



Appropriate Assessment Screening Report

prepared for Tom McNamara & Partners



on behalf of Art Data Centres



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This report has been prepared by Scott Cawley Ltd. in accordance with the particular instructions and requirements of our agreement with the Client, the project's budgetary and time constraints and in line with best industry standards. The methodology adopted and the sources of information used by Scott Cawley Ltd. in providing its services are outlined in this report. The scope of this report and the services are defined by these circumstances.

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The conclusions presented in this report represent Scott Cawley Ltd.'s best professional judgement based on review of site conditions observed during the site visit (if applicable) and the relevant information available at the time of writing. Scott Cawley Ltd. has used reasonable skill, care and diligence in compiling this report and no warranty is provided as to the report's accuracy.

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Appendix I

The Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the European sites in the vicinity of the proposed development site (see Figure 5)

1 Introduction

- 1 This report, which contains information required for the competent authority (in this instance Clare County Council) to undertake a screening for Appropriate Assessment (AA), has been prepared by Scott Cawley Ltd. on behalf of the applicant. It provides information on, and assesses the potential for, the proposed development to impact on the Natura 2000 network (hereafter referred to as European sites)¹. The proposed development consists of the development of a data centre, located to the west of the Ennis townland, after Junction 13 of the M18 Motorway on the R352. The proposed data centre will comprise of six data hall buildings, offices, a vertical farm, an electrical substation, an energy centre, a transformer compound, undergrounding of circuit cables, associated infrastructure and a number of car parking areas (hereinafter referred to as the proposed development).
- 2 An AA is required if significant effects on European sites arising from a proposed development cannot be ruled out at the screening stage, either alone or in combination with other plans or projects. It is the responsibility of the competent authority to make a decision as to whether or not the proposed development will have significant effects on European sites, either individually or in combination with other plans or projects.

For the reasons set out in detail in this AA Screening Report, an **Appropriate Assessment of the proposed development is required in this instance** as it cannot be concluded, on the basis of objective information, that the proposed development, either individually or in combination with other plans or projects, will not have a significant effect on the following European site(s): Dromore Woods and Loughs SAC, Lower River Shannon SAC, Old Domestic Building (Keevagh) SAC, Old Domestic Buildings, Rylane SAC, Ballyallia Lough SPA, River Shannon and River Fergus Estuaries SPA, Corofin Wetlands SPA, and Slieve Aughty Mountains SPA.

2 Methodology

2.1 Guidance

- 3 This Appropriate Assessment Screening Report has been prepared with regard to the following guidance documents, as relevant:
 - *OPR Practice Note PN01. Appropriate Assessment Screening for Development Management* (Office of the Planning Regulator, 2021);
 - *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities*. (Department of Environment, Heritage and Local Government, 2010 revision);
 - *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities*. Circular NPW 1/10 & PSSP 2/10;
 - *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* (European Commission, 2021);

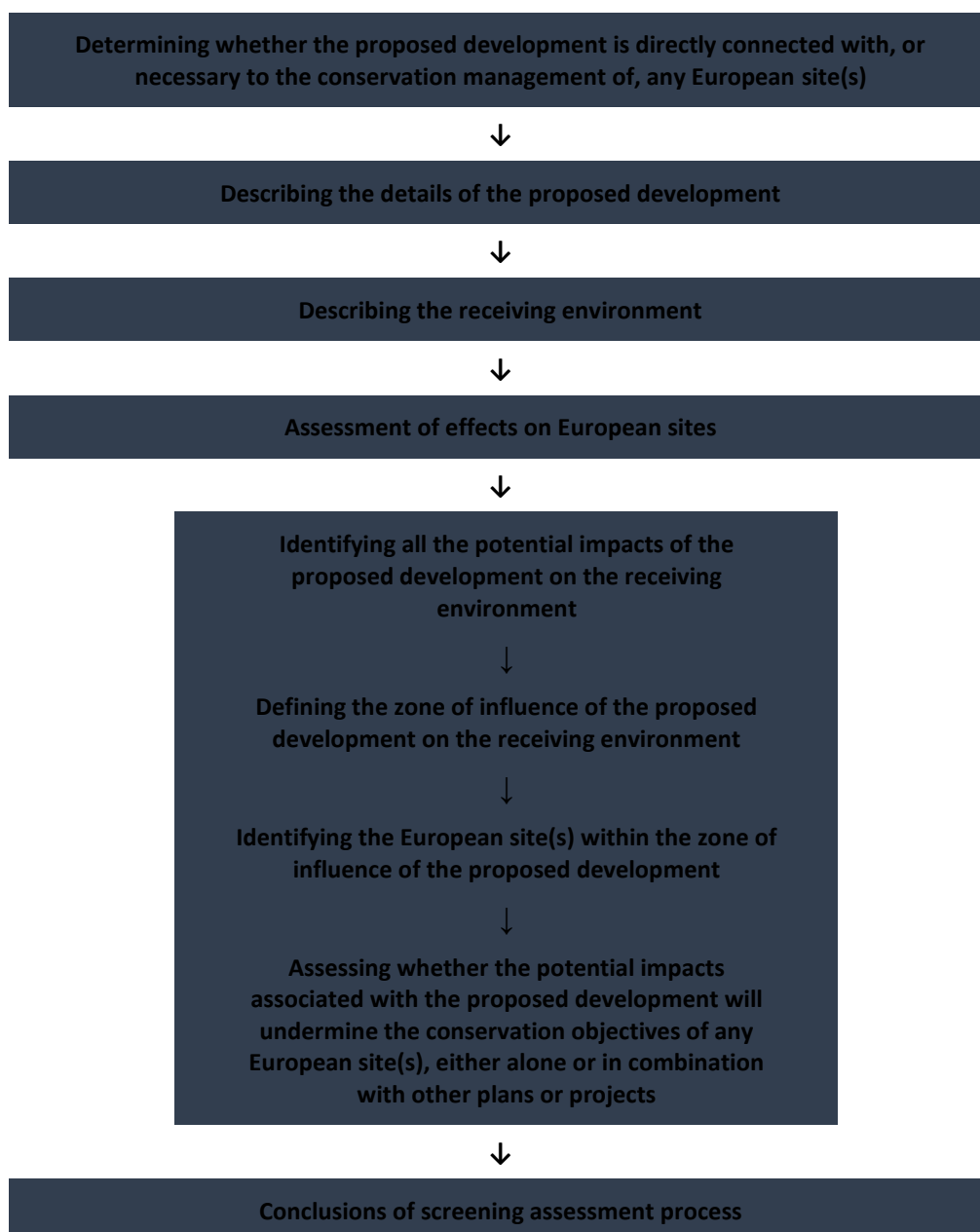
¹ The Natura 2000 network is a European network of important ecological sites, as defined under Article 3 of the Habitats Directive 92/43/EEC, which comprises both special areas of conservation and special protection areas. Special conservation areas are sites hosting the natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of the Habitats Directive, and are established under the Habitats Directive itself. Special protection areas are established under Article 4 of the Birds Directive 2009/147/EC for the protection of endangered species of wild birds. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats.

In Ireland these sites are designed as *European sites* - defined under the Planning Acts and/or the Birds and Habitats Regulations as (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, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

- *Communication from the Commission on the precautionary principle* (European Commission, 2000); and,
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (European Commission, 2019).

2.2 Assessment Methodology

- The above referenced guidance sets out a staged process for carrying out Appropriate Assessment. To determine if an Appropriate Assessment is required, documented screening is required. Screening identifies the potential for effects on the conservation objectives of European sites, if any, which would arise from a proposed plan or project, either alone or in combination with other plans and projects (i.e. significant effects).
- Significant effects on a European site are those that would undermine the conservation objectives supporting the favourable conservation condition of the Qualifying Interest (QI) habitats and/or the QI/Special Conservation Interest (SCI) species of a European site(s).
- Screening for Appropriate Assessment involves the following steps:



- 7 If the conclusions at the end of screening are that there is no likelihood of significant effects occurring on any European sites as a result of the proposed plan or project, either alone or in combination with other plans and projects, then there is no requirement to undertake an Appropriate Assessment.
- 8 In establishing which European sites are potentially at risk (in the absence of mitigation) from the proposed development, a source-pathway-receptor approach was applied. In order for an impact to occur, there must be a risk enabled by having a source (e.g. water abstraction or construction works), a receptor (e.g. a European site or its QI(s) or SCI(s)²), and a pathway between the source and the receptor (e.g. pathway by air for airborne pollution, or a pathway by a watercourse for mobilisation of pollution). For an impact to occur, all three elements must exist; the absence or removal of one of the elements means there is no possibility for the impact to occur.
- 9 The identification of source-pathway-receptor connection(s) between the proposed development and European sites essentially is the process of identifying which European sites are within the Zone of Influence (ZoI) of the proposed development, and therefore potentially at risk of significant effects. The ZoI is the area over which the proposed development could affect the receiving environment such that it could potentially have significant effects on the QI habitats or QI/SCI species of a European site, or on the achievement of their conservation objectives³.
- 10 The identification of a source-pathway-receptor link does not automatically mean that significant effects will arise. The likelihood for significant effects will depend upon the characteristics of the source (e.g. extent and duration of construction works), the characteristics of the pathway (e.g. direction and strength of prevailing winds for airborne pollution) and the characteristics of the receptor (e.g. the sensitivities of the European site and its QIs/SCIs). Where uncertainty exists, the precautionary principle⁴ is applied.

2.3 Desktop Data Review

- 11 The desktop data sources used to inform the assessment presented in this report are as follows (accessed in May 2022):
 - Online data available on European sites and protected habitats/species as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie⁵, including conservation objectives documents
 - Online data available on protected species as held by the National Biodiversity Data Centre (NBDC) from www.biodiversityireland.ie

² The term qualifying interest is used when referring to the habitats or species for which an SAC is designated; the term special conservation interest is used when referring to the bird species (or wetland habitats) for which an SPA is designated.

³ As defined in the *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2018)

⁴ The precautionary principle is a guiding principle that derives from Article 191 of the Treaty on the Functioning of the European Union and has been developed in the case law of the European Court of Justice (e.g. ECJ case C-127/02 – Waddenzee, Netherlands).

The guidance document *Communication from the Commission on the Precautionary Principle* (European Commission, 2000) notes that the precautionary principle “covers those specific circumstances where scientific evidence is insufficient, inconclusive or uncertain and there are indications through preliminary objective scientific evaluation that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the chosen level of protection”.

Applying the precautionary principle in the context of screening for appropriate assessment requires that where there is uncertainty or doubt about the risk of significant effects on a European site(s), it should be assumed that significant effects are possible and AA must be carried out.

⁵ The following SAC and SPA GIS boundary datasets are the most recently available at the time of writing: SAC_ITM_2022_04 and SPA_ITM_2021_10.

- Information on the surface water network and surface water quality in the area available from www.epa.ie
- Information on groundwater resources and groundwater quality in the area available from www.epa.ie and www.gsi.ie
- Ordnance Survey of Ireland mapping and aerial photography available from www.osi.ie
- Information on the location, nature and design of the proposed development supplied by the applicant's design team
- Spatial information relevant to the planning process including land zoning and planning applications from Department of Housing Planning, Community and Local Government web map portal. Available from <https://myplan.ie/>
- University of Bristol Speleological Society – Irish Caves Locations. Available from <http://www.ubss.org.uk>
- Information contained within the Environmental Impact Assessment Report (EIAR) prepared for the proposed development planning application, including Chapter 5 Land, Soils & Geology and Hydrogeology, Chapter 6 Hydrology, Chapter 7 Biodiversity, Chapter 8 Air Quality & Climate, Chapter 9 Noise and Vibration, Chapter 10 Landscape and Visual.
- Site Lighting Analysis Report and Light Spill Modelling Study, produced by Hurley Palmer Flatt (June 2021)
- The Landscape and Biodiversity Management Plan produced by Nicholas de Jong Associates (June 2021)
- The Landscape Design Strategy produced by Nicholas de Jong Associates (June 2021)
- Surface Water and Pollution Management Plan, Art Data Centre, produced by Clifton Scannell Emerson Associates (CSEA), (June 2021).
- *Clare County Development Plan 2017 – 2023 (As Varied)* (Clare County Council, 2019)
- *Clare Biodiversity Action Plan 2017 – 2023* (Clare County Council, 2017)
- *Clare County Development Plan 2017 – 2023 Variation No. 1, Natura Impact Report* (Clare County Council, 2019)
- *Clare County Development Plan 2017 – 2023 Variation No. 1, Flood Risk Assessment* (Clare County Council, 2019)
- *Clare County Council Development Plan 2017-2023 (As Varied)* (Clare County Council, 2019), specifically in regard to the proposed development site. Specific policies and objectives relating to AA were as follows:

Development Plan Objective: Appropriate Assessment, Strategic Environmental Assessment and Strategic Flood Risk Assessment

- CDP2.1 It is an objective of the development plan:
 - To require the preparation and assessment of all planning applications in the plan area to have regard to the information, data and requirements of the Natura Impact Report, SEA Environmental Report and Strategic Flood Risk Assessment Report contained in Volume 10 of this development plan;
 - To require projects to be fully informed by ecological and environmental constraints at the earliest stage of project planning and any necessary

assessment to be undertaken, including assessments of disturbance to species, where required;

- To require compliance with the objectives and requirements of the Habitats Directive, the Bird Directive, Water Framework Directive, all other relevant EU Directives and all relevant transposing legislation.

Development Plan Objective: Environmental Impact Assessment

- CDP14.9 It is an objective of Clare County Council:
 - To implement the EIA Directive, ensuring that all elements/stages or components of the project are included in one overall assessment and all reasonable alternatives are taken into consideration in choosing the option with the least environmental impact.
 - To have regard to 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessments (2013)' when considering proposals for which an EIA is required;
 - To ensure full compliance with the requirements of the EU Habitats Directive, SEA Directive and associated legislation/regulations, including the associated European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), European Communities (Environmental Assessment of Certain Plans and Programmes) regulations 2004-2011, and the European Communities (Environmental Impact Assessment) Regulations 1989–2011 (or any updated/superseding legislation).

Development Plan Objective: European Sites

- CDP14.2 It is an objective of the development plan:
 - To afford the highest level of protection to all designated European sites in accordance with the relevant Directives and legislation on such matters;
 - To require all planning applications for development that may have (or cannot rule out) likely significant effects on European sites in view of the site's Conservation Objectives, either in isolation or in combination with other plans or projects, to submit a Natura Impact Statement in accordance with the requirements of the EU Habitats Directive and the Planning and Development Act, 2000 (as amended);
 - To recognise and afford appropriate protection to any new or modified SPAs or SACs that are identified during the lifetime of this plan, having regard to the fact that proposals for development outside of a European site may also have an indirect effect.

Development Plan Objective: Requirement for Appropriate Assessment under the Habitats Directive

- CDP14.3 It is an objective of the development plan:
 - To implement Article 6(3) and where necessary Article 6(4) of the Habitats Directive and to ensure that Appropriate Assessment is carried out in relation to works, plans and projects likely to impact on European sites (SACs and SPAs), whether directly or indirectly or in combination with any other plan(s) or project(s). All assessments must be in compliance with the European Communities (Birds and Natural Habitats) Regulations 2011;

- To have regard to 'Appropriate Assessment of Plans and Projects in Ireland – Guidelines for Planning Authorities 2009' or any updated version.

Development Plan Objective: Protection of Water Resources

- CDP8.22 It is an objective of the development plan:
 - To protect the water resources of County Clare having regard to the requirements of the relevant EU Directives;
 - To ensure that developments that would have an unacceptable impact on water resources, including surface water and groundwater quality and quantity, designated sources protection areas, coastal and transitional waters, river corridors and associated wetlands are not permitted;
 - In areas of potable groundwater resources or over vulnerable aquifer areas, development proposals will only be considered if the applicant can clearly demonstrate that the proposed development will not pose a risk to the quality of the underlying groundwater;
 - To protect groundwater resources, in accordance with statutory requirements and specific measures as set out in the Shannon and Western River Basin Management Plans;
 - To ensure that proposals for development which infringe on a river boundary, or an associated habitat, including their connection by groundwater, will only be considered where it can be clearly demonstrated that:
 - The character of the area will be conserved;
 - An acceptable physical riparian zone will be maintained with all natural vegetation preserved;
 - There will be no impact on the ecological, aquatic or fishing potential of the waters or associated waters;
 - All proposals are in compliance with the requirements of the Habitats Directive, where appropriate.

Development Plan Objective: Habitat Protection

- DP14.11 It is an objective of the development plan:
 - To protect and promote the sustainable management of the natural heritage, flora and fauna of the county through the promotion of biodiversity, the conservation of natural habitats and the enhancement of new and existing habitats;
 - To promote the conservation of biodiversity through the protection of sites of biodiversity importance and wildlife corridors, both within and between the designated sites and the wider plan area; c) To ensure that there is no net loss of potential Lesser Horseshoe Bat feeding habitats, treelines and hedgerows within 3km of known roosts.

