Technical Appendix 2 – Ecological Impact Assessment

Coolshamrock 110 kV Substation SID

22/09/2023

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EXECUTIVE SUMMARY

2.1. An Ecological Impact Assessment (EcIA) has been undertaken for a proposed substation (the "Proposed Development") in the townland of Coolshamroge, Ennis, Co. Clare (the "Application Site") to assess the potential impacts from the Proposed Development on local ecology. Baseline information within the ecological assessment comprises of an initial desk-based assessment and a Fossitt habitat survey, which was extended to identify the presence or likely absence of protected species, which have been outlined within the relevant sections of this report.

2.2. The main impacts during the construction phase include the direct loss of habitat under the Proposed Development footprint and indirect loss of habitat due to disturbance and pollution. The loss of improved agricultural grassland and arable land is considered to be negligible to nature conservation within the local area.

2.3. Within the 15km zone of influence (ZOI) surrounding the Application Site there are 21 Natura 2000 Designated Sites. There are three Special Protection Areas (SPAs); the River Shannon and River Fergus Estuaries SPA, Ballyallia Lough SPA and Slieve Augthy Mountains SPA. There are eighteen Special Areas of Conservation (SACs); Lower River Shannon SAC, Old Domestic Building (Keevagh) SAC, Poulnagordon Cave (Quin) SAC, Lough Gash Turlough SAC, Ballyallia Lake SAC, Newhall and Edenvale Complex SAC, Newgrove House SAC, Old Domestic Buildings, Rylane SAC, Kilkishen House SAC, Pouladatig Cave SAC, Ratty River Cave SAC, Dromore Woods and Loughs SAC, Knockanira House SAC, Toonagh Estate SAC, Danes Hole, Poulnalecka SAC, Old Farm Buildings, Ballymacrogan SAC, Moyree River System SAC and Ballycullinan, Old Domestic Building SAC and one Ramsar Site; Ballyallia Lough.

2.4. It has been concluded that hydrological and ornithological connectivity exists between the Application Site and the River Shannon and River Fergus Estuaries SPA and hydrological and ecological connectivity exists between the Application Site and the Lower River Shannon SAC, providing a pathway for potential impacts. It has also been concluded that Ecological connectivity exists between Old Domestic Building (Keevagh) SAC and Poulnagordon Cave (Quin) for lesser horseshoe bats. These designated sites have been outlined and fully assessed within the **supporting Natura Impact Statement (NIS)** report. The findings of the NIS conclude that with the implementation of integral design measures, mitigation and best practice construction methods, there will be **no significant effects** for all Natura 2000 designated sites within the ZOI.

2.5. There are no Natural Heritage Areas (NHAs) and five proposed Natural Heritage Areas (pNHAs) located within 5km of the Application Site. The Fergus Estuary and Inner Shannon, North Shore pNHA has hydrological, and ornithological connectivity, however the findings in this EcIA conclude that the Proposed Development will have no adverse effects on any of the features within the pNHA.

2.6. From the current survey findings and impact assessment conducted, it is considered that the Proposed Development is **unlikely to have any significant effects** for local wildlife. However, as a precaution, several measures have been outlined within this report to reduce any potential impacts for local ecology.

INTRODUCTION

Background

2.7. Neo Environmental Ltd have been commissioned by Renewable Energy Systems (RES) Ltd ("the Applicant") to undertake an Ecological Impact Assessment (EcIA) for a Strategic Infrastructure Development ("SID") Application for a new 110kV Substation ("the Proposed Development") to feed into the existing Drumline-Ennis 110kV overhead line (OHL) circuit. The Substation and 110kV loop in infrastructure is situated within the townland of Coolshamroge, Ennis, Co. Clare ("the Application Site"). The Substation is to facilitate the Manusmore Solar Farm (PA Ref: 20562), the Manusmore Solar Farm Extension (PA Ref: 21915) and the Coolshamrock Solar Farm (PA Ref: 22586).

2.8. Please see **Figure 3, Volume 2** for the layout of the Proposed Development.

Development Description

2.9. Coolshamrock and Manusmore Solar Farms will feed into a new 110kV substation. The method of connection to the national grid for the new substation will be a looped connection into the existing Drumline – Ennis 110kV Circuit. 2 No. new OHL end towers will be constructed to facilitate connection to the existing OHL (see **Figure 3 and 11, Volume 2).** The application site will comprise of a 110/33kV substation which consists of 2 No. control buildings, a transformer compound, a high voltage (HV) switchgear compound, a customer MV compound and associated cabling. There is also 2. No underground 110kV cables, a cable access track and 2 No. overhead line towers.

2.10. The control buildings will consist of foundation works, block work, roofing, low voltage electrical fit out, medium voltage switchgear, cladding and building finishing works.

2.11. A power transformer, HV electrical equipment (4bays), lightning protection masts, communication mast, structural steel works, circuit breakers, current transformers, voltage transformers, busbars, surge arresters, cable sealing ends, disconnectors/earth switches, surge arrestors and post insulators will be installed in the Eirgrid HV Substation Compound.

2.12. The Customer MV Compound will consist of 2 No. capacitor banks, 1 No. reactor banks and associated circuit breakers (capacitor and reactor), 1 no. harmonic filter, resistor, pre-insertion resistor and 1 No. auxiliary transformer.

2.13. Palisade and concrete post and rail fencing will be erected around the compound for security/protection.

2.14. The 110kV loop in connection will connect the Drumline-Ennis 110kV overhead line (OHL) circuit to 2. Overhead line towers and 2. No associated 110kV underground cables and into the HV compound infrastructure. There is a cable access which branches from the consent solar tracks (P22568) to provide access to the cables and towers.

Site Description

2.15. The proposed Substation and 110kV loop in infrastructure is located within the townland of Coolshamroge, Ennis, Co. Clare. The proposed site is approximately 7km southeast of Ennis, 4.2km east of Clarecastle and 1.5km west of the smaller settlement Quin.

2.16. The Application Site in which the substation is proposed to be located comprises of 3 fields of relatively flat agricultural land. The Application site lies at an elevation of c. 26-29m AOD and covers a total area of c. 3.78 acres. The approximate Irish Grid Reference points (ITM) of the proposed substation are X 539777 and Y 674345. The proposed substation will be enclosed by palisade fencing. Access to the proposed substation will be from a private lane off an unnamed local road to the south which is the same entrance point from the Coolshamrock Solar Farm (PA Ref:22586).

Scope of the Assessment

2.17. An Ecological Impact Assessment was completed at the Application Site to inform the submission of a planning application to Clare County Council for a proposed substation development. The aims of this report are to:

- Determine the main habitat types within and immediately adjacent to the Application Site in relation to the Proposed Development footprint;
- Identify any actual or potential habitat or species constraints pertinent to the development of the Application Site and to identify how the Proposed Development can avoid, mitigate and, if necessary, compensate for impacts on these actual or potential constraints;
- Assess the potential impacts of the Proposed Development during the construction, operation and decommissioning phases;
- Provide mitigation to reduce the impacts of the activities undertaken during the various phases of the Proposed Development;
- Identify potential opportunities for the Proposed Development to enhance and add to the biodiversity resource within the site.

2.18. This allows for the identification of potential ecological impacts and the compilation of appropriate mitigation measures where applicable.

Statement of Authority

2.19. The assessment has been managed by Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM), (Dara Dunlop), who also provided specialist input. Dylan Donoghue was the main ecologist involved in the production of report. All work has been carried out in line with the relevant professional guidance; CIEEM's Guidelines for Ecological Impact Assessment[1] and report writing[2].

2.20. Dara Dunlop is a Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM) with circa 4 years' experience in the ecology sector, including working for an ecological consultancy, undertaking a range of protected species surveys and extended phase 1 habitat surveys for industrial schemes, and land management of designated sites. Dara has authored a number of reports including Ecological Impact Assessments and Protected Species Reports for various developments.

2.21. Dylan Donoghue is an Ecologist in the process of applying for an Associate level membership with CIEEM. Dylan has 2 years' experience in the Ecology Sector, including working for an ecological consultancy, undertaking bird and bat surveys.

