-meeting-of-limerick-city-and-county-council-24.05.2021.pdf

LCCC, 2021 Draft Limerick City and County Council Development Plan (Stage 2). Available online art: https://www.limerick.ie/council/services/planning-and-property/limerick-development-plan/draft-plan

NBDC, 2021. National Biodiversity Data Centre. Available online at: https://maps.biodiversityireland.ie

NPWS, 2012a. Conservation Objectives: Lower River Shannon SAC [002165]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000205.pdf

NPWS, 2012b. Conservation Objectives: River Shannon and River Fergus Estuaries SPA [00407]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000205.pdf

NPWS, 2018a. Natura 2000 – Standard Data Form: Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA [004161]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004025.pdf

NPWS, 2018b. Natura 2000 – Standard Data Form: River Shannon and River Fergus Estuaries SPA [00407]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004025.pdf

NPWS, 2020. Natura 2000 – Standard Data Form: Lower River Shannon SAC [002165]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004025.pdf

NPWS, 2021 Mapping Resources, SPA and SAC GIS dataset downloads, National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/maps-and-data/designated-site-data/download-boundary-data

NPWS, 2021b. Conservation Objectives: Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA [004161]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000205.pdf

Tyldesley, D. and Chapman C., 2013 The Habitats Regulations Assessment handbook. edition UK:DTA Publications.

Offices at
Dublin
Limerick

Registered Office
24 Grove Island
Corbally
Limerick
Ireland

t: +353 (0) 61 345463
e: info@jbaconsulting.ie

JBA Consulting Engineers and Scientists Limited
Registration number 444752

JBA Group Ltd is certified to:
ISO 9001:2015
ISO 14001:2015
OHSAS 18001:2007

Visit our website
www.jbaconsulting.ie