2.4 Consultations

12 The following organisations with relevance to ecology were consulted:

- The National Parks & Wildlife Service (NPWS) section of Department of Housing, Local Government and Heritage (formerly Department of Culture, Heritage and the Gaeltacht)

- The Vincent Wildlife Trust

13 A summary of these consultations with relevance to Appropriate Assessment is provided in Table 1 below.

Table 1: Appropriate Assessment issues raised during consultation

<u>Consultee</u>	<u>Date of Consultation</u>	<u>Issues Raised</u>	<u>Relevant Section of the AA Screening/Natura Impact Statement (NIS) where this is addressed</u>
NPWS - Department of Housing, Local Government and Heritage (formerly Department of Culture, Heritage and the Gaeltacht)	15/01/2021	<ul style="list-style-type: none"> • NPWS raised concerns regarding light spill from the proposed development on important ecological features for commuting and/or foraging bats, specifically in relation to lesser horseshoe bat, and the a light spill model would be a key factor in informing mitigation. • NPWS highlighted the critical timing required for compensatory planting of ecological corridors. • NPWS queried whether hen harrier winter roost surveys would be undertaken. • NPWS queried the culvert with otter ledges in place under the M18 Motorway and whether they discharge onto the site, and if they had been checked for otter usage. 	<p>Section 7.2.5 of the NIS addresses mitigation required for light spill and early planting regimes.</p> <p>Section 2.5 of the AA Screening details specific surveys undertaken for the site (including hen harrier).</p> <p>Section 3.2.3 details the otter surveys undertaken within the site.</p>
Vincent Wildlife Trust	13/01/2021	<ul style="list-style-type: none"> • Additional areas for planting were recommended within the proposed development site. • Linear habitats for bats along Toureen Laneway was recommended to be maintained and kept completely dark. • The Light Spill Model would be crucial in informing our assessment. • Planting of native species on site was recommended. 	Section 7.2.5 of the NIS addresses mitigation required for light spill and planting regimes.
Public consultations, including landowners,	22/04/2021	No issues were raised during these consultations regarding ecology.	-

neighbours and local councillors.			
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2.5 Baseline Surveys

- 14 This section describes the ecological surveys carried out to inform the assessment of significant effects on European sites.
- 15 Ecological field surveys were carried out in accordance with best practice professional guidelines between June – October 2018, June 2020 - April 2021, and March 2022. The surveys and survey dates are presented in Table 2.

Table 2 Ecological surveys and survey dates

Survey	Survey Date(s)	Surveyor(s)
Habitat surveys (including invasive plant species)	27 th July 2018 16 th August 2018 8 th – 10 th July 2020 14 th March 2022	Scott Cawley Ltd.
Badger surveys	7 – 9 th July 2020 14 th March 2022	Scott Cawley Ltd.
Otter surveys	7 th – 9 th July 2020 14 th March 2022	Scott Cawley Ltd.
Breeding bird surveys	25 th June 2020 6 th July 2020 20 th April 2021	Scott Cawley Ltd.
Wintering bird surveys (including hen harrier surveys)	24 th September 2020 20 – 21 st October 2020 9 th November 2020 4 th December 2020 24 th January 2021 17 th February 2021 8 th March 2021	Scott Cawley Ltd. and independent ornithologist, André Robinson
Bat surveys:		Scott Cawley Ltd.
Building surveys (internal and external)	6 th – 8 th July 2020 15 th March 2022	
Static detector activity surveys	July – October 2018 July - October 2020	
Walked transect surveys	7 th and 16 th August 2018 July – August 2020	
Roost emergence/re-entry activity surveys	July – September 2020	

2.5.1 Habitats and Flora Survey

- 16 Terrestrial and aquatic habitat surveys were undertaken of the proposed development site on the 27th July and 16th August 2018 by Kate-Marie O'Connor B.A. (Hons) M.Sc. and Colm Clarke B.A. (Hons) M.Sc., on the 8th – 10th July 2020 by Siofra Quigley B.Sc. (Hons) M.Sc. and Alexis Fitzgerald B.A. (Hons) M.Sc., and on the 14th March 2022 by Siofra Quigley following the methodology described in Best Practice Guidance for Habitat Survey and Mapping⁶. All habitat types were classified using the *Guide to Habitats in Ireland*⁷, recording the indicator species and abundance using the DAFOR scale⁸ and recording any species of conservation interest. Vascular and bryophyte plant nomenclature generally follow that of *The National Vegetation Database*⁹ having regard to more recent taxonomic changes to species names after the *New Flora of the British Isles*¹⁰ and the British Bryological Society's *Mosses and Liverworts of Britain and Ireland: A Field Guide*¹¹. Annex I habitat types were classified after the *Interpretation manual of European Union Habitats EUR28*¹² with reference to the corresponding national habitat survey reports and NPWS wildlife manuals, as applicable. The nomenclature for Annex I habitats follows that of the *Interpretation manual of European Union Habitats EUR28* with abbreviated names after those used in *The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview*¹³.

2.5.2 Fauna Surveys

2.5.2.1 Terrestrial Mammals

- 17 A terrestrial fauna survey (excluding bats) was undertaken on the 7th – 9th July 2020 and on the 14th March 2022 by Siofra Quigley B.Sc. (Hons) M.Sc. The presence/absence of terrestrial fauna species were surveyed through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as by direct observation. The habitats on site were assessed for signs of usage by protected/red-listed fauna species, and their potential to support these species. Surveys to check for the presence of badger *Meles Meles* setts and otter *Lutra lutra* holts within the study area, and to record any evidence of use, were undertaken. Indirect method of surveying for red squirrel *Sciurus vulgaris* and pine marten *Martes martes* were also undertaken, which included checking tree canopies for the presence of potential dreys and dens.
- 18 Infra-red motion-activated cameras were deployed in areas of suitable habitat to confirm usage of certain mammal species, specifically for badger, pine marten, and red squirrel within the woodland habitat in the north west, and to determine usage of Spancelhill Stream for foraging/commuting otters in the north west (under NPWS Licence No. 007/2020). These cameras were deployed for a period of 27 nights between 23rd September - 20th October 2020. The mammal ledge located in the west of the site in the culvert beneath the M18 Motorway was also checked for signs of otter or other mammal usage during surveys carried out along the Spancelhill Steam in 2020 and 2022.

⁶ Smith, G.F., O'Donoghue, P., O'Hora, K. & Delaney, E. (2011) *Best Practice Guidance for Habitat Survey and Mapping*. The Heritage Council Church Lane, Kilkenny, Ireland.

⁷ Fossitt, J.A. (2000) *A Guide to Habitats in Ireland*. Heritage Council, Kilkenny.

⁸ The DAFOR scale is an ordinal or semi-quantitative scale for recording the relative abundance of plant species. The name DAFOR is an acronym for the abundance levels recorded: Dominant, Abundant, Frequent, Occasional and Rare.

⁹ Weekes, L.C. & FitzPatrick, Ú. (2010) *The National Vegetation Database: Guidelines and Standards for the Collection and Storage of Vegetation Data in Ireland*. Version 1.0. Irish Wildlife Manuals, No. 49. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

¹⁰ Stace, C. (2019) *New Flora of the British Isles. 4th Edition*. C&M Floristics.

¹¹ Atherton, I., Bosanquet, S. & Lawley, M. (2010) *Mosses and Liverworts of Britain and Ireland: A Field Guide*. Latimer Trend & Co., Plymouth.

¹² CEC. (Commission of the European Communities) (2013) *Interpretation manual of European Union Habitats EUR28*. European Commission, DG Environment.

¹³ NPWS (2019). *The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview*. Unpublished NPWS report.

2.5.2.2 Bats

Building and tree surveys

- 19 A ground-level assessment of trees, structures and buildings within the subject lands, to examine their suitability to support roosting bats and potential to act as important landscape features for commuting/foraging bats, was based on guidelines (see Table 3) in *Bat Surveys for Professional Ecologists: Good Practice Guidance* (Collins ed., 2016) and included inspections of trees, structures and buildings for potential roost features (PRFs), and for signs of bats (staining at roost entrances, droppings, carcasses, insect remains). This included internal access of barns and outbuildings to assess for the actual presence of bats, and for evidence as described above. Residential buildings were unable to be accessed due to Covid 19 restrictions, however all buildings were assessed externally. Building and tree surveys were undertaken during surveys carried out in 2018, 2020 and 2022.

Table 3 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, applied according to professional judgement. (Collins (2016))

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	<p>A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).</p> <p>A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.</p>	<p>Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat.</p> <p>Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.</p>
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	<p>Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.</p> <p>Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.</p>
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	<p>Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.</p> <p>High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging</p>

Suitability	Description Roosting habitats	Commuting and foraging habitats
		bats such as broadleaved woodland, treelined watercourses and grazed parkland. Site is close to and connected to known roosts.

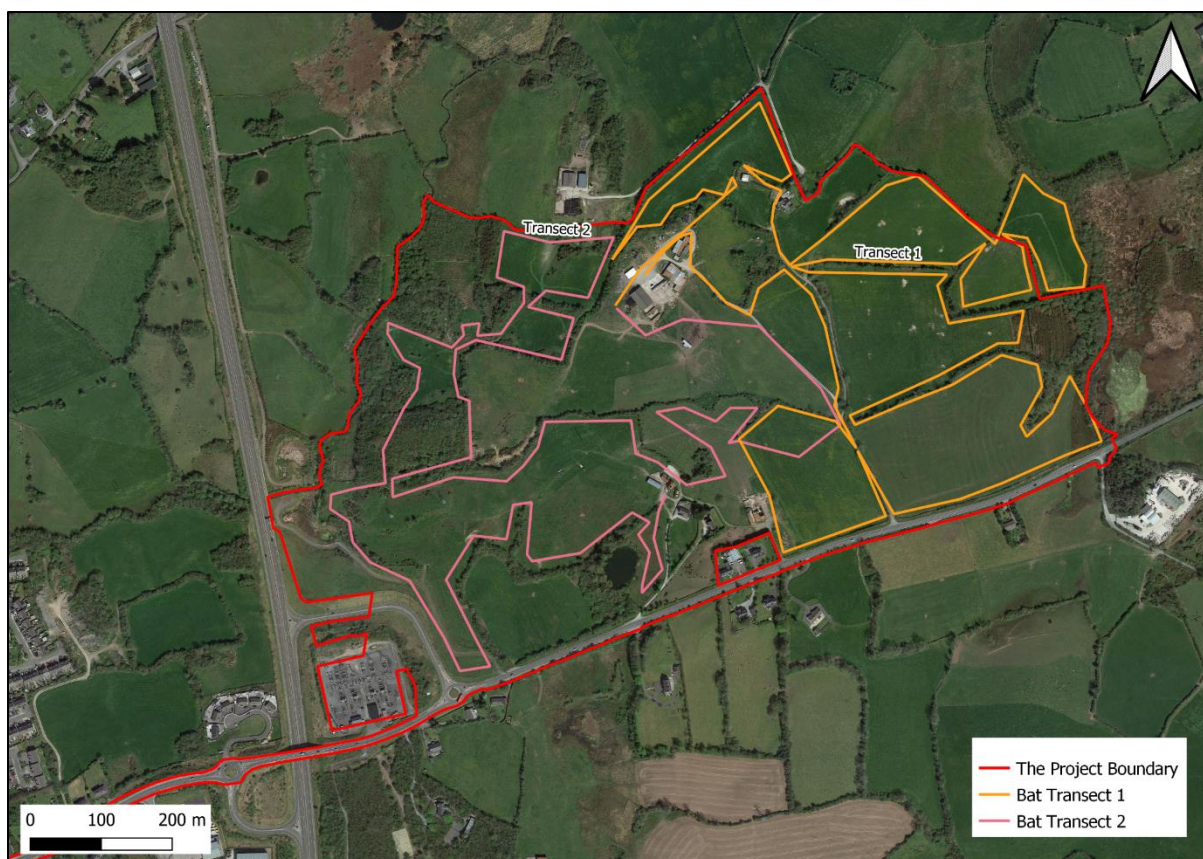
Transect surveys

Two extended dusk and one all night bat activity walked transect surveys were undertaken within the subject lands. The extended dusk surveys commenced 15 minutes before sunset and lasted for approximately two hours. One full night survey was also undertaken from 15 minutes before sunset, until just before sunrise. This full night survey was carried out to determine how bats use the proposed development site throughout the night. Details of dates, timings, weather, and other details are shown in Table 4 below. Two routes were walked by two surveyors during each visit, the routes are illustrated on Figure 1. The focus of the routes was to survey linear vegetation features and field boundaries. However, this was also dependent on access between fields. Direct observations of how bats use the landscape were recorded, and handheld ultrasound detectors (Elekon Batlogger M) were used to identify the bat species by their calls. Data generated from the transect surveys was analysed using Elekon BatExplorer software, whereby calls were identified to species level (where this was possible), through professional judgement and with reference to *British Bat Calls: A Guide to Species Identification* (Russ, 2012). Transect surveys were undertaken in 2018 and 2020, however in 2018, two dusk transects were carried out, and in 2020 two dusk surveys and one full night survey were undertaken.

Table 4 Details of transect surveys undertaken within the proposed development site.

Date (Sunset/Sunrise)	Survey Time	Survey Type	Weather Conditions
08/07/2020 (22:00)	21:47- 23:39	Dusk transect survey	Mild, wet weather with temperatures around 16°C and light breeze. Overcast with light to moderate rain throughout the night.
28-29/07/2020 (21:35/05:20)	21:20 – 05:00	All night transect survey	Dry and partially overcast, with temperatures between 13 - 14°C.
18/08/2020 (20:55)	20:42 – 22:31	Dusk transect Survey	Dry, mild partly cloudy weather with temperatures around 16°C and light breeze.

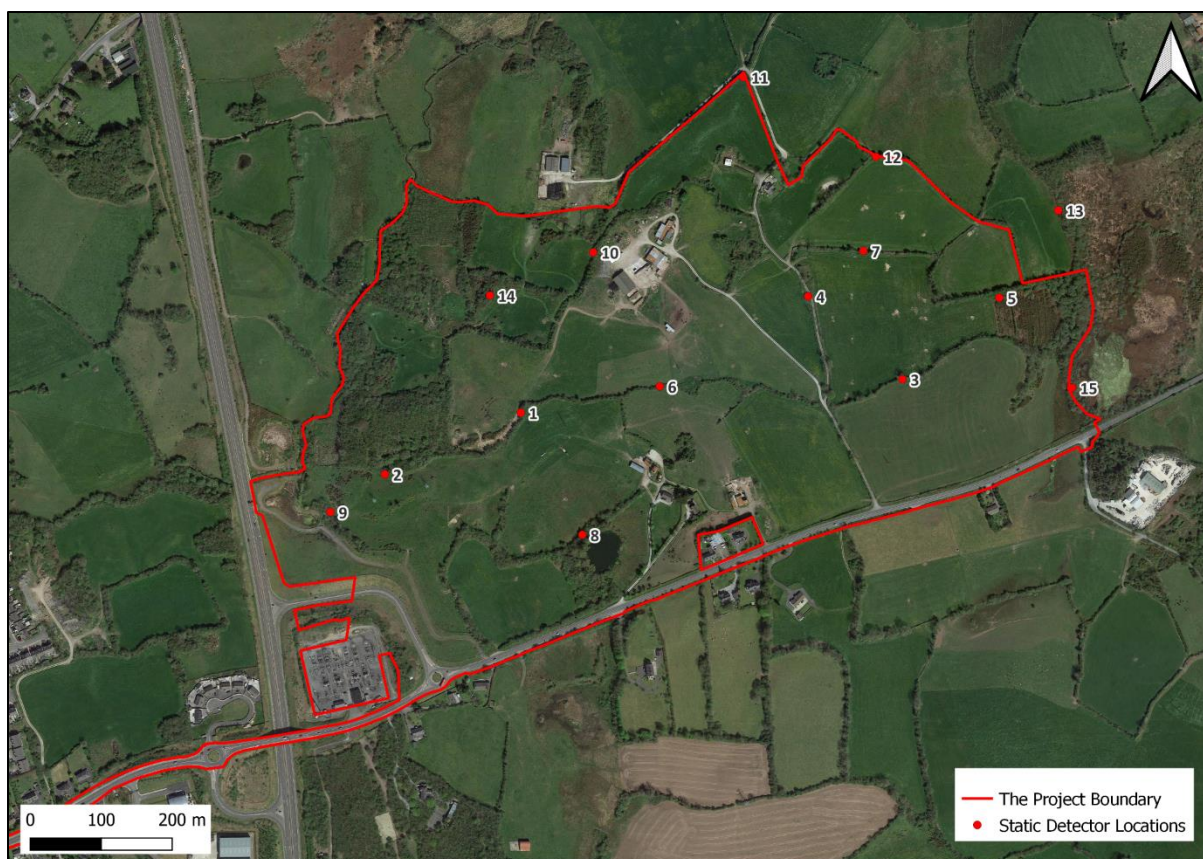
Figure 1 Indicative transect routes walked within the site



Automated static detectors

- 60 The walked transect surveys were supplemented by automated static bat detectors (*i.e.* Song Meter SM2). This use of static bat detectors at a fixed location for an extended period of time increases the likelihood of recording lesser horseshoe bats present on site compared to walked transects only. Detectors were deployed for a minimum period of 8 nights at 15 different locations within the subject lands between the 6th July and 20th October 2020. Locations of these deployments were chosen with an emphasis on areas identified as being potentially suitable for commuting and/or foraging bats, whilst also ensuring the site was covered as best as possible. Locations of the deployed static detectors can be found in **Figure 2**. Once the detectors had been deployed for a minimum of 7 nights, they were collected and the data was analysed using Kaleidoscope bat analysis software. This software identifies each individual bat call recorded by the detectors, which can then be used to identify the calls by species.
- 61 The average number of calls recorded per night for each species was calculated for each individual static detector. These averages were then examined against the transect survey results, and based on this analysis the features which are important for commuting and/or foraging bats within the proposed development boundary, were identified. 14 static detectors were also deployed in 2018, in similar positions to 2020.