[1] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version

[2] CIEEM, 2017. Guidelines for Report Writing. Available at www.cieem.net

LEGISLATION AND PLANNING POLICY CONTEXT

European Legislation

2.22. European legislation relevant to the Proposed Development is outlined within **Table 2-1** below.

Table 2-1: Relevant European Legislation

Directive	Main Provisions
EU Habitats Directive 92/43/EEC	The EU Habitats Directive sets out the framework for the designation and protection of sites for nature conservation for species and habitats listed in Annex II, IV and V. The directive was adopted in 1992 as a response to the Bern Convention. "*The main aim of the Habitats Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance*" The protection of species outlined in the Habitats Directive is transposed into national legislation principally by 'EC (Natural Habitats) Regulations 1997 (amended)'[3].
The Birds Directive 2009/147/EC	European Union members meet their obligations for bird species under the Bern Convention and Bonn Convention, and more generally by the means of the EU Birds Directive. The Birds Directive sets out the criteria for Special Protection Areas including; a list of species requiring protection in Annex 1 of the Directive and mechanisms for protecting wild birds naturally occurring in Europe. This Directive is transposed into national legislation principally by the 'EC (Birds and Natural Habitats) Regulations 2011'[4]. The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the

[3] Office of the Attorney General (1997), European Communities (Natural Habitats) Regulations 1997 (amended 1998, 2005), available at www.irishstatutebook.ie

[4] Office of the Attorney General (2011), European Communities (Birds and Natural Habitats) Regulations 2011, available at www.irishstatutebook.ie

	precise legal mechanisms for their achievement are at the discretion of each Member State.
Environmental Liability Directive 2004/35/EC	The Environmental Liability Directive aims to make those causing damage to the environment (water, land and nature) legally and financially responsible for that damage. The directive covers environmental damage caused by or resulting from occupational activities to: Species and natural habitats protected under the 1992 Habitats Directive and the 1979 Wild Birds Directive. Damage to protected species and natural habitats is "*any damage that has significant adverse effects on reaching or maintaining the favourable conservation status of such habitats or species*".
Bern Convention	The Bern Convention came into force in 1982, with the principal aims to ensure conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to regulate the exploitation of those species (including migratory species) listed in Appendix III.
Bonn Convention	The Bonn convention came into force in 1985. Contracting Parties work together to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix I of the Convention), concluding multilateral Agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix II), and by undertaking cooperative research activities.

National Legislation

2.23. The principal national legislation governing the protection of wildlife and natural resources in Ireland is:

- The Wildlife Act 1976 (amended 2000)[5] - this is the principal legislation for the protection of wildlife in Ireland and outlines strict protection for species that have significant conservation value. The Act also provides a mechanism to give statutory protection to Natural Heritage Areas ("NHAs"). The amendment in 2000 broadens the scope of the Wildlife Acts to include most species, including the majority of fish and aquatic invertebrate species which were excluded from the 1976 Act.

[5] Office of the Attorney General (1976) Wildlife Act 1976 (amended 2000), available at www.irishstatutebook.ie

- EC (Birds and Natural Habitats) Regulations 2011 (amended 2015)[6] - transposes the EU directives into law. It protects species and priority habitats considered to be of European interest.
- Flora Protection Order 2015[7] - this Order makes it illegal to cut, uproot or damage a listed species in any way. It is illegal to alter, damage or interfere in any way with their habitats. This protection applies wherever the plants are found.
- The EC (Water Policy) Regulations 2003[8] – transposes the Water Framework Directive into national law.

2.24. The regulations contained within the above referenced legislation have all been taken into account during the production of this ecological report.

Planning and Development Act, 2000 (as amended)[9]

2.25. Relevant sections regarding ecology within the Planning and Development Act, 2000 (amended 2006) are as follows:

First Schedule, Part IV Environment and Amenities

"5. (a) Preserving and protecting flora, fauna and ecological diversity.

(b) Preserving and protecting trees, shrubs, plants and flowers.

6. Protecting and preserving (either in situ or by record) places, caves, sites, features and other objects of archaeological, geological, historical, scientific or ecological interest."

Fifth Schedule

"19. Any condition relating to the protection of features of the landscape which are of major importance for wild fauna and flora.

20. Any condition relating to the preservation and protection of trees, shrubs, plants and flowers.

[6] Office of the Attorney General (2011) European Communities (Birds and Natural Habitats Regulations 2011 (amended 2015), available at www.irishstatutebook.ie

[7] Office of the Attorney General (2015) Flora Protection Order 2015, available at www.irishstatutebook.ie

[8] Office of the Attorney General (2003) European Communities (Water Policy) Regulations 2003, available at www.irishstatute book.ie

[9] Office of the Attorney General (2000) Planning and Development Act 2000, available at www.irishstatutebook.ie

21. Any condition relating to the preservation (either in situ or by record) of places, caves, sites, features or other objects of archaeological, geological, historical, scientific or ecological interest.

22. Any condition relating to the conservation and preservation of—

(a) one or more specific—

(i) (I) natural habitat types in Annex I of the Habitats Directive, or
(II) species in Annex II of the Habitats Directive which the site hosts, contained in a European site selected by the Minister for Arts, Heritage, Gaeltacht and the Islands in accordance with Annex III (Stage 1) of that Directive.

(ii) species of bird or their habitat or other habitat contained in a European site specified in Article 4 of the Birds Directive, which formed the basis of the classification of that site

or

(b) any other area prescribed for the purpose of section 10(2)(c).”

Part XIV

“212. – (1) A planning authority may develop or secure or facilitate the development of land and, in particular and without prejudice to the generality of the foregoing, may do one or more of the following:

(f) secure the preservation of any view or prospect, any protected structure or other structure, any architectural conservation area or natural physical feature, any trees or woodlands or any site of archaeological, geological, historical;

(g) secure the creation, management, restoration or preservation of any site of scientific or ecological interest, including any Nature Conservation Site.”

Planning Policy Statement 2015[10]

2.26. The aim of Planning Policy Statement 2015 is as follows:

“Planning legislation in Ireland seeks to ensure, in the interests of the common good, the proper planning and sustainable development of urban and rural areas.”

[10]Environment, Community and Local Government (2015), Planning Policy Statement 2015, available at www.environ.ie

2.27. The Government outlined 10 key principles as a strategic guide in implementing the aim above. Relevant ecological principals outlined within this document include:

"4. Planning must support the transition to a low carbon future and adapt to a changing climate taking full account of flood risk and facilitating, as appropriate, the use of renewable resources, particularly the development of alternative indigenous energy resources.

8. Planning will conserve and enhance the rich qualities of natural and cultural heritage of Ireland in a manner appropriate to their significance, from statutorily designated sites to sites of local importance, and including the conservation and management of landscape quality to the maximum extent possible, so that these intrinsic qualities of our country can be enjoyed for their collective contribution to the quality of life of this and future generations.

9. Planning will support the protection and enhancement of environmental quality in a manner consistent with the requirements of relevant national and European standards by guiding development towards optimal locations from the perspective of ensuring high standards of water and air quality, biodiversity and the minimisation of pollution risk."

Clare County Council Development Plan 2023-2029[11]

2.28. Clare County Council Development Plan (CDP) was produced to provide direction and focus for planning and sustainable development of the county. It includes the following objectives with relevant ecological aims;

"CDP15.1: Development Plan Objective: Biodiversity

- *It is an objective of Clare County Council:*

A) *To implement the National Biodiversity Action Plan 2017- 2021, the All Ireland Pollinator Plan 2021-2025, the EU A Farm to Fork Strategy 2020, the County Clare Heritage Plan 2017-2023 and the County Clare Biodiversity Plan 2017- 2023, or any subsequent plans, in partnership with all relevant stakeholders;*

B) *To review the Clare County Heritage Plan 2017-2023 and to prepare a new plan, which will be set within the context of the National Heritage Plan "Heritage Ireland 2030", upon the expiry of the existing adopted Plan;*

C) *To support National Biodiversity Week and events such as Bioblitz in order to increase awareness of biodiversity and its benefits to the community;*

11 https://clarecdp2023-2029.clarecoco.ie/stage3-amendments/adoption/volume-1-written-statement-clare-county-development-plan-2023-2029-51406.pdf

D) *To ensure that features of importance to local biodiversity are retained as part of developments and projects being undertaken in the County;*

E) *To identify ecological buffer spaces/zones, where appropriate, in the Plan area.*

F) *To support current and future projects with the aim of restoration/rehabilitation of natural habitats and species.*

CDP15.2: Development Plan Objective: Natural Heritage, Biodiversity and Built Heritage Assets

It is an objective of Clare County Council:

A) To support initiatives that enhance and protect County Clare's unique natural heritage, biodiversity and built heritage assets, recognising the contribution which education and outreach can play in developing understanding of biodiversity and heritage in our communities. Such initiatives should secure funding to support projects in the region in line with the National Biodiversity Action Plan.

CDP15.3: Development Plan Objective: European Sites

- *It is an objective of Clare County Council:*

A) To afford the highest level of protection to all designated European sites in accordance with the relevant Directives and legislation on such matters;

B) 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);

C) 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.

CPD15.4: Development Plan Objective: Habitat Protection

- *It is an objective of Clare County Council:*

A) To implement Article 6(3) and where necessary 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); and

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

CDP 15.5: Development Plan Objective: Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs)

- *It is an objective of Clare County Council:*

A) To actively promote the conservation and protection of areas designated as an NHA (including proposed sites) and to only consider proposals for development within or affecting an NHA where it can be clearly demonstrated that the proposed development will not have a significant adverse effect on the NHA or pNHA;

B) To identify and afford appropriate protection to any new, proposed or modified NHAs identified during the lifetime of this Plan."