Figure 2 Locations of deployed static bat detectors



Roost emergence/re-entry activity surveys

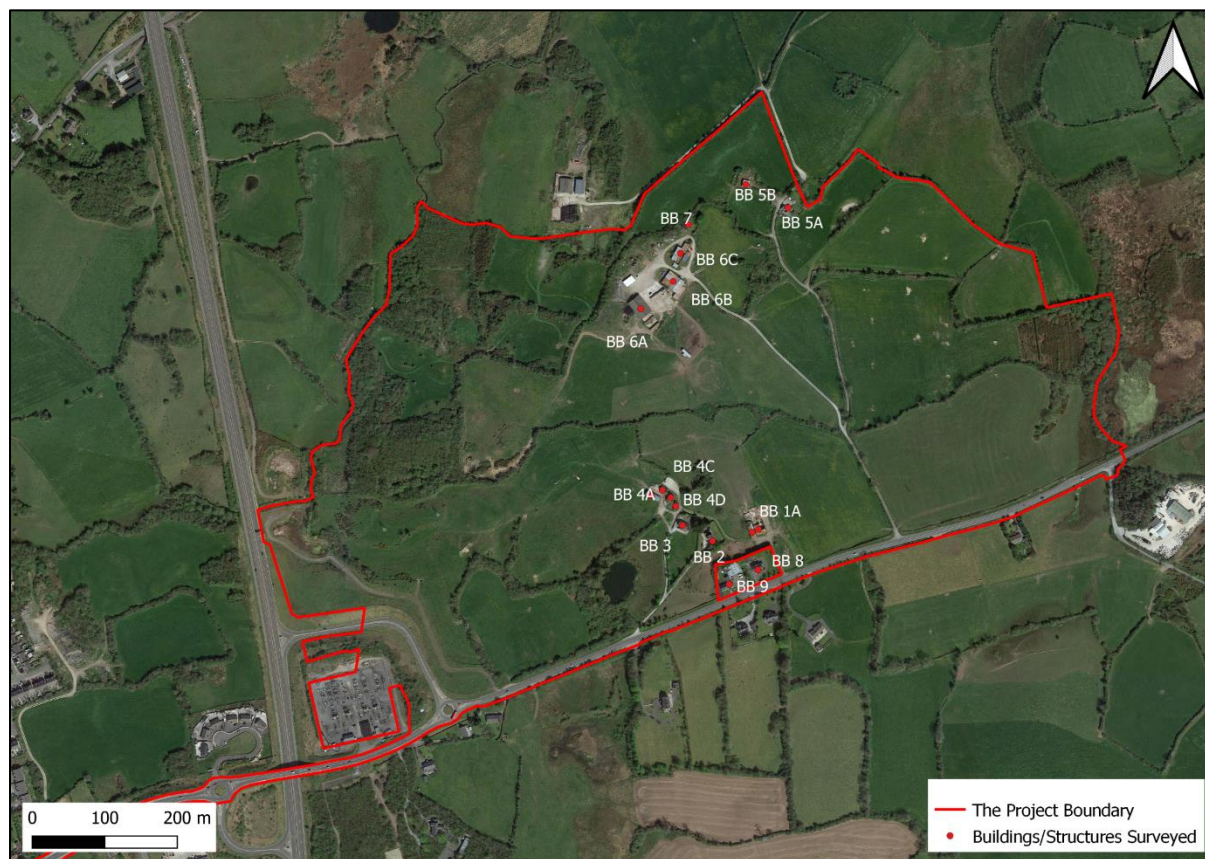
- 62 A number of bat roost emergence/re-entry activity surveys were undertaken at six residential buildings and 10 farm buildings/structures within the lands by surveyors who are experienced in bat activity surveys. The surveys were designed with reference to methodologies in *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn.) (Collins, 2016), survey details and map showing building locations are provided in Table 5 and Figure 3. Observations of bat activity were recorded, with data generated from the surveys analysed using Elekon BatExplorer software, whereby calls were identified to species level (where this was possible), through professional judgement and with reference to *British Bat Calls: A Guide to Species Identification* (Russ, 2012). Roost emergence/re-entry surveys were only carried out in 2020.

Table 5 Details of emergence/re-entry bat surveys undertaken within the proposed development site

Building ID Number	Building suitability, surveyed internally/externally	Number of emergence/re-entry surveys	Date of surveys	Survey time (sunset/sunrise)	Weather Conditions
BB 1A and 1B	Low Internals carried out on BB 1A, unable to carry out internals on BB 1B due to safety concerns. Externals carried out on both.	2 (1 dusk, 1 dawn)	09/07/2020	21:47 – 23:37 (21:59)	Dry, clear skies, temperatures between 12 - 14°C.
			19/08/2020	04:54 – 06:24 (06:24)	Dry, overcast, light breeze with temperatures of 17°C.
BB 2	Moderate Externals only carried out	2 (1 dusk, 1 dawn)	10/07/2020	03:22 – 05:22 (05:24)	Clear, dry night with no wind, temperatures between 12 - 14°
			21/09/2020	19:20 – 21:02 (19:37)	Dry, overcast with no wind, temperatures of 15°C
BB 3	High Externals only carried out	3 (2 dusks, 1 dawn)	07/07/2020	21:47 – 23:37 (22:00)	Overcast, light to heavy rain with no wind, temperatures of 15 - 16°C
			31/07/2020	04:20 – 05:51 (05:53)	Overcast, light rain with no wind, temperatures of 17°C
			19/08/2020	20:39 – 22:22 (20:52)	Overcast, no rain, light breeze, temperatures of 19°C
BB 4A, 4B, 4C, and 4D	Low Internals and externals carried out	1 (dusk)	06/07/2020	21:47 – 23:30 (22:01)	Light rain, overcast with no wind, temperatures of 15 - 17°C
BB 5A and 5B		3 (2 dawns, 1 dusk)	27/07/2020	21:18 – 23:10 (21:36)	Overcast, with heavy rain for brief period during survey then dry for rest of survey, no wind, temperatures of 13 - 15°C

Building ID Number	Building suitability, surveyed internally/externally	Number of emergence/re-entry surveys	Date of surveys	Survey time (sunset/sunrise)	Weather Conditions
	Moderate (3 surveys undertaken due to poor survey conditions on first survey) Externals carried out on both, internal on BB 5B.		18/08/2020	04:53 – 06:24 (06:23)	Overcast, no rain, light winds, temperatures of 16 - 17°C
			22/09/2020	05:24 – 07:25 (07:22)	Clear skies, no rain or wind, temperatures of 11 - 13°C
BB 6A, 6B, and 6C	Low Externals and internal surveys carried out	1 (dawn)	28/07/2020	03:47 – 05:48 (05:48)	Overcast, light rain, no wind, temperatures of 12 - 13°C
BB 7	Moderate (3 surveys undertaken due to poor survey conditions) External and internal survey carried out	3 (2 dusks, 1 dawn)	29/07/2020	21:16 – 22:56 (21:33)	Overcast with light to moderate rain, gusty winds, temperatures of 15°C
			21/08/2020	04:55 – 06:22 (06:28)	Overcast, no rain, moderate winds, temperatures of 15°C
			22/09/2020	19:24 – 21:00 (19:34)	Overcast, no rain or wind, temperatures of 13°C
BB 8	Moderate External survey only	2 (2 dawns)	30/07/2020	04:20 – 06:05 (05:51)	Overcast, light rain, no wind, temperatures of 16 - 19°C
			23/09/2020	05:54 – 07:20 (07:24)	Clear skies, light rain towards the end of the survey, no wind, temperatures of 11 - 12°C
BB 9	Moderate External survey only	2 (2 dusks)	30/07/2020	21:20 – 23:01 (21:31)	Overcast, dry, with no wind, temperatures of 16 - 17°C
			23/09/2020	19:20 – 21:03 (19:31)	Clear skies, dry, no wind, temperatures of 8 - 12°C

Figure 3 Location of buildings surveyed and associated ID number



2.5.2.3 Breeding Birds

- 63 Breeding bird surveys were undertaken on the 25th June and 6th July 2020 by Shea O’Driscoll B.Sc. (Hons) M.Sc., and on the 20th April 2021 by Shane Brien B.Sc. (Hons) M.Sc., using a methodology adapted from the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species*¹⁴. The study area covered the lands within the proposed development site, which were slowly walked in a manner allowing the surveyor to come within 50m of all habitat features. Birds were identified by sight and song, and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes. Buildings and barns within the proposed development site were also checked for nesting barn swallows *Hirundo rustica*, house martins *Delichon urbicum* and barn owls *Tyto alba*.

2.5.2.4 Wintering Birds

- 64 Wintering bird surveys were undertaken once a month during the period of September 2020 and March 2021 by Shane Brien B.Sc. (Hons) M.Sc. and Niall McHugh B.Sc (Hons) both of Scott Cawley Ltd, and André Robinson, an independent ornithologist, using a methodology based on the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species*. The study area covered the lands within the proposed development site within the red line boundary and the wetland area to the east of the site (not within the red line boundary), as shown on Figure 1. Lands were initially surveyed visually using binoculars/scope from a vantage point(s) at the edge of the study area followed by a walkover of the area to identify birds which may not be visible from a distance (e.g. waders) and evidence of usage by wildfowl such as swans or geese

¹⁴ Gilbert, G., Gibbons, D.W. & Evans, J. (1998) *Bird Monitoring Methods - A Manual of Techniques for Key UK Species*. RSPB: Sandy

(e.g. droppings). Birds were identified by sight and general location and activity. They were recorded using the British Trust for Ornithology (BTO) species and activity codes.

Hen Harrier *Circus cyaneus*

- 65 Vantage point surveys for the presence of hen harrier were carried out in accordance with best practice guidelines *Raptors – a Field Guide to Surveys and Monitoring (Second Edition 2009)* (Hardey et al., 2009)¹⁵. The habitats within the site were assessed for suitability for roosting and/or foraging hen harrier. Suitable wintering roosting and foraging habitat was identified within the east of the site, where the wetland/swamp habitats were located. A suitable vantage point was determined that appropriately covered the area identified as potential wintering roosting and foraging habitat. This area was surveyed for two hours at dusk, during monthly visits between September 2020 and March 2021. The site is not suitable as foraging or breeding habitat during the breeding season, as this typically occurs on moorlands and young forestry plantations^{16,17,18}.

2.5.3 Survey Limitations

- 66 Occupied residential houses (BB 2, BB 3, BB 5, BB 8 and BB 9) could not be surveyed internally for the presence of roosting bats due to health and safety concerns associated with Covid-19. The absence of an internal inspection does not compromise the assessment of the structure's potential to support roosting bats as buildings that were assessed as having moderate potential (according to BCT guidelines), had at least two emergence/re-entry surveys within the active bat season and during optimal survey conditions.
- 67 A number of surveys experienced poor weather during surveys, i.e. bat surveys, and wintering bird surveys, which could have implications for results. Any bat activity surveys that experienced poor weather, were repeated when weather had improved. For wintering bird surveys, the visibility was considered acceptable for all surveys undertaken. Therefore, bad weather is not considered a limitation.
- 68 Five of the 15 statics were deployed in late September which would be considered late in the season. However, weather conditions during September and October 2020 were unseasonably mild and as such, it was considered that all static deployments were undertaken in suitable conditions for recording bat activity. As 2018 surveys included static detector surveys, two seasons of bat activity within the site have been carried out, providing a robust baseline. Bat surveys in April and October, where they meet certain weather conditions and temperature requirements, are also considered acceptable within BCT guidelines.
- 69 Specific fish and invertebrate surveys were not undertaken within the proposed development. However, this is not considered to be a limitation to the assessment as a precautionary approach is applied and it is assumed any suitable habitat identified could hold populations of species based on local records and habitat suitability.
- 70 Despite the limitations noted above, sufficient survey data was gathered to fully inform the assessment of impacts, the mitigation measures described in this report and the assessment of residual impacts predicted in relation to the proposed development.

¹⁵ Hardey J, Crick H, Wernham C, Riley H, Etheridge B and Thompson D (2009) *Raptors: A Field Guide to Survey and Monitoring*, 2nd Edition. TSO, Edinburgh

¹⁶ Ruddock, M., Mee, A., Lusby, J., Nagle, A., O'Neill, S. & O'Toole, L. (2016). The 2015 National Survey of Breeding Hen Harrier in Ireland. *Irish Wildlife Manuals*, No. 93. National Parks and Wildlife Service, Department of the Arts, Heritage and the Gaeltacht, Ireland.

¹⁷ Barton, C., Pollock, C., Norriss, D.W., Nagle, T., Oliver, G.A. & Newton, S. (2006). The second national survey of breeding hen harriers *Circus cyaneus* in Ireland 2005. *Irish Birds* 8: 1-20.

¹⁸ Norriss, D.W., Marsh, J., McMahon, D. & Oliver, G.A. (2002). A national survey of breeding hen harriers *Circus cyaneus* in Ireland 1998-2000. *Irish Birds* 7: 1-10.

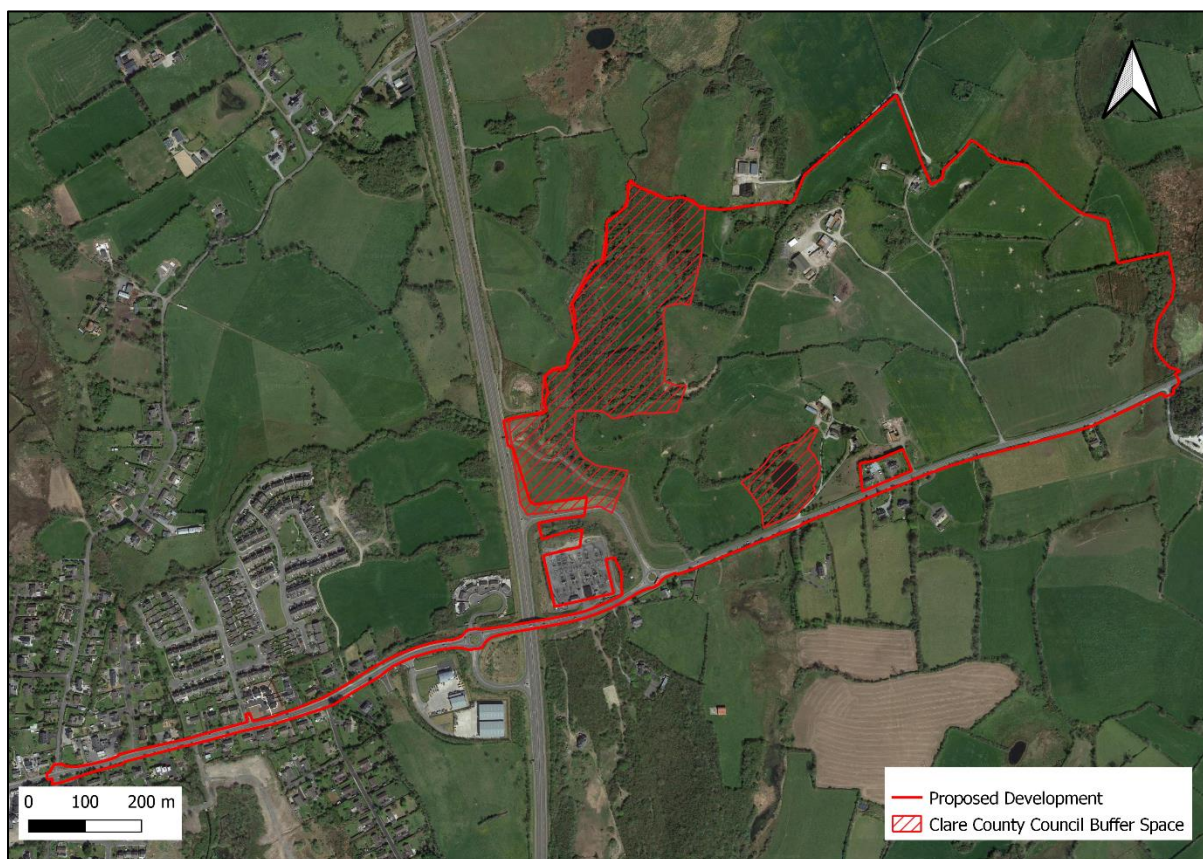
3 Provision of Information for Screening for Appropriate Assessment

- 71 The following sections provide information to facilitate the Appropriate Assessment screening of the proposed development to be undertaken by the competent authority.
- 72 A description of the proposed development and the receiving environment is provided to identify the potential ecological impacts. The environmental baseline conditions are discussed, as relevant to the assessment of ecological impacts where they may highlight potential pathways for impacts associated with the proposed development to affect the receiving ecological environment (*e.g.* geological, hydrogeological and hydrological data).
- 73 The potential impacts are examined in order to define the potential zone of influence of the proposed development on the receiving environment. This then informs the assessment of whether the proposed development will result in significant effects on any European sites; *i.e.* affect the conservation objectives supporting the favourable conservation condition of the European site's QIs or SCIs.

3.1 Description of the Proposed Development

- 74 The proposed development is to demolish a number of existing dwelling houses and farm outbuildings and to develop six data storage facilities, an energy centre, an Above Ground Installation (AGI) building, a vertical farm, a substation compound and associated ancillary development on a c. 60 ha. greenfield site (currently used for agriculture and hosting power transmission infrastructure) in the townlands of Tooreen and Cahernalough, Ennis, Co Clare.
- 75 Figure 4 presents the site layout for the proposed masterplan. The proposed development footprint occupies c. 17.3ha of the 60ha proposed development site; the site layout reserves c. 10 ha of lands as ecological buffer zones. The indicated buffer zones on Figure 4 were delineated following assessment undertaken as part of the areas assessment within the Clare County Development Plan 2017-2023 (Variation No.1).
- 76 To facilitate the footprint of the development, there will be a total loss of 2.7km of hedgerows, and 30 trees. There will also be approximately 1,525m² of scrub being removed. In order to ensure the site continues to remain suitable for local wildlife species, there will be replacement planting of 4.86km of new native hedgerows, 57 new native trees and 58,567m² of native woodland planting. The proposed planting plan will be carried out in phases, with the first phase carried out pre-construction before any removal of vegetation takes place. In order to reduce the amount of soil being removed from the lands, berms will be utilised in a number of places within the proposed development. These areas will be planted with woodland species, and will further screen the development. The proposals for the site have been prepared taking account of the of the All-Ireland Pollinator Plan with the majority of the species proposed in the various habitats recommended in the Plan. Further details on the landscaping proposals and phasing of the development can be found in Chapter 10 *Landscape And Visual Impact Assessment* of the EIAR, The Landscape and Biodiversity Management Plan, and the Landscape Design Strategy that will be submitted as part of this application.

Figure 4. Proposed development. Red hatched areas show the buffer zones included in the proposed development



- 77 A full development description can be found in Chapter 2 *Description of the Proposed Development* of the Environmental Impact Assessment Report (EIAR) which will be submitted as part of the planning application.

Foul water

- 78 There is an existing 225mm diameter foul drain that forms part of an existing foul drainage network that services the existing Knockanean area southwest of the proposed development along the existing Tulla Road/R352. This existing foul drain discharged to the existing Pumping Station of Gort Na mBlath located approximately 550m further west from the proposed development. It is proposed to convey and discharge all domestic foul flows generated from the proposed development into the existing Gort Na mBlath Pumping Station. A temporary trench excavation along the Tulla road will be undertaken to facilitate pipe laying for connection with the existing public wastewater sewer and mains water supply.
- 79 There is no trade effluent proposed for this development. Foul sewage will be collected from site (*i.e.* from the data storage facility, offices and energy centre washroom facilities and canteen) and discharged through a new pumping station which will be constructed as part of this proposed development, to the foul drainage network which runs along the Tulla Road and ultimately discharges to Ennis North (Clonroadmore) WWTP Reg D0048.

Surface water

- 80 The proposed surface water drainage service to the development comprises various drainage components including positive stormwater networks, attenuation systems and several Sustainable Drainage System (SuDS) elements. Stormwater will be attenuated on site for the 1:1,000 year flood event. An over flow subsurface pipeline will discharge at current discharge rates (greenfield) to the Spancelhill Stream (also known as Ballymacahill River).

- 81 The roofs, yards and internal access roads proposed throughout and within the footprint of the proposed development will be drained through a sealed drainage system that will ultimately be collected by gullies and conveyed through a series of proposed storm water pipes prior to discharging into a proposed open attenuation basin. There will be no direct discharge from hardstand area to swallow holes or existing pond features within the site boundary. Further details are provided in Chapter 6 *Hydrology* of the EIAR and within the CSEA engineering reports and drawings¹⁹ prepared for planning.

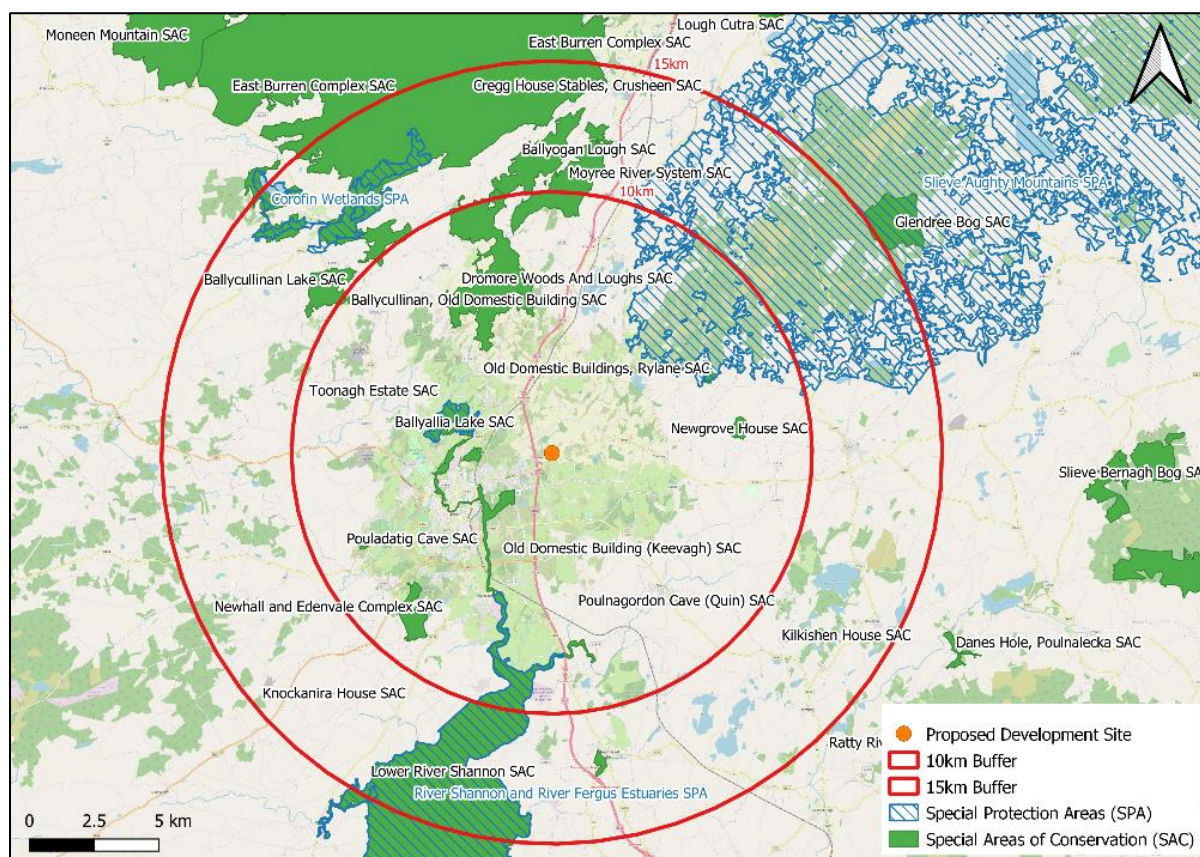
3.2 Overview of the Receiving Environment

3.2.1 European sites

- 82 The proposed development does not overlap with any European sites. There are 23 European sites within the vicinity of the proposed development. The nearest European site is the Lower Shannon SAC, located c. 1.4km south-west of the proposed development site. The next closest European site is Ballyallia Lake SAC, located c. 2.2km north west of the proposed development at its closest point.
- 83 The Spancelhill Stream flows along the north-western boundary of the proposed development site, flanked by the woodland on the southern bank and improved agricultural grassland and scrub on the northern bank. It flows between two attenuation ponds located within and adjacent to the western section of the proposed development site, before exiting the site through a culvert under the M18 Motorway to Ennis. Spancelhill Stream then flows c. 2.1km downstream until it reaches the River Fergus, which then ultimately discharges into the Fergus Estuary c. 4.9km downstream. The River Fergus overlaps with the Lower River Shannon SAC where the Spancelhill Stream joins the River Fergus, and the Fergus Estuary overlaps with the River Shannon and River Fergus Estuaries SPA c. 4.9km downstream. Therefore, the closest European site to the proposed development is the Lower River Shannon, located 2.1km downstream, or 1.4km south west (as the crow flies) to the proposed development.
- 84 The Dromore Woods and Loughs SAC is located c. 4.5km north west of the proposed development site, and is upstream of the proposed development site. A portion of the River Fergus flows through this European site. The River Fergus then flows c. 9.3km downstream, via Ballyallia Lake SAC, and combines with the outfall of the River Fergus that connects with the Spancelhill Stream, upstream of this.
- 85 There is therefore a hydrological link between the proposed development site and European sites therein.
- 86 There are 12 SACs designated for populations of lesser horseshoe bats within 15km of the proposed development. The nearest SAC designated for populations of lesser horseshoe bat is the Old Domestic Building (Keevagh) SAC, located c. 4.3km south west of the proposed development.
- 87 There are four SPAs located within c. 15km of the site. The nearest SPA is Ballyallia Lough SPA, located c. 2.5km north west of the site, designated for its wetlands and wildfowl, including; wigeon *Anas penelope*, gadwall *Mareca strepera*, teal *Anas crecca*, mallard *Anas platyrhynchos*, shoveler *Spatula clypeata*, coot *Fulica atra*, and black-tailed godwit *Limosa limosa*. The River Shannon and River Fergus Estuaries SPA also designated for its wetlands and waterbirds, is located c. 7km downstream of the site, via Spancelhill River which flows along the western boundary of the site, and the River Fergus.
- 88 All of the European sites present in the vicinity of the proposed development are shown on Figure 5 below. The QIs/SCIs of the European sites in the vicinity of the proposed development are provided in Appendix I.

¹⁹ *Engineering Planning Report, Art Data Centre – Ennis Campus*. Clifton Scannell Emerson Associates (CSEA), February 2022

Figure 5 European sites in the vicinity of the proposed development



3.2.2 Habitats

- 89 The proposed development site is located in the 10km Grid Square R37 at R 37315 79402, east of Ennis. The land within the site comprises mainly of agricultural fields, used for pasture of cattle and sheep. A number of barns and sheds utilised for agricultural use, and four residential houses are also present within the lands. In the north west of the site, a well-established oak-ash-hazel woodland is bordered by the Spancelhill Stream. Toureen Lough lies in the south of the site, with wetland habitats present in the west and north. The field boundaries within the site largely consist of hedgerows, dry stone walls, and treelines. The R352 bounds the site to the south, with agricultural lands surrounding the proposed development site, and the townland of Ennis to the west.
- 90 The following habitat types (and mosaics of these), assigned using the Heritage Council Classification System⁷, were identified within the proposed development site:
- Stone Walls and Other Stonework (BL1)
 - Buildings and Artificial Surfaces (BL3)
 - Spoil and Bare Ground (ED2)
 - Recolonising Bare Ground (ED3)
 - Exposed Calcareous Rock (ER2)
 - Mesotrophic Lake (FL4)
 - Other Artificial Lakes and Ponds (FL8)
 - Reed and Large Sedge Swamps (FS1)
 - Depositing/Lowland Rivers (FW2)

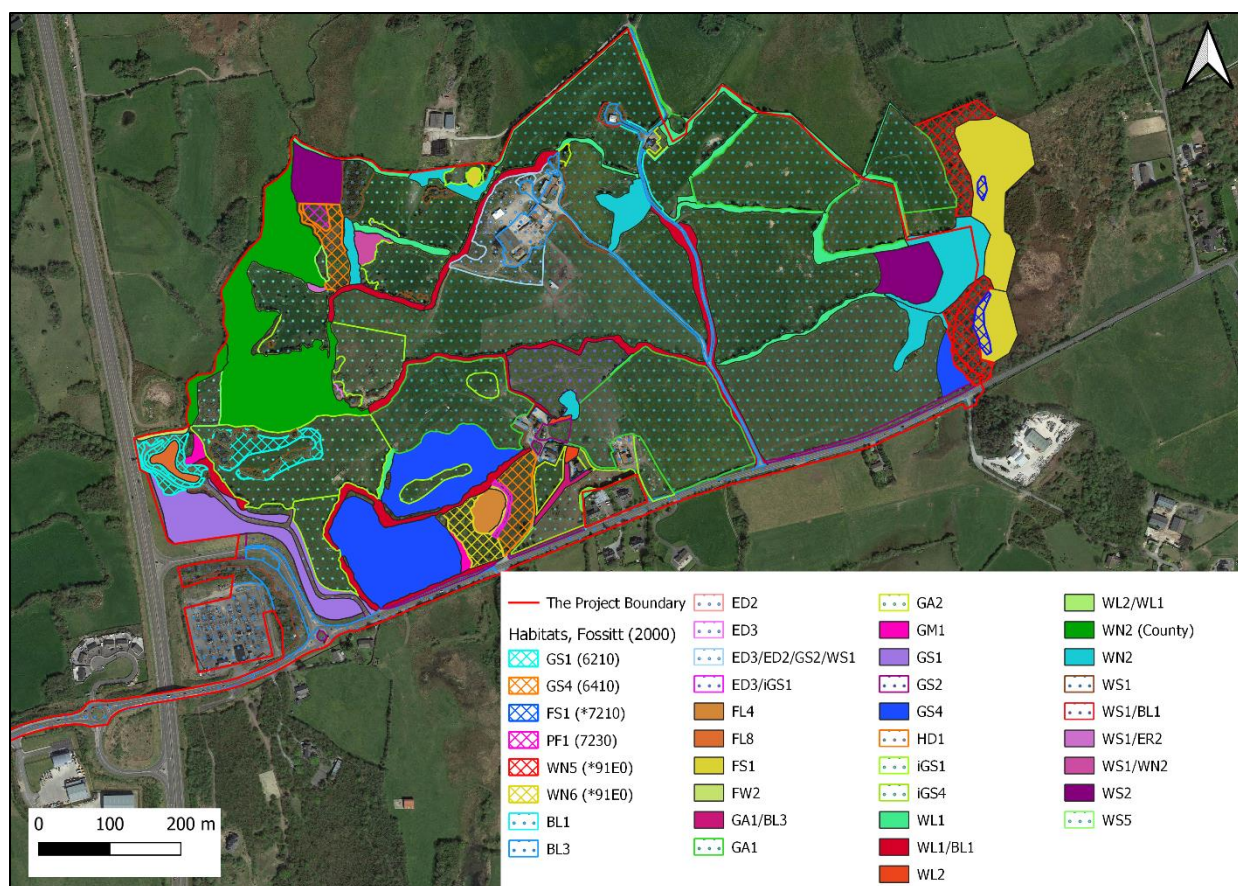
- Drainage Ditch (FW4)
- Improved Agricultural Grassland (GA1)
- Amenity Grassland (GA2)
- Marsh (GM1)
- Dry Calcareous and Neutral Grassland (GS1)
- Wet Grassland (GS4)
- Dense Bracken (HD1)
- Rich Fen and Flush (PF1)
- Hedgerow (WL1)
- Treeline (WL2)
- Oak-Ash-Hazel Woodland (WN2)
- Riparian Woodland (WN5)
- Willow-Alder-Ash Woodland (WN6)
- Scrub (WS1)
- Immature Woodland (WS2)
- Recently-Felled Woodland (WS5)

91 The following habitats listed on Annex I of the EU Habitats Directive were recorded within the proposed development site:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [*91E0], located in the east of the site, and west of Toureen Lough;
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210], located in the west of the site, south of the woodland;
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410], located east of Toureen Lough, and in the north west of the site;
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davalliana* [*7210], located in the east of the site; and
- Alkaline fens [7230], two small patches along the eastern bank of Toureen Lough, and in the north west of the site adjacent to the woodland and *Molinia* meadow habitat.

92 Whilst these habitats were recorded onsite, they are not located within and do not provide a supporting role to any Annex I habitats connected with any European site. Overall the habitats located within the footprint of the proposed development have limited ecological value.

Figure 6 Habitat map of the site



3.2.3 Flora

- 93 The National Biodiversity Data Centre (NBDC) did not return any records for protected and/or rare plant species as listed on the Flora (Protection) Order 2022, or any Annex II plant species within 2km of the proposed development site, nor were any of these aforementioned species found within the site during field surveys carried out in 2018, 2020 or 2022. *Galium uliginosum*, a rare plant species (of least concern) contained within Ireland Red List No. 10: Vascular Plants (Wyse Jackson *et al.*, 2016), was identified within the proposed development site, in the rich fen and flush habitat in the north of the site.
- 94 There were two records of a non-native species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011-2015, *i.e.* Japanese knotweed *Reynoutria japonica*, located c. 1.4km north of the proposed development site. There were no other records of any non-native invasive listed on the Third Schedule, and no such species were recorded within the lands during habitat surveys.

3.2.4 Fauna

3.2.4.1 Otter

- 95 The NBDC data search returned 16 records for otter within c. 2km of the proposed development, with the most recent from 2018. Locations of these records included along the River Fergus, and Ballyallia Lough, both of which have hydrological connections with the proposed site. Evidence of otter activity (*i.e.* otter spraint) was recorded within Spancelhill Stream in the north west of the site, adjacent to the woodland, c. 180m west of the footprint of the proposed development at its closest point. The mammal ledge located underneath the M18 Motorway culvert in the west of the site was also checked for otter usage, with no evidence identified during surveys carried out in 2020. During surveys carried out in 2022, an otter spraint

was identified on the ledge of the M18 culvert. The nearest European site for which this species is designated is the Lower River Shannon SAC, which is located c. 1.4km south west of the proposed development site, and hydrologically downstream of the site via the River Fergus. Dromore Woods and Loughs SAC, located c. 4.5km north west of the proposed development is also designated for otters, and is hydrologically upstream of the proposed development site via the River Fergus.

3.2.4.2 Lesser horseshoe bat

Desktop records

- 96 From a review of records held by Bat Conservation Ireland, there were 9 lesser horseshoe bat roosts within c. 2km of the proposed development site. The closest three roosts to the site were located c. 405m, c. 800m and 830m, all south of the site, with the closest located at Kilfelim. There were 61 records of lesser horseshoe bat from an NBDC desktop search of records within c. 2km of the site, the most recent record was from 2015.