Clare Biodiversity Action Plan 2017- 2023[12]

2.29. The aim of the Clare Biodiversity Action Plan 2017– 2023 is to conserve the biodiversity of County Clare. To gain knowledge, improve awareness of the county's natural resource and develop appreciation of the county's biodiversity and guide the sustainable development of the county. The objectives of the plan are;

- *To implement the actions of Ireland's National Biodiversity Action Plan 2017-2021 as they relate to County Clare;*
- *To inform all biodiversity projects undertaken as part of the County Clare Heritage Plan 2017-2023 and support its full implementation;*
- *To ensure the Clare County Biodiversity Action Plan 2017-2023 fully informs all planning policy within the County, including the biodiversity objectives in the Clare County Development Plan 2017-2023;*
- *To produce best practice guidelines on biodiversity conservation and management for all sections of Clare County Council;*
- *To ensure that all projects carried out under the Clare County Biodiversity Action Plan 2017-2023 comply with the requirements of the Habitats Directive, and all other legislation as appropriate.*

Guidance Documents

BS 42020:2013 Biodiversity[13]

2.30. The British Standards Institute has published BS 42020:2013 Biodiversity Code of practice for planning and development which offers a coherent methodology for biodiversity

[12] https://www.clarecoco.ie/services/arts-recreation/publications/Clare-Biodiversity-Action-Plan-2017-2023-26799.pdf

[13] BS 42020:2013 Biodiversity. Code of practice for planning and development

management. This document seeks to promote transparency and consistency in the quality and appropriateness of ecological information submitted with planning applications and applications for other regulatory approvals.

2.31. BS 42020:2013 cites CIEEM EcIA Guidelines as the acknowledged reference on ecological impact assessment. These guidelines are consistent with the British Standard on Biodiversity, which provides recommendations on topics such as professional practice, proportionality, pre-application discussions, ecological surveys, adequacy of ecological information, reporting and monitoring.

CIEEM Guidelines

2.32. The Chartered Institute of Ecology and Environmental Management (CIEEM) have produced guidance on EcIA[14] and Ecological Report Writing[15].

2.33. EcIA is a process of identifying, quantifying and evaluating potential effects from activities such as those related to development on habitats, species and ecosystems. This EcIA process follows the tasks set out in **Table 2-2** below.

Table 2-2: EcIA Process

Task	Description
Scoping	Determining the matters to be addressed in the EcIA, including consultation to ensure the most effective input to defining the scope. Scoping is an ongoing process – the scope of the EcIA may be modified following further ecological survey/research and during impact assessment.
Establishing the baseline	Collecting information and describing the ecological conditions in the absence of the proposed project, to inform the assessment of impacts.
Important ecological features	Identifying important ecological features (habitats, species and ecosystems, including ecosystem function and processes) that may be affected, with reference to a geographical context in which they are considered important.
Impact assessment	An assessment of whether important ecological features will be subject to impacts and characterisation of these impacts and their effects. Assessment of the significance of the residual ecological effects of the project (those remaining after mitigation), including cumulative effects.

[14] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Costal and Marine.
[15] CIEEM (2017) Guidelines for Ecological Report Writing

Avoidance, mitigation, compensation and enhancement	Incorporating measures to avoid, reduce and compensate negative ecological impacts and their effects, and the provision of ecological enhancements. Monitoring impacts and their effects. Evaluation of the success of proposed mitigation, compensation and enhancement measures.

2.34. The aims of their EcIA guidelines are to:

- promote good practice;
- promote a scientifically rigorous and transparent approach to EcIA;
- provide a common framework to EcIA in order to promote better communication and closer cooperation between ecologists involved in EcIA; and,
- provide decision-makers with relevant information about the likely ecological effects of a project.

METHODOLOGY

Zone of Influence (ZOI)

2.35. The ZOI is the area encompassing all predicated negative ecological effects from a proposed scheme and is informed by the habitats present within the site and the nature of the proposals. Due to the scale and nature of the proposal, it is considered that the following ZOI, outlined in **Table 2-3** below, from the proposed substation was appropriate for the gathering of information for the desk study.

Table 2-3: Zone of Influence for ecological features

ECOLOGICAL FEATURE	Zone of Influence (ZOI)
International/European statutory designations	15km or wherever hydrological influence extends (whichever is further)
National statutory designations	5km or wherever hydrological influence extends (whichever is further)
Protected and Priority Species	2km
Fossitt habitat survey	50m

Desk Study

2.36. A desk-based assessment was undertaken to collate available ecological information for the Application Site and the surrounding area. This included a search of statutory designated sites within a 5km radius of the Proposed Development, including: Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar Sites, Nature Reserves (NRs), Wildfowl Sanctuaries, Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs). The descriptions of each of these sites was obtained utilising the National Parks and Wildlife Service (NPWS) website[16].

2.37. A NIS was undertaken to assess all Natura 2000 sites within the ZoI of the Proposed Development boundary. The findings of which are contained within **Volume 1: Natura Impact Statement**.

2.38. A data search was conducted though the National Biodiversity Data Centre (NBDC) to obtain information regarding protected/notable species within 2km of the Application Site

[16] NPWS website available at - http://www.npws.ie/protected-sites.

boundary. The Application Site is located at approximate Irish National Grid Reference (IGR) X (ITM) 539777 Y (ITM) 674345.

2.39. Additional information on the suitability of habitat in the surrounding area for bats was also obtained from the NBDC in the form of a habitat suitability map. The map provided enhanced information on the recorded distribution of bats and broad-scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species.

Field Survey

Fossitt Habitat Survey

2.40. A Fossitt habitat survey was undertaken between the 25th – 26th of August 2021 by Dylan Donoghue BSc (Hons) and 3rd of March 2022 by Dylan Donoghue BSc (Hons) and Louis Maloney BSc (Hons) MSc.

2.41. Survey work was carried out in accordance with Fossitt habitat survey guidance[17] with habitats mapped electronically in the field in order to produce a habitat map.

Species Scoping Survey

2.42. A species scoping survey was carried out to identify the presence of protected species, or the potential of the Application Site to support protected species. The aim of the survey was to provide an overview of the Application Site and to determine whether any further survey work was required.

2.43. No additional protected species surveys were undertaken at this time.

2.44. Table 2-4 below outlines the relevant habitat and field signs that indicate the potential presence of protected or notable species within the ESA.

Table 2-4: Indicative Habitats and Field Signs of Protected Species

Taxon	Indicative Habitat(s)	Field Signs (In Addition to Sightings)
Bats	Roosts – trees, buildings, bridges, caves, etc. Foraging areas – e.g. parkland, water bodies, streams, wetlands, woodland edges and hedgerow. Commuting routes – linear features (e.g.) hedgerows,	In or on potential roost sites: droppings stuck to walls, urine spotting in roof spaces, oil from fur staining round roost entrances, feeding remains (e.g. moth wings under a feeding perch).

[17] Fossitt (2000) A Guide to Habitats in Ireland

	water courses, tree lines). See **Appendix C** for preferred foraging and commuting habitat for individual species.	
Badger	Found in most rural and many urban habitats.	Excavations and tracks: sett entrances, latrines, hairs, well-worn paths, prints, scratch marks on trees.
Otter	Watercourses.	Holts (or dens), prints, spraints (droppings), slide marks into watercourses, feeding signs (e.g. fish bones).
Birds	Trees, scrub, hedgerow, field margins, grassland, buildings.	Nests, droppings below nest sites (especially in buildings of trees), tree holes.
Common lizard *(Zootoca vivipara)*	Rough grassland, log and rubble piles.	Shedded skins.

Wintering Bird Surveys

2.45. Given the close proximity of the Application Site to the River Shannon & River Fergus Estuaries SPA, wintering bird surveys (WBS) were completed as part of the Coolshamrock Solar Farm (**Planning Ref 22586**)[18]. The proposed substation is located entirely within the solar farm application site boundary. The WBS were completed over three days towards the end of the winter season 14th January 2022, 4th and 28th of February 2022 to provide a current baseline for bird activity of the qualifying species associated with the SPA.

2.46. Please refer to **Appendix B** within **Volume 1: Natura Impact Statement** for details of the surveys including methodology and results.

2.47. No additional surveys were undertaken at this time.

Weather Conditions

2.48. **Table 2-5** describes the weather conditions at the time of the habitat survey giving temperature (°C), Wind speed (Beaufort Scale), Cloud-cover (octas) and precipitation.

[18] Clare County Council- planning Ref 22586, Appendix B - Wintering Bird Survey of Coolshamrock Solar Farm and Grid Route Application

Table 2-5: Weather conditions at time of survey

Survey date	Temperature	Beaufort no.	Cloud-cover (Okta)	Precipitation
25/08/2021	22°C	1	0	None
26/08/2021	24°C	1	0	None
03/03/2022	9°C	4	3	None

Limitations

2.49. Results of the assessment undertaken by Neo Environmental are representative of the time that surveying was undertaken.

2.50. The absence of specific species records returned during the data search does not necessarily indicate absence of a species or habitat from an area, but rather that these have not been recorded or are perhaps under-recorded within the search area.

2.51. A Fossitt habitat survey does not aim to produce a full botanical or faunal species list or provide a full protected species survey but, enables competent ecologists to ascertain an understanding of the ecology of the site in order to:

- Broadly identify the nature conservation value of a site and preliminary assess the significance of any potential impacts on habitat/species recorded; and/or
- Confirm the need and extent of any additional specific ecological surveys that are required to identify the true nature conservation value of a site.

Evaluation Methods

2.52. The evaluation of ecological receptors is based upon the CIEEM guidelines[19] (2018) which suggests that the value or potential value of an ecological resource or feature (for example a habitat type, species or ecosystems) should be determined within a geographical context (e.g. rare at a local level). Attributing a value to a receptor, which is also a designated site, is generally precise, as the designations themselves provide an indication of value.