Building inspection surveys

- 97 There were no lesser horseshoe bat roosts identified within the proposed development site. Lesser horseshoe bats are restricted in terms of their choice of roosting site, as they cannot land on walls and crawl in, they must fly through an opening large enough to accommodate it's wingspan (Kelleher, 2006)²⁰. As a result, lesser horseshoe bats are typically cave-dwelling species, however in Ireland, this species will use buildings for its summer roosts, and caves for hibernation roosts²¹. Old stone buildings with slate roofs are ideal roosting sites as they usually offer a warm area near the apex of the roof in which to rear young. There are no caves or suitable roost buildings within the proposed development site, with the closest cave in Ballyallia, located c. 2.8km north west of the site, and the nearest known roost located c. 405m south of the proposed development site.

Transect surveys

- 98 One brief lesser horseshoe bat call was identified during one of the transect surveys of the site in July 2020. This was recorded in the south of the site, adjacent to the cattle sheds.

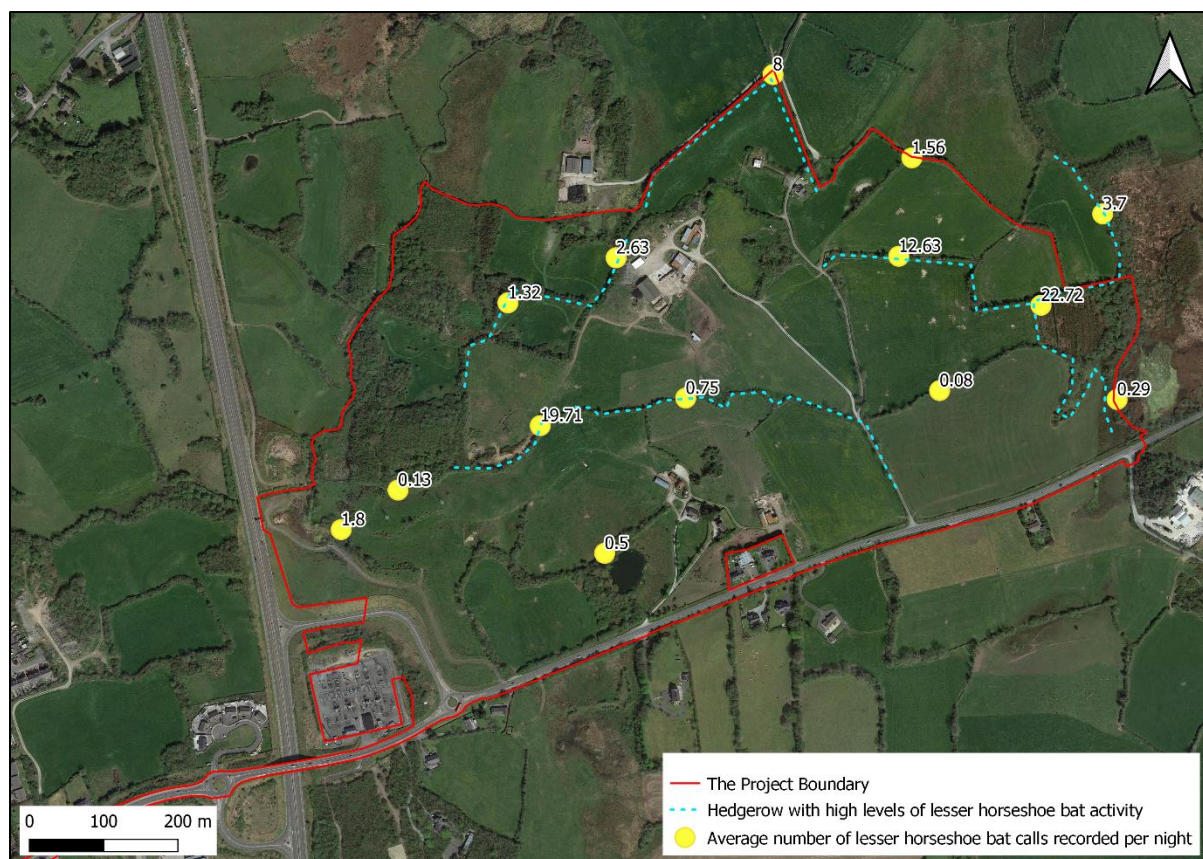
Static detector surveys

- 99 Lesser horseshoe bats were identified from the use of static detector deployments in 15 different locations across the proposed development site. Lesser horseshoe bat calls were identified on 14 out of 15 of the deployed static detectors, with varying degrees of activity. Highest numbers of calls per night were noted in the east at the boundary of scrub/woodland habitat, in the west along a hedgerow bordering the woodland area, and a hedgerow adjacent to Tooreen Laneway, all of which are bordered by pasture fields. This is ideal habitat for lesser horseshoe, and is clearly important for commuting and foraging for this species within the site.

Figure 7 Important habitat features for lesser horseshoe bat (blue dotted line), and average numbers of calls per night from static detector deployments

²⁰ Kelleher, C. (2006). *Summer Roost Preferences of Lesser Horseshoe bat Rhinolophus hipposideros in Ireland*. The Irish Naturalists' Journal, Vol. 18, No.6, pp. 229-231.

²¹ McAney, K. (2014) *An overview of Rhinolophus hipposideros in Ireland (1994–2014)* Vespertilio 17: 115–125, 2014



European sites

100 The nearest European site designated for lesser horseshoe bat is Old Domestic Building (Keevagh) SAC, a summer breeding site, located c. 4.3km south east of the proposed development site. Dromore Woods and Loughs SAC, and Old Domestic Buildings, Rylane SAC are located within 6km of the proposed development site (*i.e.* c. 4.5km north west and c. 5.9km north east respectively), and are also designated as European sites for populations of lesser horseshoe bat. Other European sites designated for lesser horseshoe bat located within the vicinity of the proposed development, however further than 6km from the proposed development include; Newhall and Edenvale Complex SAC, Toonagh Estate SAC, Newgrove House SAC, Poulmagordon Cave (Quin) SAC, Poulnadatig Cave SAC, Old Farm Buildings, Ballymacrogan SAC, Moyree River System SAC, Ballycullinan, Old Domestic Building SAC, East Burren Complex SAC, Knockanira House SAC, and Kilkishen House SAC.

3.2.4.3 Wintering birds

101 The desk-based review returned records of 42 wintering bird species, which included 39 SCI species, including 10 species listed under Annex I of the Birds Directive. The majority of wintering birds identified in the desk-based review are typically found in coastal, estuarine and intertidal habitats including the Fergus Estuary and Lower Shannon Estuary.

102 During wintering bird surveys carried out between September 2020 and March 2021, five SCI species from nearby European sites were identified within the lands; coot, mallard, gadwall, teal being SCI species of Ballyallia Lough SPA c. 2.7km north west of the site, and black-headed gull, an SCI species for the River Shannon and River Fergus Estuaries SPA, located c. 5.1km south west of the site, and teal also being an SCI species for the River Shannon and River Fergus Estuaries SPA and Corofin Wetlands SPA, c. 10.7km north west of the site. Suitable habitat for these species was identified within the proposed development, and included; Toureen Lough, the M18 Motorway Attenuation Pond, the wetland habitats in the east of the lands (small section of this habitat within the red line boundary), and the wetland features in the north west. The lands provide some areas of suitable foraging habitat (e.g. open amenity, arable and improved agricultural grassland), for specific wintering birds such as geese and swans. However, these suitable

habitats, while they are present on site, are grazed, mostly located in hilly areas giving limited sight lines, and therefore would have limited suitability for these species. There is ample habitat however for waterfowl and some wader species within the wetland habitats found in the proposed development site. The habitats offer suitable foraging habitat and shelter for smaller overwintering species such as passerine species fieldfare *Turdus pilaris* and redwing *Turdus iliacus*, which were both recorded in flocks during the wintering bird surveys carried out in October and November 2020. Peak numbers of 40 for redwing and 30 for fieldfare were observed, with both species identified in the north west of the site moving along the hedgerows.

Table 6 *Details of wintering bird species found within the proposed development site*

Common name/Latin name/BoCCI Code	Nearest European site	Distribution in the study area	Peak count/Site/Date	Conservation Importance	
				BoCCI (Breeding/Wintering)	Annex I
Black-headed gull <i>Chroicocephalus ridibundus</i> (BH)	River Shannon and River Fergus Estuaries SPA, c. 5.1km south west as the crow flies	Observed flying over site, did not land within site during three visits.	22 birds, flying high above the central area of the site and headed west, seventh visit	Red (B)	-
Teal <i>Anas crecca</i> (T.)	Ballyallia Lough SPA, c. 2.7km north west of the site as the crow flies. River Shannon and River Fergus Estuaries SPA, c. 5.1km south west as the crow flies. Corofin Wetlands SPA, c. 10.7km north west as the crow flies.	Observed on the wetland feature in the north of the site during three visits.	10 birds, on the wetland feature in the north, on third visit	Amber (B/W)	-
Coot <i>Fulica atra</i> (CO)	Ballyallia Lough SPA, c. 2.7km north west of the site as the crow flies.	Observed on the wetland feature in the north of the site during one visit.	2 birds, on wetland feature in the north, on first visit	Amber (B/W)	-
Mallard <i>Anas platyrhynchos</i> (MA)	Ballyallia Lough SPA, c. 2.7km north west of the site as the crow flies.	Observed on Toureen Lough during three visits, on the wetland feature in the east during one visit and on the	2 birds, on Toureen Lough, and on feature in the north.	Amber (B/W)	-

Common name/Latin name/BoCCI Code	Nearest European site	Distribution in the study area	Peak count/Site/Date	Conservation Importance	
				BoCCI (Breeding/Wintering)	Annex I
		wetland feature in the north during one visit			
Gadwall <i>Mareca strepera</i> (GA)	Ballyallia Lough SPA, c. 2.7km north west of the site as the crow flies.	Observed wading in wetland meadow adjacent to Toureen Lough during one visit (2), and on the wetland feature in the north during one visit.	2 birds, on Toureen Lough.	Amber (B/W)	-

3.2.4.4 Hen harrier

- 110 The desktop search returned records for hen harrier and merlin *Falco columbarius*, both Annex I species on the Bird Directive, within c. 2km of the proposed development. Whilst there is no suitable summer breeding and foraging habitat within the proposed development (*i.e.* heather moorland, open non-afforested habitats, and young forestry plantations²²), suitable habitat for wintering hen harrier was identified within the marsh/reed habitat in the east of the site, beyond the red line boundary of the proposed development site. The site was deemed unsuitable for merlin, as they are typically associated with forestry plantations and moor and heathlands (Lusby et al., 2017)²³.
- 111 Dedicated surveys for hen harrier were carried out monthly between September 2020 and March 2021 (optimum time for winter roost survey²⁴), in this area of suitable roosting habitat. No hen harriers were recorded within or near the proposed development site during these surveys. The nearest European site

²² Ruddock, M., Mee, A., Lusby, J., Nagle, A., O'Neill, S. & O'Toole, L. (2016). The 2015 National Survey of Breeding Hen Harrier in Ireland. Irish Wildlife Manuals, No. 93. National Parks and Wildlife Service, Department of the Arts, Heritage and the Gaeltacht, Ireland.

²³ Lusby, J., Corkery, I., McGuinness, S., Fernández-Bellon, D., Toal, L., & Norriss, D. et al. (2017). *Breeding ecology and habitat selection of Merlin Falco columbarius in forested landscapes*. *Bird Study*, 64(4), 445-454.

²⁴ *Irish Hen Harrier Winter Survey, Survey Guide*. Found here <http://www.ihhws.ie/>

for which both these species is designated is the Slieve Aughty Mountains SPA, located c. 4.5km north west of the proposed development site.

3.2.4.5 Freshwater Pearl Mussel *Margaritifera margaritifera*

- 112 The freshwater pearl mussel population of the Lower River Shannon SAC is present in the Cloon River, which is located in a different river catchment to that of the proposed development, c. 20.5km south west of the proposed development (NPWS, 2012a).

3.2.4.6 Fish Species

- 113 There are five Annex II fish species found within the Lower River Shannon SAC, i.e. sea lamprey *Petromyzon marinus*, brook lamprey *Lampetra planeri*, river lamprey *Lampetra fluviatilis*, Atlantic salmon *Salmo salar* and twaite shad *Alosa fallax*, the four former species of which are Qualifying Interests of the SAC. The three lamprey species and Atlantic salmon have all been observed to be spawning in the Lower Shannon and its tributaries (NPWS, 2013c).

3.2.5 Hydrology

- 114 The proposed development site is located within the Fergus sub-catchment of the Shannon Estuary North catchment. The Spancelhill Stream flows along the north western boundary of the proposed development site between two existing attenuation ponds, before exiting the site through a culvert under the M18 Motorway. It then flows c. 2.1km downstream into the River Fergus, ultimately discharging into the Fergus Estuary c. 4.9km. A drainage ditch along the southern boundary of the woodland drains to the Spancelhill Stream. Other surface water features in the site include: Toureen Lough in the south adjacent to the R352, and wetland habitats in the east and north of the site.
- 115 According to the EPA online Map Viewer, the Spancelhill Stream has a Q-Value of “Q3” which is of “poor” water quality status. The EPA gather this information from the monitoring station at Gaurus Bridge (a bridge located downstream at Aughavaddy Bridge, located c. 2km downstream from the site), and at Bridge North West, near Spancelhill (a bridge located upstream at Knockaluskraun, located c. 1.9km from the site). The Spancelhill Stream is considered “at risk” of not achieving good status under the Water Framework Directive (WFD). Upstream of where the Spancelhill Stream joins the River Fergus has a Q-Value of “Q3-4”, which is of “moderate” water quality status. This is gathered at the Corravarrin Bridge River Station. The River Fergus is also considered “at risk” of not achieving good status under the WFD. The Fergus Estuary, where surface water from the site ultimately discharges to, is considered “Unpolluted”, and “at risk” in terms of achieving good status under the WFD.
- 116 The proposed development site is located in the Spancelhill WFD River Sub Basin, with surface waters also flowing through the Fergus Sub Basin, and draining into the Fergus Estuary, which supports habitats and qualifying interest species of the Lower River Shannon SAC and special conservation interest bird species (and their supporting wetland habitats) of the River Shannon and River Fergus Estuaries SPA.

3.2.6 Hydrogeology

- 117 Geological Survey of Ireland (GSI) data indicates that the proposed development is underlain by “Tubber Formation” which is described as “Crinoidal and cherty limestone and dolomite”. GSI data indicates that the site is underlain by a “Regionally Important Aquifer” that is “Karstified (conduit)”. The GSI (2018) Interim Vulnerability Map presently classifies the aquifer in the proposed development site as predominantly “Rock at or near surface or karst”, with some areas “Extreme”, indicating an overburden depth of 0-3m of moderately permeable soil present.
- 118 The Groundwater Body (GWB) underlying the proposed development site is the “Ennis” GWB, which is currently classified by the EPA as having “Good” groundwater status and the groundwater risk is classed as currently under “Review”. There are a number of European sites within this GWB with groundwater dependent habitats, including; Lower River Shannon SAC, Ballyallia Lake SAC, Dromore Woodland and

Loughs SAC, Ballycullinan Lake SAC, Moyree River System SAC, Ballyogan Lough SAC, and a small section of the East Burren Complex SAC.

3.2.7 Soils & Geology

119 A full description of the baseline soil and geology of the proposed development site is presented in Chapter 5 Land, Soils, Geology and Hydrogeology of the EIAR accompanying this application. The soils have been interpreted as predominantly loose to medium dense to dense clayey sand/gravel and soft to firm to stiff sandy gravelly clay²⁵. The combined data of ground investigations indicated that soil thickness is thinnest through the centre and in the south west of the site, increasing in thickness to the east and north. Peat and/or silt/clay has been identified surrounding Toureen Lough and in the south east of the site. No contaminated soil has been identified within the site.

Bedrock has been interpreted as comprising of low resistivity Dolomite located across the west and south west of the site and higher resistivity Limestone in the centre and east, underlying the majority of the site. Localised vertical and sub-vertical zones of low resistivities have been observed within the dolomite and limestone and have been interpreted as karst zones within the rock.

3.2.8 Air Quality

120 A reduction in air quality within the immediate vicinity of the construction works may occur as a consequence of dust deposition associated with these construction activities. The nearest European site Lower River Shannon SAC is located c. 1.4km south west (at its nearest point) of the proposed development and therefore not located within the Zol of this potential impact, which is a considered to be a maximum of 200m from the proposed works ²⁶.

121 The back-up diesel generators in the data storage facility will release air pollutant emissions (primarily NOX emissions). Whilst these will only be used in the event of a power failure and for testing purposes, the potential impacts on nearby designated sites has been examined.

3.3 Assessment of Effects on European Sites

122 This section identifies all the potential impacts associated with the proposed development, examines whether there are any European sites within the Zol of effects from the proposed development, and assesses whether there is any risk of the proposed development resulting in a significant effect on any European site, either alone or in combination with other plans or projects.

123 In assessing the potential for the proposed development to result in a significant effect on any European sites, any measures intended to avoid or reduce the harmful effects of the project on European sites are not taken into account.

124 Based on the baseline ecological environment and the extent and characteristics of the Proposed development the following potential impacts have been identified:

- Habitat loss and fragmentation during construction;
- Habitat degradation/effects on QI/SCI species as a result of hydrological impacts during construction and operation;
- Habitat degradation/effects on QI/Sci species as a result of hydrological impacts;
- Habitat degradation as a result of air quality impacts during construction and operation;

²⁵ Preliminary Report on the Geophysical Investigation for the Project Art Data Centre, Ennis Co. Clare For GII. Apex Geophysics April 2021.