[19] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.1.

Adopted Design Principles

2.53. The evaluation of the ecological baseline has enabled the inclusion of integral design measures which will ensure impacts from the Proposed Development on ecological receptors can be reduced or avoided through the development design.

Impact Assessment

2.54. The impact assessment process involves:

- identifying and characterising impacts and their effects;
- incorporating measures to avoid and mitigate negative impacts and effects;
- assessing the significance of any residual effects after mitigation;
- identifying appropriate compensation measures to offset significant residual effects; and
- identifying opportunities for ecological enhancement.

2.55. The terms 'impact' and 'effect' are used commonly throughout ecological reports. Impact is defined as a change experienced by an ecological feature, whilst effect is defined as the outcome to an ecological feature from an impact. Impacts and effects can be positive, negative or neutral.

2.56. Assessment of potential impacts and effects needs to consider on-site, adjacent and more distant ecological features, including habitats, species and statutory and ecological designated sites.

2.57. This EcIA has been concluded by an experienced ecologist following CIEEM guidance[20].

[20] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Costal and Marine.

BASELINE CONDITIONS

Designated Sites

2.58. The Proposed Development at Coolshamrock does not lie within or directly adjacent to any statutory or non-statutory designated environmental sites.

2.59. Within 15km of the Application Site boundary there are three SPAs, eighteen SACs and one Ramsar Site. Within 5km of the Application Site boundary there are five pNHAs. Each of these sites are outlined in **Table 2-6** below, and detailed within **Figure 1, Appendix A**.

2.60. The site descriptions are derived from the original site citations available from NPWS[21].

2.61. Please refer to the supporting **NIS, Volume 1** for details of all Natura 2000 sites within 15km of the Application Boundary.

Table 2-6 Natura 2000 sites within 15km

Site Code	Site Name	Qualifying Features	Distance (km)	Potential Connectivity with the Proposed Development Site
SPA				
004077	River Shannon and River Fergus Estuaries SPA	Cormorant (*Phalacrocorax carbo*) [A017] Whooper Swan (*Cygnus cygnus*) [A038] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056]	2.95km Southwest	Ornithological and hydrological

[21] http://www.npws.ie/protected-sites

		Scaup (*Aythya marila*) [A062] Ringed Plover (*Charadrius hiaticula)* [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Greenshank (*Tringa nebularia*) [A164] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Wetland and Waterbirds [A999]		
004041	Ballyallia Lough SPA	Wigeon (*Anas penelope*) [A050] Gadwall (*Anas strepera*) [A051] Teal (*Anas crecca*) [A052] Mallard (*Anas platyrhynchos*) [A053] Shoveler (*Anas clypeata*) [A056] Coot (*Fulica atra*) [A125] Black-tailed Godwit (*Limosa limosa*) [A156]	8.01km Northwest	None

		Wetland and Waterbirds [A999]		
004168	Slieve Aughty Mountains SPA	Hen Harrier *(Circus cyaneus)* [A082] Merlin *(Falco columbarius)* [A098]	8.31km Northeast	None
SAC				
002165	Lower River Shannon SAC	Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Molinia meadows on calcareous, peaty or clayey-	2.05km Southwest	Hydrological and ecological

		silt-laden soils (*Molinion caeruleae*) [6410] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Lutra lutra* (Otter) [1355]		
002010	Old Domestic Building (Keevagh) SAC	*Rhinolophus hipposideros* (Lesser Horseshoe Bat)	1.50km Northeast	Ecological
000064	Poulnagordon Cave (Quin) SAC	Caves not open to the public [8310] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	2.41km East	Ecological
000051	Lough Gash Turlough SAC	Turloughs [3180] Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation	6.07km South	None
000014	Ballyallia Lake SAC	Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation [3150]	7.11km Northwest	None

002091	Newhall and Edenvale Complex SAC	Caves not open to the public [8310] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	7.13km West	None
002157	Newgrove House SAC	Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	7.36km Northeast	None
002314	Old Domestic Buildings, Rylane SAC	*Rhinolophus hipposideros (*Lesser Horseshoe Bat*) [1303]*	8.60km Northeast	None
002319	Kilkishen House SAC	*Rhinolophus hipposideros (Lesser Horseshoe Bat)*	9.09km East	None
000037	Pouladatig Cave SAC	Caves not open to the public [8310] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	9.45km west	None
002316	Ratty River Cave SAC	Caves not open to the public [8310] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	9.89km Southeast	None
000032	Dromore Woods and Loughs SAC	Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation [3150] *Hydrophilous* tall herb fringe communities of plains and of the montane to alpine levels [6430] Limestone pavements [8240] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355]	10.50km Northwest	None

002319	Knockanira House SAC	*Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	11.31km Southwest	None
002247	Toonagh Estate SAC	*Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	11.82km Northwest	None
000030	Danes Hole, Poulnalecka SAC	Caves not open to the public [8310] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	13.18km East	None
002245	Old Farm Buildings, Ballymacrogan SAC	*Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	14.08km Northwest	None
000057	Moyree River System SAC	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Alkaline fens [7230] Limestone pavements [8240] Caves not open to the public [8310] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355]	14.44km Northwest	None
002246	Ballycullinan, Old Domestic Building SAC	*Rhinolophus hipposideros* (Lesser Horseshoe Bat)	14.89km Northwest	None
Ramsar				
845	Ballyallia Lough Ramsar site	Primarily important as an wildfowl sanctuary for supporting waterfowl.	8.02km Northwest	None

pNHA				
002010	Old Domestic Building (Keevagh) pNHA	Also designated as an SAC	1.50km Northeast	Ecological
000064	Poulnagordon Cave (Quin) pNHA	Also designated as an SAC	2.41km East	Ecological
002048	Fergus Estuary and Inner Shannon, North Shore pNHA	Wetland habitats	2.90km South	Ornithological and hydrological
001008	Dromoland Lough pNHA	Fen habitats	3.23km South	None
000015	Ballycar Lough pNHA	Wetland habitats	4.42km Southeast	None

Habitats

2.62. A Fossitt habitat survey was undertaken in August 2021 and March 2022 which identified six habitat types within the survey boundary; each of these are outlined in **Table 2-7** below along with other relevant target notes.

2.63. In addition, the habitat map is shown within **Figure 2, Appendix A**.

Table 2-7: Habitat types on site

Habitat Type	Species Present	Other Observations/ Potential for Species
Improved Agricultural Grassland (GA1)	Perennial rye grass (*Loliuam perenne),* creeping buttercup (*Ranunculus repens)*, common nettle *(Urtica dioica),* cock's-foot (*Dactylis glomerata*), vetch (*Vicia* sp.), thistle (Cirsium sp), broad-leaved dock (*Rumex obtusifolius*)	Well managed and maintained grassland with low species diversity dominated by perennial rye grass. Some potential for foraging badger and Irish hare. Considered to be of low ecological value.
Treelines (WL2)	Ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), European larch (Larix decidua), wych elm (*Ulmus glabra*),	Not well maintained, with some sections showing higher species diversity. Many mature and over-

	willow (Salix Spp), blackthorn (*Prunus spinosa*), ivy (*Hedera helix*), and bramble (*Rubus fruticosus* agg)	mature, partly failed trees present. Providing bat roosting and bird nesting opportunities as well as foraging opportunities for many species. Treelines here do provide good connectivity to wider environs, which is of particular importance for bats.
Hedgerow (WL1)	Ash, sycamore, hazel, hawthorn, blackthorn, ivy, and bramble,	Not well managed and regularly maintained. These areas provide bird nesting and foraging opportunities as well as providing shelter to mammals. Considered to be of moderate ecological value.
Oak-Ash- Hazel Woodland (WN2)	Hazel (*Corylus avellana*), Ash (*Fraxinus excelsior*), and Hawthorn	Semi- natural woodland, understory mostly bramble. Providing potential bird nesting locations
Active Quarries (ED4)	Bramble, Common Hogweed (*Heracleum sphondylium*)	Considered to be of low ecological value.
Spoil and Bare Ground (ED2)	Gravel driveway	Considered to be of low ecological value.

Protected and Notable Species

Desk Based

2.64. The potential presence of protected species within the study area was assessed through a data search conducted via the NBDC. This identified records of invasive, rare, scarce and protected species within 2km of the Proposed Development location. The Application Site is located within the 2km grid squares R37X, and R37W.

2.65. A database search was also carried out for adjacent grid squares to ensure a full assessment of the 2km radius from the central coordinate Irish Grid Reference (ITM) X 539777 and Y 674345. These include 2km grid squares R47B, R47A, R37V, R37Q, R37R, R37S, R37T, R37Y, R47D and R47C.

2.66. Additional information on the suitability of habitat in the surrounding area for bats was also obtained from the NBDC in the form of a habitat suitability map. The map provided enhanced information on the recorded distribution of bats, and broad-scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species.

2.67. In addition, the Fossitt habitat surveys included a species scoping survey in order to assess the potential of the site to support protected species.

2.68. Table 2-8 below summarises the protected/notable species recorded within the search area, and their potential to be present within the proposed Application Site boundary.

Table 2-8: Summary of Biological Records

Species	Grids With Recordings Of Species	Suitable Habitat Or Field Signs Observed Within Survey Area	Potential For Species Within Application Site
Mammals			
Badger (*Meles meles)*	R37X, R37W, R47B, R37V, R37Q, R37R, R37S, R37Y, R47D, R47C	Suitable habitat present	Yes
Brown Long-eared Bat (*Plecotus auritus*)	R47B, R37V, R37R	Suitable habitat present	Yes
Brown rat (*Rattus norvegicus*)*	R37R	Suitable habitat present	Yes
Daubenton's Bat (*Myotis daubentonii*)	R47B, R37V, R37T	Suitable habitat present	Yes
Hedgehog (*Erinaceus europaeus*)	R47B, R47A, R37V, R37Q, R37R, R37S, R37T	Suitable habitat present	Yes
Leislers' bat (*Nyctalus leisleri*)	R47B, R47A	Suitable habitat present	Yes
Lesser Horseshoe Bat	R37V, R37R, R37T, R37Y, R47C	Suitable habitat present	Yes

(*Rhinolophus hipposideros*)			
Lesser Noctule (Nyctalus leisleri)	R47B, R37V, R37T , R47C	Suitable habitat present	Yes
Natterer's Bat (*Myotis nattereri*)	R47B	Suitable habitat present	Yes
Pipistrelle (*Pipistrellus pipistrellus sensu lato*)	R47B, R37V, R37R, R37T, R47C	Suitable habitat present	Yes
Pine Marten (*Martes martes*)	R47B, R47B, R37S, R47D, R47C	Suitable habitat present	Yes
Eurasian Red Squirrel (*Sciurus vulgaris*)	R37W, R47A, R37V, R37Y, R47D, R47C	Suitable habitat present	Yes
Soprano Pipistrelle (*Pipistrellus pygmaeus)*	R47B, R37V, R37T	Suitable habitat present	Yes
Sika Deer (*Cervus nippon*)	R37T	Suitable habitat present	Yes
BIRDS			
Barn Owl (*Tyto alba*)	R47B, R37S, R37T	Suitable habitat present	Yes
Barn Swallow (*Hirundo rustica*)	R47B, R47A, R37V, R37Q, R37T, R47D, R47C	Suitable habitat present	Yes
Black-headed Gull (*Larus ridibundus*)	R47B, R47A, R37V, R47D	Suitable habitat present	Yes
Common Coot (*Fulica atra*)	R47A, R37V	No Suitable habitat present	No
Common Linnet (*Carduelis cannabina)*	R47B, R47A, R37Q , R47D, R47C	Suitable habitat present	Yes

Common Pheasant (*Phasianus colchicus*)	R47B, R47A, R37V, R37Q, R47C	Suitable habitat present	Yes
Common Shelduck (*Tadorna tadorna)*	R37V	No suitable habitat present	No
Common Snipe (*Gallinago gallinago*)	R47A, R37V, R37T	Suitable habitat present	Yes
Common Starling (*Sturnus vulgaris*)	R47B, R47A, R37V, R47D	Suitable habitat present	Yes
Common Swift (*Apus apus*)	R37V, R37Y	Suitable habitat present	Yes
Common Wood Pigeon *(Columba palumbus*)	R47B, R47A, R37V, R37Q, R47D	Suitable habitat present	Yes
Eurasian Curlew (*Numenius arquata*)	R37Q	Suitable habitat present	Yes
Eurasian Woodcock (*Scolopax rusticola*)	R37Y	Suitable habitat present	Yes
Eurasian Teal (*Anas crecca*)	R47A	No suitable habitat present	No
Great Cormorant (*Phalacrocorax carbo*)	R37Q	No Suitable habitat present	No
House Martin (*Delichon urbicum*)	R47B, R37V, R47C	Suitable habitat present	Yes

House Sparrow (*Passer domesticus*)	R47B, R47A, R37V, R47D, R47C	Suitable habitat present	Yes
Little Egret (*Egretta garzetta*)	R47A	No Suitable habitat present	No
Little Grebe (*Tachybaptus ruficollis*)	R47A	No suitable habitat present	No
Mallard (*Anas platyrhynchos*)	R37V, R37Q	No Suitable habitat present	No
Merlin (*Falco* columbarius)	R47A, R37Y	Suitable habitat present	Yes
Mute Swan (*Cygnus olor*)	R47A, R37V	Suitable habitat present	Yes
Northern Lapwing (*Vanellus vanellus*)	R47C	Suitable habitat present	Yes
Peregrine falcon (*Falco peregrinus*)	R47C	Suitable habitat present	Yes
Sand Martin (*Riparia riparia*)	R37T, R47C	Suitable habitat present	Yes
Sky Lark (*Alauda arvensis*)	R37Q	Suitable habitat present	Yes
Spotted flycatcher (*Muscicapa striata*)	R47D	Suitable habitat present	Yes
Whooper swan (*Cygnus cygnus*)	R37Q, R47C	Suitable habitat present	Yes
Common Wood Pigeon (*Columba palumbus*)	R47B, R37Q	Suitable habitat present	Yes

FLORA			
Canadian Waterweed (*Elodea canadensis*)	R37W, R37V	Suitable habitat present	Yes
Great Plantain (*Plantago major*)	R37W	Suitable habitat present	Yes
Japanese Knotweed (*Fallopia japonica*)	R37W	Suitable habitat present	Yes
Traveller's-joy (*Clematis vitalba*)	R47A	Suitable habitat present	Yes
INSECTS			
Marsh Fritillary (*Euphydryas aurinia*)	R37S, R37T	No suitable habitat identified	No
OTHER SPECIES			
Common Frog (*Rana temporaria*)	R37W, R37R, R37Y, R47C	Suitable habitat present	Yes
Smooth newt (*Lissotriton vulgaris*)	R37V	Suitable habitat present	Yes

* indicates an invasive species

2.69. Table 2-9 below details the results of the NBDC Bat Suitability Index search undertaken for the Proposed Development. The index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats.

Table 2-9: Bat Suitability Index

Species	Index Score
Brown long-eared bat (*Plecotus auritus*)	50
Common pipistrelle (*Pipistrellus pipistrellus*)	48

Daubenton's bat (*Myotis daubentonii*)	39
Leisler's bat (*Nyctalus leisleri*)	47
Lesser horseshoe bat (*Rhinolophus hipposideros*)	29
Nathusius's pipistrelle (*Pipistrellus nathusii*)	16
Natterer's bat (*Myotis nattereri*)	49
Soprano pipistrelle (*Pipistrellus pygmaeus*)	46
Whiskered bat (*Myotis mystacinus*)	45

Field Survey

Badger

2.70. Records of badger were recorded in the 2km desk study.

2.71. Habitats within the Application Site, such as woodland, would provide suitable foraging habitat for badger. There were however no field signs or evidence of badgers within the Application Site during the Fossitt habitat survey.

Bats

2.72. The bat suitability index is presented in **Table 2-9**. Records of daubenton's bat, lesser horseshoe bat, lesser noctule pipistrelle, soprano pipistrelle and natterer's bat were identified within the data search.

2.73. Woodland, treelines and hedgerows offer commuting pathways and foraging opportunities for bat species.

Otter

2.74. Records of otter were returned from the 2km desk study.

2.75. No sightings or field signs of otter (*Lutra lutra*) were observed within the survey area. Habitats within the Application Site are only suitable for commuting otter.

Pine marten

2.76. Records of pine marten were identified as part of the desk study.

2.77. Pine martens are found in old growth native woodland and areas of plantation woodland which is absent from the Application Site. Therefore, it is unlikely that the site is important for this species.

Hedgehog

2.78. Records of hedgehog were identified during the desk study. Habitats present within the Application Site, including treelines, hedgerows and woodland, provide suitable foraging opportunities for hedgehog.

Other Mammals

2.79. Records of red squirrel were identified during the desk study. No records of other protected mammals were identified.

2.80. Records of brown rat and Sika Deer which are all considered to be invasive species are present within the site. All two species are widespread across Ireland.

Birds

2.81. Given the close proximity of the Application Site to the River Shannon & River Fergus Estuaries SPA/pNHA, wintering bird surveys were undertaken to provide a current baseline for bird activity of the qualifying species associated with the SPA. The Line Transect surveys identified common passerine and corvid species utilising the improved grassland, treeline, and woodland habitats associated with the study area.

2.82. The full results of the Wintering Bird Survey are outlined within **Appendix B of Volume 1: Natura Impact Statement**.

2.83. Observations of bird species during the walk over survey were also recorded to provide further information for the assessment of potential bird activity within the Application Site. **Table 2-12** below lists the bird species observed during the site visit. Species listed as amber are those of medium conservation concern due to declining populations.

2.84. The only amber listed species on the Birds of Conservation Concern Ireland 2020-2026[22] list identified during site surveys was, robin, and swallow.

Table 2-10: Bird Species Observed During the Fossitt Habitat Survey

Scientific Name	Common Name	BoCCI Listed Species
Erithacus rubecula	Robin	Amber
Corvus frugilegus	Rook	Green

[22] https://www.rspb.org.uk/globalassets/downloads/bocci4-leaflet.pdf

Hirundo rustica	Swallow	Amber
Columba palumbus	Wood pigeon	Green
Troglodytes troglodytes	Wren	Green

Herptiles

2.85. Records of common frog (*Rana temporaria*) and smooth newt (*Lissotriton vulgaris*) were recorded in the 2km desk study.