²⁶ NRA (2011) *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes*.

- Habitat degradation as a result of introducing/spreading non-native invasive species;
- Disturbance and displacement impacts during construction and operation; and
- Direct injury/mortality.

3.3.1 Habitat loss and fragmentation

- 125 The proposed development does not overlap with the boundary of any European site. Therefore, there are no European sites at risk of direct habitat loss impacts.
- 126 As the proposed development does not traverse any European sites there is no potential for habitat fragmentation to occur.
- 127 As the proposed development will not result in habitat loss or habitat fragmentation within any European site, there is no potential for any in combination effects to occur in that regard.
- 128 Lands located within the proposed development site are currently being utilised by a number of SCI and QI species (as described in Section 3.2.4), which are likely to be connected with populations from nearby European sites for which these species are designated.
- 129 The Lower River Shannon SAC is designated for otter, and is hydrologically connected to the proposed development site via the River Fergus and Spancelhill Stream. Dromore Woods and Lough SAC is also designated as a European site for otter. While this site is c. 4.5km north west of the proposed development site, a hydrological connection between this European site and the proposed development exists via the River Fergus that flows through Dromore Woods and Loughs, in a southerly direction, ultimately discharging into the Lower River Shannon SAC. Evidence of otter (*i.e.* spraint) was recorded along the Spancelhill Stream. Whilst no otter holts were recorded, this species is likely to use the Spancelhill Stream as commuting and foraging habitat. Construction works within the Spancelhill Stream will include the installation of a grated culvert with associated headwall and mattress, with a total loss of 2m³ of bankside habitat. Habitat loss may also occur indirectly as a consequence of severe habitat degradation arising from a reduction in water quality and/or a change to the hydrological regime, as described in the hydrological impacts below. Therefore, indirect habitat loss as a result of habitat degradation in water quality and/or change to the hydrological regime, could affect the conservation status of this QI species from Dromore Woods and Loughs SAC, and the Lower River Shannon SAC.
- 130 Fish species *i.e.* Atlantic salmon, sea lamprey, brook lamprey, and river lamprey, are QI species of the Lower River Shannon SAC. Alteration of the habitats within the tributaries that these species use, could result in habitat loss, and could affect the conservation status of these QI species. As part of the proposed works, during construction, there will be the instalment of a grated culvert with associated headwall and mattress with a total loss of 2m². This could result in habitat loss for fish species, however the Spancelhill Stream is deemed unsuitable for salmonid species due to the heavy poaching of this stream from cattle in the surrounding lands. This poaching has resulted in soft, silty substrate with no instream vegetation. Instream vegetation is vital for young salmonid species to be able to hide from predators²⁷, and therefore the stream is unsuitable for this QI species. Lamprey species tend to live in soft substrate, where they can hide from predators²⁸. As this habitat is present along the Spancelhill Stream that borders the proposed development site, there is potential for lamprey species to be directly impacted from the installation of the drainage pipes, headwall and mattress. There may also be indirect habitat loss as a result of habitat degradation in

²⁷ Marsh, JE, Lauridsen, RB, Gregory, SD, et al. Above parr: Lowland river habitat characteristics associated with higher juvenile Atlantic salmon (*Salmo salar*) and brown trout (*S. trutta*) densities. *Ecol Freshw Fish*. 2019; 00: 1– 15.

²⁸ Lamprey habitats, Lamprey Surveys and consultancy advice UK & Ireland. Found here: <https://lampreysurveys.com/lamprey-habitats/>

water quality and/or change to the hydrological regime, which could affect the conservation status of these QI species from the Lower River Shannon SAC.

- 131 Lesser horseshoe bat is a QI species for a number of European sites in the vicinity of the proposed development site. This species has been recorded using the proposed development site for foraging and/or commuting during surveys carried out in 2018 and 2020. No roosts were identified within the site. However, records from BCI (as discussed in Section 3.2.4), identified nine lesser horseshoe roosts within 2km of the proposed development site, with the closest being c. 430m south. Research carried out on this species has suggested that the majority of feeding activity takes place within c. 2-3km of roosts during the year with occasional movements in excess of c. 4km (Bontadina, 2002 and Biggane, 2003). This distance can reduce down to a few hundred metres in the birthing season whilst larger scale movements of up to 15km are not unreasonable when bats move between winter and summer roosts. The Core Sustainance Zone (CSZ) for this species is described as the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost. A review carried out by BCT of radio-tracked individuals, has defined the CSZ as within 2.5km of their roosts²⁹. From research carried out in Galway on radio-tracked lesser horseshoe bats, this species has been shown to travel as far as c. 5.15km from roosts for foraging (Rush and Billington, 2014). In consideration of this, a precautionary approach has been adopted and it has been assumed for the purposes of this assessment that the lesser horseshoe bats recorded within the proposed development site may be connected with the lesser horseshoe bat populations of; Old Domestic Building (Keevagh) SAC located c. 4.3km south east, Dromore Woods and Loughs SAC located c. 4.5km north west, Old Domestic Buildings, Rylane SAC located c. 5.9km north east. European sites designated for lesser horseshoe bat beyond this, are well out with the CSZ and therefore are not included in this assessment. The proposed development will result in the loss of lesser horseshoe bat foraging and commuting habitat, however the site has been designed through an iterative process, to avoid as much lesser horseshoe bat habitat as possible. There is potential however, to impact on the conservation status of this species in the absence of mitigation. There will be removal of c. 2.7km of hedgerows and 30 trees within the footprint of the development. In the absence of mitigation, removal of suitable foraging and commuting habitat within the proposed development site may potentially indirectly impact on lesser horseshoe bat species that utilise the site for roosting, foraging and/or commuting by making it unsuitable.
- 132 A number of SCI species from nearby SPA sites were identified using the lands during wintering bird surveys carried out monthly between September 2020 and March 2021 (inclusive), this included; coot, mallard, teal, black-headed gull, and gadwall. Mallard, coot, teal and gadwall are SCI species of Ballyallia Lough SPA located c. 2.7km north west of the proposed development. Black-headed gull and teal are SCI species for the River Shannon and River Fergus Estuaries SPA located c. 5.1km south west of the site. Teal is an SCI species for Corofin Wetlands SPA, located 10.7km north west of the site.
- 133 All of the SCI birds identified within the site were either located on the waterbodies within the site (teal, gadwall, mallard, coot) or flying over the site (black-headed gull). The peak count of any individual was teal, with 10 individuals recorded in the north of the site on the temporary pond feature. The development will not involve the removal or alteration of any of the permanent waterbodies within the proposed development site as they are within the ecological protection areas as set out by Clare County Council in the Variation No. 1. The footprint of the development will encroach on temporary 'pond' features in the north west of the site, where teal have been identified during a number of wintering bird surveys (See Section 3.2.4.3).
- 134 Therefore, the development will have a direct impact on the conservation objectives for Ballyallia Lough SPA, the River Shannon and River Fergus Estuaries SPA, and Corofin Wetlands SPA. The development could

²⁹ NPWS (2018) *Conservation objectives supporting document – lesser horseshoe bat (Rhinolophus hipposideros) Version 1*. Conservation Objectives Supporting Document Series. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland.

also potentially result in the degradation of downstream habitats as a result of the degradation of water quality caused by run off from the development. This could affect the suitability of these habitats for the aforementioned bird species, and in the absence of mitigation could result in loss of supporting habitat for these SCI species from Ballyallia Lough SPA, the River Shannon and River Fergus Estuaries SPA, and Corofin Wetlands SPA.

- 135 Records of hen harrier, an Annex I bird species were returned from the vicinity of the proposed development. Hen harriers have been found to travel up to 9km from nests (Arroyo *et al.*, 2014), and the nearest European site designated for this species is Slieve Aughty Mountains SPA, c. 4.5km from the proposed development. This species is known to breed and forage in the summer on heather moorland and young forestry plantations where they nest on the ground. They will then spend winter in more coastal and lowland areas throughout Ireland¹⁵. Therefore, there is potential that hen harriers associated with the Slieve Aughty Mountains SPA may hunt and roost during winter in the vicinity of the proposed development. However, dedicated hen harrier vantage point surveys were carried out within the proposed development and no individuals were identified within or in the adjoining lands. Given that the proposed development will sit into the landscape and the nearest building to suitable habitat to be constructed will be over 250m away, there is no potential for the proposed development to result in loss of habitat or territory on SCI populations of hen harrier associated with the Slieve Aughty Mountains SPA.

3.3.2 Habitat degradation/effects on QI/SCI species as a result of hydrological impacts

- 136 The release of contaminated surface water runoff and/or an accidental spillage or pollution event into any surface water features during construction, or operation, has the potential to affect water quality in the receiving aquatic environment. In the absence of mitigation, the associated effects of a reduction of surface water quality could potentially extend for a considerable distance downstream of the discharge point or location of the accidental pollution event. Such an occurrence, of a sufficient magnitude, either alone or in combination with other pressures on water quality, and in the absence of mitigation could undermine the conservation objectives of the European sites downstream in the Fergus Estuary transitional waterbody (*i.e.* the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA).
- 137 The proposed development is hydrologically connected to the River Fergus, via Spancelhill Stream which flows along the north western boundary of the site. Otter territories are within the range of c. 7.5km for females and c. 13km for males (Reid *et al.*, 2012)³⁰. Therefore, there is potential for otter associated with the Lower River Shannon SAC to move upstream and for Dromore Woods and Loughs SAC to be present within the zone of influence of the proposed development. A reduction in water quality as a result of an accidental pollution event (either alone or in combination with other pressures on water quality) however could result in the degradation of the local aquatic environment, which could in turn negatively affect the otter population through direct contact with pollutants or a decline in fish prey. Sea lamprey *Petromyzon marinus*, brook lamprey *Lampetra planeri*, river lamprey *Lampetra fluviatilis*, Atlantic salmon *Salmo salar* and freshwater pearl mussel *Margaritifera margaritifera*, all QI species of Lower River Shannon SAC, could also be negatively impacted from a reduction in water quality.
- 138 Process and sanitary wastewater from the site (including the proposed development) will be discharged to Irish Water's downstream municipal wastewater infrastructure for appropriate treatment and discharge to receiving water. In the event of a pollution event, there is the potential to affect water quality in the Spancelhill Stream, the River Fergus, and the Fergus Estuary, and therefore European sites and the conservation objectives of these sites therein. In a worst case scenario, the release of contaminated surface water runoff and/or an accidental spillage or pollution event into any surface water features during construction, or operation, also has the potential to affect SCI bird species and QI mammal species that

³⁰ Reid, N., Hayden, B., Lundy, M.G., Pietravalle, S., McDonald, R.A. & Montgomery, W.I. (2013) National Otter Survey of Ireland 2010/12. Irish Wildlife Manuals No. 76. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland

commute, forage and loaf in the Fergus Estuary and Shannon Estuary *i.e.* birds associated with River Shannon and River Fergus Estuaries SPA and marine mammals associated with Lower River Shannon SAC. This reduction in water quality (either alone or in combination with other pressures on water quality) could result in the degradation of sensitive habitats present downstream, which in turn could negatively affect the SCI/QI species that rely upon these habitats as foraging/commuting and/or roosting habitat. It could also negatively affect the quantity and quality of prey available to SCI and QI populations. In a worst-case scenario these potential impacts could occur to such a degree that the conservation objectives of the River Shannon and River Fergus Estuaries SPA and Lower River Shannon SAC are compromised.

- 139 As the Proposed development has the potential to result in habitat degradation and effects on of the qualifying/special conservation interest species of European sites as the result of hydrological impacts, there is the potential for in combination effects to occur.

3.3.3 Habitat degradation as a result of hydrogeological impacts

- 140 Groundwater effects could arise as a consequence of an accidental pollution event potentially causing a reduction in groundwater quality and/or dewatering activity potentially causing a reduction in groundwater levels in the locality. Long-term discharge of surface water runoff to groundwater during operation of the Proposed development may result in a reduction in groundwater quality and/or quantity in the receiving environment, also resulting in the degradation of groundwater dependent terrestrial ecosystem and any species that they may support.
- 141 The proposed development lies within the Ennis GWB. There are a number of European sites within this GWB that are designated for groundwater dependent habitats and/or species including; Lower River Shannon SAC, Ballyallia Lake SAC, Dromore Woodland and Loughs SAC, Ballycullinan Lake SAC, Moyree River System SAC, Ballyogan Lough SAC, and a small section of the East Burren Complex SAC. However, excluding the Lower River Shannon SAC, the proposed development is down-gradient of all of these European sites, and therefore is no potential for groundwater impacts to affect conditions in those European sites.
- 142 Only one of the QIs of the Lower River Shannon SAC may be influenced by groundwater conditions *i.e.* *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*). The nearest known location of this Annex I habitat within the SAC is north of the River Shannon north of Moyross in Co. Limerick, c. 27km south east of the proposed development site (NPWS, 2012a). This site is located within a different groundwater body to that of the proposed development site (Limerick City North GWB). There will be no dewatering or interactions with the water table, and therefore there will be no hydrogeological impacts on European site or their QI species and habitats as a result of the development.

3.3.4 Habitat degradation as a result of introducing/spreading non-native invasive species

- 143 No non-native invasive plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded within, or in close proximity to, the proposed development. However, during construction and/or routine maintenance/management work, non-native species could potentially be introduced to terrestrial habitats located within downstream European sites via surface water features. Giant hogweed is typically found in damp places such as riverbanks and spreads via seed dispersal (NBDC, 2013a), while Himalayan balsam and Japanese knotweed are both found in a wider variety of habitats including river banks, roadsides, and urban areas such as waste ground and railways; the former species spreading by seed dispersal, the latter vegetatively (NBDC, 2013b; NBDC, 2013c). Giant hogweed, Himalayan Balsam and Japanese knotweed are all classified as high impact invasive species.
- 144 The introduction and/or spread of these invasive species to downstream European sites could potentially result in the degradation of existing habitats present, in particular coastal habitats not permanently or regularly inundated by seawater. These species may outcompete other native species present, negatively impacting the species composition, diversity and abundance and the physical structural integrity of the habitat. This in turn could undermine the conservation objectives of these European sites.

145 As the proposed development has the potential to result in habitat degradation of the qualifying/special conservation interest species of European sites as the result of the spread of invasive species, there the potential for in combination effects to occur.

3.3.5 Habitat degradation as a result of air quality impacts

146 A reduction in air quality within the immediate vicinity of the construction works may occur as a consequence of dust deposition associated with these construction activities. This includes reduction in photosynthesis due to smothering from dust on the plants and chemical changes such as acidity to soils. The Zol for ecological receptors (as described in Chapter 8 *Air Quality and Climate* of the EIAR) is 50m from any construction activities, as the nearest European site to the proposed development is 1.4km south east of the proposed development and therefore any construction related air quality impacts on European sites from the proposed development are imperceptible.

147 The impact of emissions of NO_x within 20km of the Proposed Development and existing emission points on ambient ground level concentrations within the following designated habitat sites was assessed using AERMOD. The 20km distance was selected based on maximum extent of the impact zone from the air emissions onsite. After 20km, the ambient air concentration of NO_x due to emissions from the facility are imperceptible. The assessment included the following European sites:

- Special Areas of Conservation (SAC) – Ballyallia Lake SAC, Ballycullinan Lake SAC, Ballycullinan Old Domestic Building SAC, Dromore Woods And Loughs SAC, East Burren Complex SAC, Knockanira House SAC, Lower River Shannon SAC, Moyree River System SAC, Newgrove House SAC, Newhall And Edenvale Complex SAC, Old Domestic Building (Keevagh) SAC, Old Domestic Buildings, Rylane SAC, Old Farm Buildings, Ballymacrogan SAC, Pouladatig Cave SAC, Poulmagordon Cave (Quin) SAC, Toonagh Estate SAC; and
- Special Protection Area (SPA) – Ballyallia Lough SPA, Corofin Wetlands SPA, River Shannon and River Fergus Estuaries SPA, and Slieve Aughty Mountains SPA.

148 An annual limit value of 30 µg/m³ for NO_x is specified within EU Directive 2008/50/EC for the protection of ecosystems. The NO_x limit value is applicable only in highly rural areas away from major sources of NO_x such as large conurbations, factories and high road vehicle activity such as a dual carriageway or motorway. There are sections of designated sites which are near the proposed development that are within an urban setting, so the limit value for NO_x for the protection of ecosystems is not technically applicable at these sites. Regardless, the annual average concentrations for NO_x from all emission points at the proposed development were predicted at receptors within the designated sites for all five years of meteorological data modelled (2016 – 2020). The receptor spacing ranged from 25 m to 100 m with 2,486 discrete receptors modelled in total within the sensitive ecosystems.

149 The NO_x modelling results are detailed in Table 8.12 of Chapter 8 Air Quality & Climate of the EIAR. Emissions from the facility lead to an ambient NO_x concentration (excluding background) which ranges from 6 – 7% of the annual limit value at the worst-case location within the designated sites over the five years of meteorological data modelled. In addition, modelling results based on conservative assumptions indicate that the proposed development combined with background concentrations will have a slight impact on NO_x concentrations within the sensitive ecosystems contributing at most 70% of the limit value at the worst-case location in the worst-case year modelled.