2.86. No reptile or amphibians were identified during the site surveys. Whilst records of smooth newt and common frog were retained from the data search. The Application Site does not provide suitable habitat to support both species.

Invertebrates

2.87. The data search identified records of marsh fritillary (*Euphydryas aurinia*), and suitable habitat was observed during the site visit, as this species prefers wet marshy grassland. Marsh fritillary, rely on the presence of Devil's Bit Scabious (*Succisa pratensis)* as a food source, this species was not noted during the site surveys. In addition, no records of Devil's Bit Scabious were identified within the data search. Therefore, it is unlikely that the site is suitable for this species.

2.88. No notable invertebrate species were identified on site.

Flora

2.89. Records of an invasive plant species were identified in the 2km data search, Canadian Waterweed (*Elodea canadensis*), Great Plantain (*Plantago major*), Japanese Knotweed (*Fallopia japonica*) and Traveller's-joy (*Clematis vitalba*). These species were not observed during the site surveys.

IMPACT ASSESSMENT

Best Practice Pollution Prevention Measures

2.90. Standard best practice pollution prevention measures will be adhered to, which will reduce the potential for impacts on ecology during the construction stage. As these are standard requirements, they are separate to mitigation measures which are outlined later in this report.

2.91. Relevant measures include but are not limited to:

Pollution Prevention

- Hydrocarbons, greases and hydraulic fluids will be stored in a secure compound area;
- All plant machinery will be properly serviced and maintained thereby reducing risk of spillage or leakage;
- All waste produced from construction will be collected in skips with the construction site kept tidy at all times;
- Excavated soil will be stored on site or removed by a licensed waste disposal unit;
- All materials and substances used for construction will be stored in a secure compound and all chemicals to be stored in secure containers to avoid potential contamination; and
- Location of spill kit to be known by all construction workers and implemented in the event of spillage or leakage.

Waste Management

- Skips are to be used for site waste/debris at all times and collected regularly or when full;
- All hydrocarbons and fluids are to be collected in leak-proof containers and removed from site for disposal or recycling; and
- All waste from construction is to be stored within the site confines and removed to a permitted waste facility.

Environmental Monitoring

- Contractor to nominate member of staff as the environmental officer with the responsibility to ensure best practice measures are implemented and adhered to, with any incidents or non-compliance issues being reported to the project team.

2.92. Upon the end of the operational phase of the Proposed Development, the subject land shall be reinstated to its former agricultural use. It is recommended that the pre-construction measures should also be applied at this stage of the development.

Assessment of impacts on Designated Sites

2.93. This section discusses and evaluates the likely impacts of the Proposed Development affecting Designated Sites which are within the 15km Zone of Influence ("ZOI") of the Proposed Development. This is to assess whether there is some ecological, ornithological or hydrological connection between the Proposed Development and a Designated Site.

2.94. As shown in Table 2-6, the Application Site is not located within or directly adjacent to any Natura 2000 site. The River Shannon & River Fergus Estuaries SPA has hydrological and ornithological connectivity with the Application Site and the Lower River Shannon SAC has ecological and hydrological with the Application Site. In addition, both the Old Domestic Building (Keevagh) SAC and Poulnagordon Cave (Quin) SAC have ecological connectivity with the Application Site.

2.95. For further detail on Natura site connectivity with the Application Site, see Volume 1 – Natura Impact Statement.

2.96. Surface water from the Application Site connects to a drainage ditch (approximately, 200m) outside of the ESA. The drainage ditch flows along the northwest boundary of the Coolshamrock solar farm and joins the Carrowmeer stream before converging with the Manusmore stream. The Manusmore stream joins the Rine river and discharges into the River Shannon & River Fergus Estuaries SPA, the Fergus Estuary & Inner Shannon, North Shore pNHA, and the Lower River Shannon SAC. The River Shannon & River Fergus Estuaries SPA and the Fergus Estuary & Inner Shannon, North Shore pNHA is approximately 5.01km downstream of the Application site. The Lower River Shannon SAC is approximately 3.92km downstream of the Application Site.

2.97. The Proposed Development has ecological connectivity for lesser horseshoe bat associated with both the Old Domestic Building (Keevagh) SAC and Poulnagordon Cave (Quin) SAC . Given the proximity of both SACs to the Site Boundary, it is considered that lesser horseshoe bat could potentially utilise the habitats within the Application Site for foraging.

2.98. Therefore, the River Shannon and River Fergus Estuaries SPA, Lower River Shannon SAC and the Fergus Estuary, Inner Shannon Estuary pNHA, Old Domestic Building (Keevagh) SAC and Poulnagordon Cave (Quin) have been considered further in this assessment. The remaining

designated sites within the ZOI do not have connectivity with the Application Site and therefore have not been considered further

In the Absence of Mitigation

The River Shannon & River Fergus Estuaries SPA

2.99. The River Shannon & River Fergus Estuaries SPA is located approximately 2.95km South of the Application Site and has been designated for a number of important bird species of the E.U. Habitats Directive, which are detailed within **Table 2-6** above. Hydrological connectivity exists between this SPA and the Application Site.

2.100. The River Shannon & River Fergus Estuaries SPA forms the largest estuarine complex in Ireland and supports wetland and waterbirds associated with saltmarshes and intertidal sand/mudflats.

2.101. Given the proposed development site's proximity to the estuary, it cannot be discounted that it may be utilised on an intermittent or occasional basis by over-wintering avifauna as a transit route, commuting corridor or feeding ground.

2.102. A wintering bird survey (WBS) was conducted covering lands of both the proposed substation and Coolshamrock solar farm[23] . The WBS were completed over three days towards the end of the winter season: 14th January 2022, 4th and 28th of February 2022. The WBS consisted of ornithologists walking along linear features/transects in order to visually assess what species of bird were present at the time of the survey. Findings from the transect surveys indicate that no qualifying bird species of the River Shannon and River Fergus Estuaries SPA were using the fields for foraging, feeding or roosting during the surveys.

2.103. Given that no wintering bird species of the SPA were recorded using the site, it is considered that potential effects are largely limited to short-term disturbance on bird populations that are of conservation importance at a local level.

2.104. **No significant direct loss of habitat** is anticipated for these species through the construction and decommissioning of the Proposed Development.

2.105. Given that the Application Site is hydrologically connected with the SPA, there is potential for habitats within the SPA associated with supporting the ornithological qualifying species to be degraded if contamination of the aquatic environment were to occur.

2.106. An **Outline Construction Environmental Management Plan (OCEMP)** has been produced in support of this application (please see **Technical Appendix 8**), and this report outlines design and best practice measures for protecting the local environment, including terrestrial and aquatic habitats. Given the design and type of the Proposed Development, it is considered

[23] Clare County Council- planning Ref 22586, Appendix B - Wintering Bird Survey of Coolshamrock Solar Farm and Grid Route Application

that potential effects on the qualifying features will not be significant. Therefore, the Proposed Development will not result in any significant effects upon this SPA.

The Lower River Shannon SAC

2.107. As outlined in **Table 2-6**, the Lower River Shannon SAC has hydrological and ecological connectivity with the Application Site and has been designated for a number of ecological qualifying features.

2.108. As previously discussed, the Application Site is hydrologically connected with the SAC through a drainage ditch located outside of the Application Site along the northwest boundary of the Coolshamrock solar farm.

2.109. Suitable habitat for bottlenose dolphin or freshwater pearl mussel is not present within the Application Site. The distribution of suitable habitat for these two species is illustrated in the conservation objectives document[24]. According to the conservation objectives document for the Lower River Shannon SAC, freshwater pearl mussel populations reside in a different catchment along the northern section of the Shannon estuary. Therefore, there is no potential for significant effects as a result of the Proposed Development.

2.110. The Application Site does not provide suitable habitat to support otters, brook lamprey, sea lamprey, salmon and river lamprey.

2.111. During the construction phase there is potential for contaminants from the Application Site to enter the aquatic system. Sea lamprey, brook lamprey, river lamprey, salmon and common bottlenose dolphin could be impacted if contaminants enter the aquatic system. Qualifying habitats downstream of the Application Site could also be impacted by contamination.

2.112. An **Outline Construction Environmental Management Plan (OCEMP)** has been produced in support of this application (please see **Technical Appendix 8**), and this report outlines design and best practice measures for protecting the local environment, including terrestrial and aquatic habitats. Given the design and type of the Proposed Development, it is considered that potential effects on the above-named qualifying features, will not be significant.

2.113. Otter (*Lutra lutra*) are a highly mobile species and can hold territories from 2km to 40km. No holts and/or resting places, or any other field signs of otter were identified during the habitat survey. Otter can travel on land while foraging for food, it is considered likely that otter may commute within close proximity to the proposed Development while moving between suitable foraging habitats. Disturbance from the construction phase of the proposed Development is therefore considered likely to have an impact upon this species. However, since the majority of the Application Site is composed of Improved Agricultural Grassland (GA1) there is no opportunities of otter holt building.

2.114. Loss of habitat directly under the Proposed Development footprint will be relatively low, and will mainly comprise agricultural grassland, which is of low value for otter. Pollution from contaminated surface or ground waters can potentially enter the aquatic system and affect otter indirectly. Best practice pollution prevention measures and integral design measures

[24] Conservation objectives for the Lower River Shannon SAC - https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002165.pdf

have been adopted to minimise any effects from pollution, however, in the absence of mitigation there is a possibility that otter could be disturbed as a result of construction related to the Proposed Development. It is therefore considered that impacts are only limited to commuting otter.

2.115. It is considered that in the absence of mitigation there is a chance that otter could still be disturbed and that whilst the distance, dilution, type of works and design principles will limit the potential for water contamination, additional mitigation measures to further reduce effects on otter have been outlined in the NIS.

Fergus Estuary and Inner Shannon, North Shore pNHA

2.116. Fergus Estuary and Inner Shannon, North Shore pNHA is located 2.90km South of the Application Site and forms part of the River Shannon & River Fergus Estuaries SPA and Lower River Shannon SAC. Fergus Estuary and Inner Shannon, North Shore pNHA has been identified as having hydrological and ornithological connectivity with the Application Site.

2.117. As outlined above, no wintering bird species of the SPA were recorded using the site. No significant direct loss of habitat is anticipated for these species through the construction of the Proposed Development.

2.118. During the construction phase there is potential for contaminants from the Application Site to enter the aquatic system. Qualifying habitats downstream of the Application Site could also be impacted by contamination.

2.119. An **Outline Construction Environmental Management Plan (OCEMP)** has been produced in support of this application (please see **Technical Appendix 8**). This report outlines best practice measures for protecting the local environment, including terrestrial and aquatic habitats. Given the design of the Proposed Development, it is considered that potential impacts for the qualifying features will not be significant. Therefore, the Proposed Development will not affect the integrity of this pNHA.

Old Domestic Building (Keevagh) SAC

2.120. As outlined in **Table 2-6,** the Old Domestic Building (Keevagh) SAC has ecological connectivity with the Application Site and has been designated for Lesser horseshoe bat.

2.121. Due to the close proximity of the Application Site to the SAC. It's considered, that during the spring and summer months lesser horseshoe bat may commute from the SAC to forage. The Oak-Ash woodland (WN2) (see **Figure 2, Appendix A**) within the western section of the Application Site is illustrated in the SAC conservation objectives document[25] as a potential foraging area for lesser horseshoe bat. The Proposed Development will not involve the removal of this woodland and will have negligible effects on lesser horseshoe bat foraging

[25] NPWS (2018) Conservation Objectives: Old Domestic Building (Keevagh) SAC 002010. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

within this area. Lesser horseshoe bat may forage on flying insects such as noctuid moths, crane flies, caddis flies, midges and lacewings found in grassland within the Application Site boundary. Thus, lesser horseshoe bat may be subject to short term habitat displacement during construction of the proposed substation and associated infrastructure. However, the surroundings of the Application Site mainly comprise of grassland, thus providing similar habitat for these species to be displaced to. It can be concluded that **potential for significant adverse effects are considered unlikely** on these species as a result of the proposed development.

Poulnagordon Cave (Quin) SAC

2.122. As outlined in **Table 2-6**, the Paulnagordon Cave (Qui) SAC has ecological connectivity with the Application Site and has been designated for Lesser horseshoe bat.

2.123. The Application Site is not illustrated as a potential foraging area for lesser horseshoe bat within the SAC conservation objectives document[26]. However, due to the close proximity of the Application Site to the SAC. It's considered, that during the spring and summer months lesser horseshoe bat may commute from the SAC to forage on flying insects such as noctuid moths, crane flies, caddis flies, midges and lacewings found in grassland within the Application Site. As previously discussed, foraging lesser horseshoe bat may be subject to short term habitat displacement during construction of the proposed substation and associated infrastructure. However, the surroundings of the Application Site mainly comprise of grassland, providing similar habitat for these species to be displaced to. It can be concluded **that potential for significant adverse effects are considered unlikely** on these species as a result of the proposed development.

Recommended Mitigation Measures

2.124. Standard best practice pollution prevention measures will be adhered to reduce any potential effects on ecology during the construction phase.

2.125. An **Outline Construction Environmental Management Plan (OCEMP)** has been produced in support of this application (please see **Technical Appendix 8**), and this report outlines design and best practice measures for protecting the local environment, including terrestrial and aquatic habitats.

2.126. An integral part of the Proposed Development design involves methods for controlling the movement of surface water within the Application Site. Movement of surface water will be managed by a Sustainable Drainage System (SuDS) following best practice guidelines on the use of SuDS[27].

[26] NPWS (2018) Conservation Objectives: Poulnagordon Cave (Quin) SAC 000064. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

[27] Ciria (2007) The SuDS Manual. Available at: https://www.ciria.org/

2.127. The proposed drainage strategy (see **Technical Appendix 4: Flood Risk and Drainage Impact Assessment** for further details) to construct a soakway pit and rainwater harvesting tanks within the Application Site. The locations of the schemes have been chosen on the downward slope or near to existing watercourses or drainage features.

2.128. The proposed soakaways will provide a total storage greater than the volume of additional runoff generated as a result of the impermeable buildings. It is therefore considered that this adequately mitigates the increase in flow rates as a result of the minor increase in impermeable area and provides improvement.

2.129. These measures will **significantly reduce the potential** for contaminated surface waters entering the aquatic environment.

2.130. Given the design and type of Proposed Development, it is considered that potential effects on the qualifying features will not be significant. Therefore, the Proposed Development will not significantly affect the integrity of The River Shannon & River Fergus Estuaries SPA ,Lower River Shannon SAC, Old Domestic Building (Keevagh) SAC and Poulnagordon Cave (Quin) SAC.

2.131. Mitigation measures for protecting the SPA and SACs are outlined in the **Volume 1: Natura Impact Statement.**

2.132. Although otter (a qualifying feature of the Lower River Shannon SAC) is unlikely to be impacted significantly by the Proposed Development, a pre-commencement survey is recommended as a precautionary measure prior to the commencement of works.

Residual Effects

2.133. Possible residual effects of the Proposed Development include the indirect loss of habitat due to water borne pollutants entering the watercourses and field drains on, and adjacent to the site. With measures included in the Proposed Development design and the use of best practice pollution prevention measures during the construction phase, it is unlikely that any indirect loss of habitat will occur due to water based pollutants. Furthermore, with the implementation of mitigation measures this will reduce any potential impacts further.

2.134. By ensuring potential pollution from construction is managed, there will be will **a negligible effect** upon Annex I habitats and Annex II species of the River Shannon & River Fergus Estuaries SPA, the Lower River Shannon SAC, Old Domestic Building (Keevagh) SAC and Poulnagordon Cave (Quin) SAC.

Habitats

In the Absence of Mitigation

2.135. The proposed substation and associated infrastructure will occur over land which has been identified as improved agricultural grassland and soil/bare ground. This habitat is of low ecological value and currently offers limited potential to support wildlife.

2.136. Habitat loss will only occur under the Proposed Development footprint in regard to structures such as the access track, areas to be levelled and hardstanding areas for 2no control buildings, a transformer compound and high voltage (HV) switchgear compound.

2.137. Habitat loss will only occur over improved agricultural grassland. Improved agricultural grassland is considered as having low ecological value and considering that the surrounding area outside of the Application Site is mainly comprised of improved agricultural grassland, the loss of this habitat under the Proposed Development footprint **will not be significant**.

Residual Impacts

2.138. With implementation of measures included in the Proposed Development design, best practice measures implemented during the Proposed Development and the habitat management outlined that there will be **no significant negative residual impacts**. Protected and Notable Species

In the Absence of Mitigation

2.139. Each section below details the potential impacts in the absence of mitigation for protected and notable species during the construction phase and the operational phase of the Proposed Development.

Bats

2.140. **Appendix C** of this report details the general/preferred foraging and commuting habitat of each bat species. Many species of bats in Ireland generally commute and forage along linear features, such as streams/river, hedgerow or woodland edges (this is true for *Pipistrelle* and *Myotis* species). However, on occasion they will cross open features, particularly species with strong echolocation such as Leisler's bat (*Nyctalus leisleri*).

2.141. The majority of the Application Site is comprised of improved agricultural grassland. Grassland offers sub-optimal foraging habitat for bat species due to the limited number of prey species present. The loss of these habitats under the Proposed Development footprint **will not lead to a significant reduction** in foraging habitat for local bats.

2.142. Hedgerows and treelines provide suitable habitat for foraging and commuting bats. A 5m buffer around trees (dependent on tree height), 20m buffer around the drainage ditch outside of the ESA has been included as part of the design of the Proposed Development.

Badger

2.143. No badger setts were identified on site during the site survey.

2.144. However, given that badgers are a highly mobile species and new setts may be built prior to construction, there is the potential for the disturbance of badger during the construction phase of the proposed development. During the construction phase, the Proposed Development can cause undue stress in a number of ways. Installation of security fencing or hoarding can disrupt badger paths and cut off foraging areas within a clan's territory. Excavations can destroy badger setts, and any excavations lefts overnight can trap badgers.