150 In order to consider the effects of nitrogen deposition owing to emissions from the Proposed Development on the designated habitat sites, the NO_x concentrations determined must be converted firstly into a dry deposition flux. The N deposition flux for the worst-case year is 3.02 kg/ha/yr and is below the range in worst-case critical loads for the various vegetation types of 5-10 kg/ha/yr (UNECE, 2010). Therefore effects of nitrogen deposition on designated sites due to the proposed development are not significant. Overall, the operational phase impact of the proposed development on designated habitat sites is considered long-term, localised, negative and imperceptible³⁷.

151 The proposed development does not have the potential to result in habitat degradation of the qualifying/special conservation interest species of any European site as the result of air quality impacts, either during the construction phase or the operational phase.

3.3.6 Disturbance and displacement impacts

152 A temporary and/or permanent increase in noise, vibration and/or human activity levels during the construction and/or operation of the Proposed development could result in the disturbance to and/or displacement of fauna species present within the vicinity of the proposed development. For mammal species such as otter, disturbance effects would not be expected to extend beyond 150m³¹. For birds, disturbance effects would not be expected to extend beyond a distance of c. 300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance³². Other activities such as piling, may extend beyond this distance.

153 Otter are a QI species for the Lower River Shannon SAC and Dromore Woods and Loughs SAC, both of which are hydrologically connected to the proposed development. Research carried out by Ó Néill et al. (2008) on ranging behaviours of otter on river systems in Ireland found that female otter ranges averaged c. 7.5km while male otter home ranges varied between c. 7-19km. Evidence of otter (i.e. spraint) was recorded along the Spancelhill Stream. Whilst no otter holts were recorded, this species is likely to use the Spancelhill Stream as commuting and foraging habitat. It is therefore likely that this QI species of the Lower River Shannon SAC and Dromore Woods and Loughs SAC would use this watercourse for foraging and/or commuting along. Increased human presence and/or noise and vibration associated with construction works may temporarily displace commuting or foraging otter, particularly during noisy activities such as piling. Otter are known to tolerate human disturbance under certain circumstances^{33,34}. Construction works will typically be undertaken during normal daylight working hours and the majority of the construction activities will be over 150m away from Spancelhill Stream. Whilst otters are generally nocturnal in habit, and can (in many circumstances) tolerate high levels of human presence and disturbance, temporary displacement in the vicinity of the proposed development noise and vibration associated with construction works could temporarily displace commuting or foraging otter during the construction phase of the development. Furthermore, temporary works that will be occurring adjacent to Spancelhill Stream for the construction of services pipes for drainage and fibre optics, and the installation of a headwall and mattress with culvert, could also result in disturbance. Therefore, there is potential for the construction phase of the proposed development site to result in a temporary disturbance/displacement impacts on QI otter populations associated with the Lower River Shannon SAC and Dromore Woods and Loughs SAC .

154 There are no lesser horseshoe bat roosts within the proposed development site. The closest roost identified to the site is approximately 430m south, in Kilfelim. Lesser horseshoe bat have been identified using the site as foraging and/or commuting grounds, predominately located along hedgerows and treelines within

³¹ This is consistent with Transport Infrastructure Ireland (TII) guidance (Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes and Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes) documents. This is a precautionary distance, and likely to be moderated by the screening effect provided by surrounding vegetation and buildings, with the actual ZoI of construction related disturbance likely to be much less in reality.

³² The disturbance zone of influence for waterbirds is based on the relationship between the noise levels generated by general construction traffic/works (BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise) and the proximity of those noise levels to birds – as assessed in Cutts, N. Phelps, A. & Burdon, D. (2009) *Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance*, and Wright, M., Goodman, P & Cameron, T. (2010) Exploring Behavioural Responses of Shorebirds to Impulsive Noise. *Wildfowl* (2010) 60: 150–167. At 300m, noise levels are below 60dB or, in most cases, are approaching the 50dB threshold below which no disturbance or displacement effects would arise.

³³ Bailey, M. and Rochford J. (2006) *Otter Survey of Ireland 2004/2005*. Irish Wildlife Manuals, No. 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

³⁴ The Environment Agency (2010). *Fifth otter survey of England 2009-2010*. Environment Agency, Almondsbury, Bristol, England

the site, and along the woodland area in the north west of the proposed development. There are 13 SACs designated for lesser horseshoe bat located within c. 15km of the proposed development site, the nearest of which is Old Domestic Building (Keevagh) SAC, located c. 4.3km south east. It is considered likely that this distance of c. 4.3km is within the normal core foraging range and the normal commuting range of this species. Research carried out on this species has suggested that the majority of feeding activity takes place within c. 2-3km of roosts during the year with occasional movements in excess of c. 4km (Bontadina, 2002 and Biggane, 2003). This distance can reduce down to a few hundred metres in the birthing season, with research carried out in Galway on radio-tracked lesser horseshoe bats, this species has been shown to travel as far as 5.15km from roosts for foraging (Rush and Billington, 2014). Larger scale movements of up to 15km are not unreasonable when bats move between winter and summer roosts. In consideration of this, a precautionary approach has been adopted and it has been assumed for the purposes of this assessment that the lesser horseshoe bats recorded within the proposed development site may be connected with the lesser horseshoe bat populations of; Old Domestic Building (Keevagh) SAC, Dromore Woods and Loughs SAC, and Old Domestic Buildings, Rylane SAC.

- 155 Lighting will also be installed for the proposed development during construction and operation. In absence of mitigation, an increase in the existing light levels within and adjacent to the proposed development site may potentially indirectly impact on lesser horseshoe bat species that utilise the site for foraging and/or commuting by making it unsuitable. Lesser horseshoe bats are the most light sensitive species of bat in Ireland, and therefore any light spill on suitable foraging and commuting habitat within the proposed development has the potential to disturb this species, and negatively impact the conservation objectives of Dromore Woods and Loughs SAC, Old Domestic Buildings (Keevagh) SAC, and Old Domestic Buildings, Rylane SAC.
- 156 There are three SPAs located in relatively close proximity to the proposed development site which are designated for SCI species that have been identified using the site for foraging, *i.e.* Ballyallia Lough SPA, the River Shannon and River Fergus Estuaries SPA, and Corofin Wetlands SPA. These species include coot, mallard, gadwall, teal and black-headed gull. All of these birds with the exception of black-headed gull, are wader/waterfowl species, and were recording loafing and foraging on the waterbodies within the site (*i.e.* Toureen Lough, wetland in the north and in the east, and attenuation pond in the west and temporary pond feature in the north west). Black-headed gull was not identified landing in the site, but was recorded flying over.
- 157 All the permanent wetland features suitable for waterfowl/wading bird species are within the ecological protection areas as set out by Clare County Council in the Variation No. 1 (2019). However the temporary pond area in the north of the site, where teal were identified during multiple surveys, will be impacted directly by the proposed development.
- 158 Initial ground works and site preparation are predicted to produce sound levels of a Slight to Moderate impact³⁵ and Short-term (see Table 3.3 in Chapter 1 of the EIAR)^{36,37} with max. noise levels of 56 dB (A) at modelled receptors on site. Following this, construction noise impacts will reduce to Not Significant with max. noise levels predicted at 63 dB (A). Operation noise impacts are predicted to be Negative, Not Significant-Moderate, and Long-Term, with day to day noise levels predicted at max. 35 dB (A), and emergency noise at max. 50 dB (A). However, this is dependent on location, with the noisiest impact predicted in the north east, from the sub-station. The noise impact will be Not Significant in locations near the wetland features (Toureen Lough, attenuation pond, and wetland in the east). Birds are known to habituate regular noise below 70 dB, however sudden irregular noise levels, in excess of 50 dB should be

³⁵ Significance of Effects is in accordance with EPA Draft EIA Report Guidelines 2017 and EPA Draft Advice Notes for EIS 2015, with further reference has been made to the draft 'Guidelines for Noise Impact Assessment' produced by the Institute of Acoustics/Institute of Environmental Management and Assessment Working Party.

³⁶ Chapter 9 – Noise and Vibration, ART Datacentre Ennis EIAR. AWN Consulting, February 2022.

³⁷ Chapter 1 – Introduction, ART Data Centre - Ennis Campus EIAR. AWN Consulting Ltd., February 2022

avoided. Therefore, there is potential for the proposed development to result in short-term disturbance/displacement impacts on the SCI populations associated with European sites.

- 159 Records of hen harrier, an Annex I bird species were returned from the vicinity of the proposed development. Hen harriers have been found to travel up to 9km from nests (Arroyo et al., 2014), and the nearest European site which has been designated is Slieve Aughty Mountains SPA, c. 4.5km from the proposed development. This species is known to breed and forage during the summer months on heather moorland and young forestry plantations where they nest on the ground. They will then spend winter in more coastal and lowland areas throughout Ireland³⁸. Therefore, there is potential that hen harriers associated with the Slieve Aughty Mountains SPA may hunt in the vicinity of the proposed development. Dedicated hen harrier vantage point surveys were carried out within the proposed development and no individuals were identified within or in the adjoining lands. Whilst individuals were not identified using the lands during field surveys, suitable wintering roosting and foraging habitat is present in the east of the site. The proposed development is within the normal winter foraging range of hen harriers (Arroyo et al., 2014). However, given the distance between the footprint and the suitable area of wintering roosting and foraging habitat (over 250m away), and as individuals were not identified during surveys carried out within the appropriate survey period, there is no potential for the proposed development to result in disturbance/displacement on SCI populations of hen harrier associated with the Slieve Aughty Mountains SPA.
- 160 The proposed development has the potential to result in the disturbance/displacement of qualifying interest species; otter, from the Lower River Shannon SAC and Dromore Woods and Loughs SAC, lesser horseshoe bat from Dromore Woods and Loughs SAC, Old Domestic Building (Keevagh) SAC, Old Domestic Buildings, Rylane SAC, special conservation interest species; teal, coot, mallard, and gadwall of Ballyallia Lough SPA, teal and black-headed gull of the River Shannon and River Fergus Estuaries SPA, and teal also of Corofin Wetlands SPA. Therefore, there is the potential for in combination effects to also occur.

3.3.7 Direct injury/mortality

- 161 The development has been designed so that the buildings will be set into the existing landscape and will be 40m maximum in height, will be screened by various landscaping features including tree and hedgerow planting carried out during the first phases of the development which will have matured by the time the buildings will be established. The development is also not on a known flight path for SCI and wintering bird species, with gull species typical flying height range up to 250m above sea level while foraging and travelling³⁹. Given the small numbers of SCI species identified using the proposed development, most of which were located in the west or north west of the site, it is predicted that there is no potential for the proposed development to increase the collision risk to mobile SCI species which are present in the area, during the construction and operational phases. Therefore, there is no potential for the proposed development to result in mortality of SCI bird species associated with European sites.
- 162 Records of hen harrier, an Annex I bird species were returned from the vicinity of the proposed development. Hen harriers have been found to travel up to 9km from nests (Arroyo et al., 2014), and the nearest European site which has been designated is Slieve Aughty Mountains SPA, c. 4.5km from the proposed development. This species is known to breed on heather moorland and young forestry plantations where they nest on the ground. They will then spend winter in more coastal and lowland areas throughout Ireland¹⁵. Therefore, there is potential that hen harriers associated with the Slieve Aughty Mountains SPA may hunt and roost in the vicinity of the proposed development. However, dedicated winter hen harrier vantage point surveys were carried out within the proposed development and no

³⁸ Birdwatch Ireland. Hen harrier webpage. Available from: <https://birdwatchireland.ie/birds/hen-harrier/>

³⁹ Thaxter, C., Ross-Smith, V., & Cook, A. (2015). How high do birds fly? A review of current datasets and an appraisal of current methodologies for collecting flight height data: Literature review. British Trust for Ornithology Research Report No. 666.

individuals were identified within or in the adjoining lands. The proposed development does not require any tall structures to be constructed (maximum height at 40m), and whilst hen harrier do tend to fly at lower altitudes⁴⁰, they were not identified within the site, and the only suitable foraging and roosting habitat is located outwith the redline boundary and the footprint of the site. As such there is no potential for the proposed development to present a collision risk to hunting and/or breeding hen harrier, during the construction and operational phases. Therefore, there is no potential for the proposed development to result in direct injury/mortality impacts on SCI populations of hen harrier associated with the Slieve Aughty Mountains SPA.

- 163 Lesser horseshoe bat have been identified using the lands within the proposed development site as foraging and/or commuting grounds. No roosts were identified within the site, however records from BCI (as discussed in Section 3.2.4), identified nine lesser horseshoe roosts within 2km of the proposed development site, with the closest being c. 430m south. There are 13 SACs designated for lesser horseshoe bat located within c. 15km of the proposed development site, the nearest of which is Old Domestic Building (Keevagh) SAC, located c. 4.3km south east. It is considered likely that this distance of c. 4.3km is within the normal core foraging range and the normal commuting range of this species. Research carried out on this species has suggested that the majority of feeding activity takes place within c. 2-3km of roosts during the year with occasional movements in excess of c. 4km (Bontadina, 2002 and Biggane, 2003). This distance can reduce down to a few hundred metres in the birthing season, with research carried out in Galway on radio-tracked lesser horseshoe bats, this species has been shown to travel as far as c. 5.15km from roosts for foraging (Rush and Billington, 2014). Larger scale movements of up to c. 15km are not unreasonable when bats move between winter and summer roosts. As construction works will largely be undertaken during the day, it is unlikely an increase in construction related vehicles and machinery during construction would present a significant injury/mortality risk that would result in any population level effects. During operation, traffic will be very limited and also largely during daytime hours. Therefore, there is no potential for the proposed development to result in significant effects which could have implications for the conservation objectives of Old Domestic Buildings (Keevagh) SAC, Old Domestic Building, Rylane SAC and Dromore Woods and Loughs SAC as a result of direct injury/mortality impacts to lesser horseshoe bats.
- 164 Otter, which may be associated with the QI population of the Lower River Shannon SAC and Dromore Woods and Loughs SAC have been recorded in the vicinity of the proposed development. The proposed works will involve the installation of a headwall and mattress, with a grated culvert for the services and fibre duct layouts, along the bank of the Spancelhill Stream in the west of the site. This installation will be very temporary in nature (2-3 weeks), and there are no other works proposed within the stream. Otters are primarily nocturnal animals, and as works will be undertaken during daytime hours, an increase in construction related vehicles and machinery during construction will not present a significant injury/mortality risk to otters. Therefore, there is no potential for the proposed development to result in significant effects which could have implications for the conservation objectives of Lower River Shannon SAC and Dromore Woods and Loughs SAC as a result of direct injury/mortality impacts.

3.3.8 Summary

- 165 The loss or fragmentation of QI or SCI feeding habitat, along with hydrological impacts on QI/SCI species as a result of changes to the hydrological regime, habitat degradation from accidental spread of non-native species, and disturbance and displacement impacts associated with the proposed development have the potential to affect the receiving environment and, consequently, have the potential to affect the conservation objectives supporting the qualifying interest/special conservation interests of the Lower River Shannon SAC, Dromore Woods and Loughs SAC, Old Domestic Building (Keevagh) SAC, Old Domestic Buildings, Rylane SAC, River Shannon and River Fergus Estuaries SPA, Corofin Wetlands SPA, Ballyallia Lough

⁴⁰ Madders, M. and Whitfield, D. P. (2006). Upland raptors and the assessment of wind farm impacts. *Ibis*, 148, 43-56.

SPA, and Slieve Aughty Mountains SPA. Therefore, the proposed development has the potential to have significant effects on European sites.

166 As the proposed development itself is likely to affect the QIs/SCIs or conservation objectives of European sites, there is also the potential for other plans or projects to act in combination with it to result in significant effects on European sites.

167 The potential impacts of the proposed development on the receiving environment, their Zol, and the European sites at risk of likely significant effects are summarised in Table 7 below. In assessing the potential for the proposed development to result in a significant effect on any European site, any measures intended to avoid or reduce the harmful effects of the project on European sites are not taken into account.

Table 7 Summary of Analysis of Significant Effects on European sites

Potential Direct, Indirect In Combination Effects and the Zol of the Potential Effects	Are there any European sites within the Zol of the proposed development?
<p>Habitat loss and fragmentation</p> <p>No European sites are at risk of direct habitat loss impacts</p> <p>There is potential for loss of <i>ex situ</i> inland feeding sites used by SCI wintering bird species where there is suitable habitat within the proposed development (<i>i.e.</i> Toureen Lough, M18 Attenuation Lake, and temporary ponds in the north west), and QI species lesser horseshoe bat.</p>	<p>Yes</p> <p>There are no European sites at risk of direct habitat loss impacts associated with the Proposed development.</p> <p>There are European sites at risk of <i>ex situ</i> habitat loss impacts associated with the Proposed development, namely: Lower River Shannon SAC, Dromore Woods and Loughs SAC, Old Domestic Buildings (Keevagh) SAC, Old Domestic Building, Rylane SAC, River Fergus and River Shannon Estuaries SPA.</p>
<p>Habitat degradation as a result of hydrological impacts</p> <p>Habitats and species downstream of the proposed development site and the associated surface water drainage discharge points, and downstream of offsite wastewater treatment plants.</p>	<p>Yes</p> <p>There are European sites at risk of hydrological effects associated with the Proposed development, namely: Lower River Shannon SAC, River Shannon and River Fergus Estuaries SPA. There is also potential for impact on QI otter species associated with Dromore Woods and Loughs SAC.</p>
<p>Habitat degradation as a result of hydrogeological impacts</p> <p>Groundwater-dependant habitats, and the species those habitats support, in the local area that lie downgradient of the proposed development site.</p>	<p>No</p> <p>There are no European sites at risk of hydrogeological effects associated with the Proposed development.</p>
<p>Habitat degradation as a result of introducing/spreading non-native invasive species</p> <p>Habitat areas within, adjacent to, and potentially downstream of the proposed development site.</p>	<p>Yes</p> <p>There are no non-native invasive species present on the proposed development site however, accidental introduction of non-native species could occur during construction therefore, there is a risk associated with the proposed development to any European sites downstream from the spread/introduction of non-native invasive species including; Lower River Shannon SAC, River Shannon and River Fergus Estuaries SPA.</p>
<p>Habitat degradation as a result of air quality impacts</p>	<p>No</p>

Potential Direct, Indirect In Combination Effects and the Zol of the Potential Effects	Are there any European sites within the Zol of the proposed development?
Potentially up to 200m from the Proposed development boundary.	There are no European sites at risk of air quality effects associated with the Proposed development.
<p>Disturbance and displacement impacts</p> <p>Potentially up to several hundred metres from the proposed development boundary, dependent upon the predicted levels of noise, vibration and visual disturbance associated with the proposed development, taking into account the sensitivity of the qualifying interest species to disturbance effects</p>	<p>Yes</p> <p>There are no European sites within the potential zone of influence of disturbance effects associated with the construction or operation of the proposed development.</p> <p>However, there are <i>ex situ</i> inland feeding sites which are utilised by SCI wintering bird species within the proposed development (<i>i.e.</i> Toureen Lough, M18 Attenuation Lake, and temporary ponds in the north west) and within the potential disturbance Zol of the Proposed development. These are associated with the sites: Ballyallisa Lough SPA, River Shannon and River Fergus Estuaries SPA, Corofin Wetlands SPA and the Slieve Aughty Mountains SPA.</p> <p>Lesser horseshoe bat is a QI species of Dromore Woods and Loughs SAC, Old Domestic Building (Keevagh) SAC, and Old Domestic Building, Rylane, for which there is potential for construction impacts from the proposed development.</p>
<p>Direct injury/mortality impacts</p> <p>Potential for injury/mortality of mobile QI/SCI species as a result of collision with structures or machinery during construction and operation</p>	<p>No</p> <p>There are no QI or SCI species associated with European sites at risk of mortality associated with the Proposed development.</p>

4 Conclusions of Screening Assessment Process

168 Following an examination, analysis and evaluation of the best available information, and applying the precautionary principle, it can be concluded that there is the possibility for significant effects on the following European sites, either arising from the project alone or in combination with other plans and projects, as a result of Habitat loss and fragmentation, habitat degradation/effects on QI/Sci species as a result of hydrological impacts, and disturbance and displacement impacts: Dromore Woods and Loughs SAC, Lower River Shannon SAC, Old Domestic Building (Keevagh) SAC, Old Domestic Buildings, Rylane SAC, Ballyallia Lough SPA, River Shannon and River Fergus Estuaries SPA, Slieve Aughty Mountains SPA and Corofin Wetlands SPA. Other European sites within the vicinity of the proposed development have been ruled out due to the following reasons;

- The proposed development is down-gradient of European sites (Dromore Woods and Loughs SAC, Ballyallia Lake SAC, Ballycullinan Lake SAC, Moyree River System SAC, Ballyogan Lough SAC, and the East Burren Complex SAC) and therefore there is no potential for hydrological impacts or the risk of spread of invasive species from the proposed development site to affect the conservation objectives of these habitats within these European sites.
- European sites designated for lesser horseshoe bats further than 6km from the proposed development site have been ruled out due to the reasons described in Section 3.3.1.
- The next nearest SPA to the proposed development is c. 22km north (Coole-Garryland SPA), and is considered too great a distance to be impacted by the proposed development. All other SPAs are

located a greater distance away, and therefore are also located at a distance too great to be impacted from the proposed development.

169 In reaching this conclusion, the nature of the project and its potential relationship with all European sites within the zone of influence, and their conservation objectives, have been fully considered.

170 Therefore, it is the professional opinion of the authors of this report that the application for consent for the proposed development does require an Appropriate Assessment and the preparation of a Natura Impact Statement (NIS).

Appendix I

The Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the European sites in the vicinity of the proposed development site (see Figure 1)

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
Special Area of Conservation (SAC)	
<p>Lower River Shannon SAC [002165]</p> <p>1110 Sandbanks which are slightly covered by sea water all the time</p> <p>1130 Estuaries</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1150 Coastal lagoons</p> <p>1160 Large shallow inlets and bays</p> <p>1170 Reefs</p> <p>1220 Perennial vegetation of stony banks</p> <p>1230 Vegetated sea cliffs of the Atlantic and Baltic coasts</p> <p>1310 Salicornia and other annuals colonising mud and sand</p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</p> <p>1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</p> <p>3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation</p> <p>6410 <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)</p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)</p> <p>1029 <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel)</p> <p>1095 <i>Petromyzon marinus</i> (Sea Lamprey)</p> <p>1096 <i>Lampetra planeri</i> (Brook Lamprey)</p> <p>1099 <i>Lampetra fluviatilis</i> (River Lamprey)</p> <p>1106 <i>Salmo salar</i> (Salmon)</p> <p>1349 <i>Tursiops truncatus</i> (Common Bottlenose Dolphin)</p> <p>1355 <i>Lutra lutra</i> (Otter)</p> <p>NPWS (2012) <i>Conservation objectives for Lower River Shannon SAC [002165]</i>. Version 1.0. Department of Culture, Heritage and the Gaeltacht.⁴¹</p>	<p>c. 1.4km south west of the proposed development.</p>
<p>Ballyallia Lake SAC [000014]</p> <p>3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation</p>	<p>c. 2.1km west of the proposed development.</p>

⁴¹ The versions of the conservation objectives documents referenced in this table are the most recent published versions at the time of writing

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
<p>S.I. No. 71/2018 - European Union Habitats (Ballyallia Lake Special Area of Conservation 000014) Regulations 2018</p> <p>NPWS (2017) <i>Conservation Objectives: Ballyallia Lake SAC 000014</i>. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p>	
<p>Old Domestic Building (Keevagh) SAC [002010]</p> <p>1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p> <p>S.I. No. 91/2016 - European Union Habitats (Old Domestic Building (Keevagh) Special Area of Conservation 002010) Regulations 2016.</p> <p>NPWS (2018) <i>Conservation Objectives: Old Domestic Building (Keevagh) SAC 002010</i>. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p>	<p>c. 4.3km south east of the proposed development.</p>
<p>Dromore Woods and Loughs SAC [000032]</p> <p>1355 Otter (<i>Lutra lutra</i>)</p> <p>1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p> <p>Habitats</p> <p>3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation</p> <p>6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels</p> <p>8240 Limestone pavements*</p> <p>S.I. No. 114/2020 - European Union Habitats (Dromore Woods and Loughs Special Area of Conservation 000032) Regulations 2020</p> <p>NPWS (2018) <i>Conservation Objectives: Dromore Woods and Loughs SAC 000032</i>. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht</p>	<p>c. 4.4km north of the proposed development.</p>
<p>Old Domestic Buildings, Rylane SAC [002314]</p> <p>1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p> <p>S.I. No. 175/2016 - European Union Habitats (Old Domestic Buildings, Rylane Special Area of Conservation 002314) Regulations 2016.</p> <p>NPWS (2018) <i>Conservation Objectives: Old Domestic Buildings, Rylane SAC 002314</i>. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 5.9km north east of the proposed development.</p>

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
<p>Newhall and Edenvale Complex SAC [002091] 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>) 8310 Caves not open to the public</p> <p>S.I. No. 284/2017 - European Union Habitats (Newhall and Edenvale Complex Special Area of Conservation 002091) Regulations 2017. NPWS (2018) <i>Conservation Objectives</i>: Newhall and Edenvale Complex SAC 002091. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 6.5km south west of the proposed development.</p>
<p>Toonagh Estate SAC [002247] 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p> <p>S.I. No. 520/2016 - European Union Habitats (Toonagh Estate Special Area of Conservation 002247) Regulations 2016. NPWS (2018) <i>Conservation Objectives</i>: Toonagh Estate SAC 002247. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 6.6km north west of the proposed development.</p>
<p>Newgrove House SAC [002157] 1303 Lesser Horseshoe Bat(<i>Rhinolophus hipposideros</i>)</p> <p>S.I. No. 173/2016 - European Union Habitats (Newgrove House Special Area of Conservation 002157) Regulations 2016. NPWS (2018) <i>Conservation Objectives</i>: Newgrove House SAC 002157. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 6.3km east of the proposed development.</p>
<p>Poulnagordon Cave (Quin) SAC [000064] 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p> <p>S.I. No. 90/2016 - European Union Habitats (Poulnagordon Cave (Quin) Special Area of Conservation 000064) Regulations 2016. NPWS (2018) <i>Conservation objectives</i>: <i>Poulnagordon Cave (Quin) SAC [000064]</i>. Version 1. Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 7km south east of the proposed development.</p>
<p>Poulnadatig Cave SAC [000037] 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>) 8310 Caves not open to the public</p> <p>S.I. No. 89/2016 - European Union Habitats (Poulnadatig Cave Special Area of Conservation 000037) Regulations 2016 NPWS (2018) <i>Conservation Objectives</i>: <i>Poulnadatig Cave SAC 000037</i>. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.</p>	<p>c. 7.2km south west of the proposed development.</p>
<p>Old Farm Buildings, Ballymacrogan SAC [002245] 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p>	<p>c. 8.1km north west of the proposed development.</p>

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
<p>S.I. No. 92/2016 - European Union Habitats (Old Farm Buildings, Ballymacrogan Special Area of Conservation 002245) Regulations 2016</p> <p>NPWS (2018) <i>Conservation Objectives: Old Farm Buildings, Ballymacrogan SAC 002245</i>. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.</p>	
<p>Moyree River System SAC [000057]</p> <p>1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p> <p>1355 Otter (<i>Lutra lutra</i>)</p> <p>3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and Callitricho-Batrachion vegetation</p> <p>7230 Alkaline fens</p> <p>8240 Limestone pavements*</p> <p>8310 Caves not open to the public</p> <p>S.I. No. 651/2019 - European Union Habitats (Moyree River System Special Area of Conservation 000057) Regulations 2019</p> <p>NPWS (2018) <i>Conservation objectives for Moyree River System SAC 000057</i>. Version 1. Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 8.2km north of the proposed development.</p>
<p>Ballycullinan, Old Domestic Building SAC [002246]</p> <p>1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p> <p>S.I. No. 174/2016 - European Union Habitats (Ballycullinan, Old Domestic Building Special Area of Conservation 002246) Regulations 2016</p> <p>NPWS (2018) <i>Conservation Objectives: Ballycullinan, Old Domestic Building SAC 002246</i>. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p>	<p>c. 9.2km north west of the proposed development.</p>
<p>East Burren Complex SAC [001926]</p> <p>1355 Otter (<i>Lutra lutra</i>)</p> <p>1065 Marsh Fritillary (<i>Euphydryas aurinia</i>)</p> <p>1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p> <p>3140 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.</p> <p>3180 Turloughs*</p> <p>3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and Callitricho-Batrachion vegetation</p> <p>4060 Alpine and Boreal heaths</p> <p>5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands</p> <p>6130 Calaminarian grasslands of the <i>Violetalia calaminariae</i></p> <p>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)</p> <p>6510 Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>)</p> <p>7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>*</p> <p>7220 Petrifying springs with tufa formation (Cratoneurion)*</p> <p>7230 Alkaline fens</p>	<p>c. 9.3km north of the proposed development.</p>

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
<p>8240 Limestone pavements*</p> <p>8310 Caves not open to the public</p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i>, <i>Salicion albae</i>)*</p> <p>NPWS (2022) <i>Conservation Objectives: East Burren Complex SAC 001926</i>. Generic Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	
<p>Ballycullinan Lake SAC [000016]</p> <p>7210 Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion <i>davallianae</i>*</p> <p>S.I. No. 518/2016 - European Union Habitats (Ballycullinan Lake Special Area of Conservation 000016) Regulations 2016</p> <p>NPWS (2018) <i>Conservation Objectives: Ballycullinan Lake SAC 000016</i>. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 9.4km north west of the proposed development.</p>
<p>Ballyogan Lough SAC [000019]</p> <p>7210 Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion <i>davallianae</i>*</p> <p>8240 Limestone pavements</p> <p>S.I. No. 547/2021 European Union Habitats (Ballyogan Lough Special Area Of Conservation 000019) Regulations 2021</p> <p>NPWS (2018) <i>Conservation Objectives: Ballyogan Lough SAC 000019</i>. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 9.7km north of the proposed development.</p>
<p>Lough Gash Turlough SAC [000051]</p> <p>3180 Turloughs*</p> <p>3270 Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation</p> <p>S.I. No. 72/2018 - European Union Habitats (Lough Gash Turlough Special Area of Conservation 000051) Regulations 2018</p> <p>NPWS (2017) <i>Conservation Objectives: Lough Gash Turlough SAC 000051</i>. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 11.1km south of the proposed development</p>
<p>Knockanira House SAC [002318]</p> <p>1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p> <p>S.I. No. 521/2016 - European Union Habitats (Knockanira House Special Area of Conservation 002318) Regulations 2016</p> <p>NPWS (2018) <i>Conservation Objectives: Knockanira House SAC 002318</i>. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 11.8km south west of the proposed development.</p>

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
<p>Kilkishen House SAC [002319] 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p> <p>S.I. No. 177/2016 - European Union Habitats (Kilkishen House Special Area of Conservation 002319) Regulations 2016. NPWS (2018) <i>Conservation Objectives: Kilkishen House SAC 002319</i>. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>c. 12.7km south east of the proposed development site.</p>
Special Protection Area (SPA)	
<p>Balliallia Lough SPA [004041] A052 Teal(<i>Anas crecca</i>) A125 Coot(<i>Fulica atra</i>) A053 Mallard(<i>Anas platyrhynchos</i>) A050 Wigeon(<i>Anas penelope</i>) A156 Black-tailed Godwit(<i>Limosa limosa</i>) A056 Shoveler(<i>Anas clypeata</i>) A051 Gadwall(<i>Anas strepera</i>) A999 Wetland and Waterbirds</p> <p>S.I. No. 58/2010 - European Communities (Conservation of Wild Birds (Ballyallia Lough Special Protection Area 004041)) Regulations 2010 NPWS (2022) <i>Conservation objectives for Ballyallia Lough SPA [004041]</i>. Generic Version 9.0. Department of Housing, Local Government and Heritage.</p>	<p>c. 2.6km north west of the proposed development site.</p>
<p>Slieve Aughty Mountains SPA [004168] A098 Merlin(<i>Falco columbarius</i>) A082 Hen Harrier(<i>Circus cyaneus</i>)</p> <p>S.I. No. 83/2012 - European Communities (Conservation of Wild Birds (Slieve Aughty Mountains Special Protection Area 004168)) Regulations 2012. NPWS (2022) <i>Conservation objectives for Slieve Aughty Mountains SPA [004168]</i>. Generic Version 9.0. Department of Housing, Local Government and Heritage</p>	<p>c. 4.4km north east of the proposed development site.</p>
<p>River Shannon and River Fergus Estuaries SPA [004077] A179 Black-headed Gull(<i>Chroicocephalus ridibundus</i>) A141 Grey Plover(<i>Pluvialis squatarola</i>) A038 Whooper Swan(<i>Cygnus cygnus</i>) A140 Golden Plover(<i>Pluvialis apricaria</i>) A048 Shelduck(<i>Tadorna tadorna</i>) A157 Bar-tailed Godwit(<i>Limosa lapponica</i>) A046 Light-bellied Brent Goose(<i>Branta bernicla hrota</i>) A137 Ringed Plover(<i>Charadrius hiaticula</i>) A156 Black-tailed Godwit(<i>Limosa limosa</i>) A160 Curlew(<i>Numenius arquata</i>) A164 Greenshank(<i>Tringa nebularia</i>)</p>	<p>c. 5.1km south west of the proposed development.</p>

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
<p>A050 Wigeon(<i>Anas penelope</i>) A162 Redshank(<i>Tringa totanus</i>) A142 Lapwing(<i>Vanellus vanellus</i>) A017 Cormorant(<i>Phalacrocorax carbo</i>) A056 Shoveler(<i>Anas clypeata</i>) A052 Teal(<i>Anas crecca</i>) A143 Knot(<i>Calidris canutus</i>) A062 Scaup(<i>Aythya marila</i>) A054 Pintail(<i>Anas acuta</i>) A149 Dunlin(<i>Calidris alpina</i>) A999 Wetland and Waterbirds</p> <p>S.I. No. 329/2019 - European Union Conservation Of Wild Birds (River Shannon And River Fergus Estuaries Special Protection Area 004077) Regulations 2019 NPWS (2012) Conservation Objectives: River Shannon and River Fergus Estuaries SPA 004077. Version 1.0.</p>	
<p>Corofin Wetlands SPA [004220] A156 Black-tailed Godwit(<i>Limosa limosa</i>) A052 Teal(<i>Anas crecca</i>) A038 Whooper Swan(<i>Cygnus cygnus</i>) A050 Wigeon(<i>Anas penelope</i>) A004 Little Grebe(<i>Tachybaptus ruficollis</i>) A999 Wetland and Waterbirds</p> <p>S.I. No. 117/2012 - European Communities (Conservation of Wild Birds (Corofin Wetlands Special Protection Area 004220)) Regulations 2012. NPWS (2022) Conservation objectives for Corofin Wetlands SPA [004220]. Generic Version 9.0. Department of Housing, Local Government and Heritage.</p>	<p>c. 10.7km north west of the proposed development.</p>

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