2.145. **Effects for badger are considered likely** as a result of the Proposed Development, therefore mitigation measures are proposed.

Otter

2.146. Like badger, otter are also a highly mobile mammal with large territories between 2km and 40km, using watercourses and ditches to commute to suitable foraging areas.

2.147. Pollution from contaminated surface or ground waters can potentially enter the aquatic system and affect otter indirectly. Best practice pollution prevention measures and integral design measures have been adopted to minimise any effects from pollution.

2.148. **Significant effects for otter are considered unlikely** as a result of the Proposed Development however mitigation measures are proposed, in the event that otters may be identified prior to construction commencing.

Birds

2.149. Main impacts on bird species from developments include:

- Direct loss or deterioration of habitats; and/or
- Indirect habitat loss as a result of displacement by disturbance.

2.150. Wintering bird surveys undertaken between January and February 2022 within lands of both the Coolshamrock solar farm and proposed substation indicate that the Application Site predominantly supports common and widespread bird species that are typical of the farmland habitats present. The site does not support assemblages of wintering wildfowl or qualifying species for River Shannon and River Fergus Estuaries SPA.

2.151. One Snipe was recorded flying out of the wet grassland area due to ornithologists following a survey transect. Snipe are Red listed due to their declining breeding population in Ireland. However, the proposed substation does not involve the removal of wet grassland. It's therefore considered that the Proposed Development is unlikely have negative effect on local Snipe populations.

2.152. The Proposed Development will occur on land that is currently of low ecological value and is subject to a level of disturbance from current agricultural activities.

2.153. It is considered that given the short construction phase, the abundance of similar habitat within the local area, **no significant impacts** will occur for these species.

Flora

2.154. No protected flora species were identified on site. Therefore, it is considered that the proposed development **will not lead to any significant loss** of protected flora.

Mitigation Measures and Further Survey

Bats

2.155. In the event that a mature tree may require trimming or felling, the tree should be surveyed for potential bat roosts before any work commences.

2.156. Although not anticipated, if any mature trees ultimately require removal, it will need to be surveyed for Potential Roost Features (PRF) prior to removal, in line with Bat Conservation Trust guidelines[28]. Further surveys will be required should this PRF check determine the tree to be of medium or high bat roosting potential. Soft felling techniques will be used if low potential exists to ensure that no cavities are cut through, and branches or trunk pieces with cavities are lowered carefully to the ground and left with the access hole upward facing over night to allow any bats to leave.

2.157. With the implementation of these measures, **no significant effects** are predicted for bat from the Proposed Development.

Badger

2.158. Badgers are known to be present in the local area. As badgers are a highly mobile species, it is recommended that a pre-construction badger survey is undertaken to assess the potential impacts on badger at the time of construction (in the event that any new badger setts are present).

[28] Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd edition. Bat Conservation Trust, London.

2.159. All excavations are to be securely covered or closed off at the end of each working day to prevent the accidental trapping of badgers. Where this is not possible, a means of escape (for example a ramp) and daily checks must be included to allow safe exit from the excavation. Any security fencing is to have mammal gates or a gap of at least 10cm at the bottom, to allow free movement of badgers through the site.

2.160. With the implementation of these measures, **no significant effects** are predicted for badger from the Proposed Development.

Otter

2.161. Like badger, otter are also a highly mobile mammal with large territories between 2km and 40km, using land, watercourses and ditches to commute to suitable foraging areas. However, the Application Site does not provide suitable habitats to support otter holt building.

2.162. Standard best practise measures in regard to pollution prevention (as identified in **Outline Construction Environmental Management Plan OCEMP**, **Technical Appendix 8**) will be implemented to prevent contamination of the aquatic environment during the construction phase of the Proposed Development.

2.163. All excavations during the construction phase of the Proposed Development will be securely covered. Where this is not possible, a means of escape (for example a ramp) and daily checks must be included to allow safe exit from the excavation. This will therefore prevent the accidental trapping of this species.

2.164. With the implementation of these measures, **no significant effects** are predicted for otter from the Proposed Development.

Birds

2.165. During the construction phase, (including site preparation), it is considered that potential impacts for bird species from disturbance is likely.

2.166. Breeding birds are highly susceptible to disturbance, and therefore where works are to commence during the breeding season (**March to August** inclusive) bird surveys should be undertaken prior to the initiation of construction works. If breeding birds are identified within the site at this time, species-specific buffers will be implemented to protect nesting birds during construction.

Invertebrates

2.167. The Proposed Development has potential for hosting several species of insects. Insects shave the potential to utilise habitat available within the Application Site such as woodland, treelines and grassland. However, there will only be comparably small area of improved agricultural grassland habitat to be removed. Given this, and the abundance of similar available habitat

close to the Application Site, the removal of such habitat is **not likely to have a significant impact on these species**.

Flora

2.168. No invasive or protected species were identified during the Fossitt habitat survey.

2.169. Given the habitats present within the Application Site it is considered that there will be no likely significant impacts on rare or notable species as a result of the Proposed Development in the absence of mitigation.

Residual Impacts

2.170. With the implementation of mitigation measures and further survey work prior to and during the construction phase of the Proposed Development, it is considered that there will be **no significant effects** upon protected or notable species.

CUMULATIVE EFFECTS

2.171. As well as singular effects, cumulative effects also need to be considered. Article 6 of the EU Habitats Directive and Regulation 15 of the European Communities (Natural Habitats) Regulations state that any plan or project that may, either alone or in combination with other plans or projects, significantly affect a Natura 2000 site, should be the subject of an Appropriate Assessment (AA).

2.172. Cumulative impacts can be an issue when proposals have a small impact on Natura 2000 sites. If other proposals have a small impact, the combined result can have a significant impact on the Natura 2000 site.

2.173. The European Commission Habitats Directive and the Habitats Regulations 2011 require that the impacts on European sites be assessed from the plan or project in question and also in the presence of other plans and projects that could affect the same Natura 2000 sites.

2.174. This Stage 2 AA screening has identified other plans and projects that could act in combination with the Proposed Development and its associated future elements, to identify if they pose likely significant effects on European sites.

2.175. It concludes that if these other Plans and Projects have undergone an AA themselves and have either been adopted or consented following an AA then it cannot pose likely significant adverse effects on European sites.

PLANS

2.176. A review of the following plans was undertaken;

National Planning Framework 2040

2.177. The National Planning Framework (NPF) 2040 is a high-level, national vision and provides the strategic framework and principles to manage future population and economic growth in Ireland over the next 20 years. It informs the parameters for the preparation of Regional Spatial and Economic Strategies (RSESs) by each of the three Regional Assemblies, established under the Local Government Reform Act 2014.

2.178. In order to comply with the requirements of Article 6(3) of the EU Habitats Directive an AA screening was undertaken at an early stage in the drafting of the NPF.

2.179. Adopting the precautionary principle, it was concluded that a NIS should be prepared. An NIS was prepared by RPS on behalf of the Minister for Housing, Planning and Local Government. The NIS considered the potential for the NPF to adversely affect the integrity of any Natura 2000 site(s); with regard to their qualifying interests, associated conservation status, the structure/function of the site(s) and the overall site(s) integrity. This was done in a two-stage

process, initially assessing the draft NPF and subsequently assessing the changes made post consultation for the NPF.

2.180. The Minster of Housing, Planning and Local Government, having considered the AA and its conclusions determined that;

"the adoption and publication of the NPF as a replacement of the National Spatial Strategy for the purposes of section 2 of the Planning Development Act 2000 will not individually or in combination with any other plan or project adversely affect the integrity of any European Site (as defined)."

2.181. Thus, the in-combination impacts from the NPF, with the Proposed Development are **not predicted to result in any Likely Significant Effects** to any European site(s).

Regional Spatial and Economic Strategy for the Southern Region

2.182. In order to comply with the requirements of Article 6 (3) of the EU Habitats Directive and Part XAB of the Planning and Development Act 2000 (as amended), the process of Screening for AA was undertaken at an early stage in the drafting of the Regional Spatial and Economic Strategy (RSES).

2.183. The AA Screening undertaken by ecologists at RPS on behalf of the Eastern and Midland Regional Assembly, assessed whether the RSES was likely to have significant effects on any European Sites within the Natura 2000 network, either alone or in combination with other plans and projects.

2.184. The screening concluded that an AA of the RSES was required, as the Plan is not directly connected with or necessary to the management of the sites as European sites and as it cannot be excluded, on the basis of objective information, that the Plan, individually or in combination with other plans or projects, would have a significant effect on a European site.

2.185. Therefore, adopting the precautionary principle, it was concluded that a Natura Impact Report (NIR) should be prepared. An NIR was prepared by RPS on behalf of the Southern Regional Assembly. The NIR considered the potential for the RSES to adversely affect the integrity of any Natura 2000 site(s); with regard to their qualifying interests, associated conservation status, the structure/function of the site(s) and the overall site(s) integrity.

2.186. The Assembly determined that pursuant to Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act 2000-2018, that the adoption and publication of the RSES as a replacement for the "Regional Planning Guidelines" for the purposes of Section 24 (4) of the Planning and Development Act 2000 (as amended) would not either individually or in combination with any other plan or project adversely affect the integrity of any European Site.

Clare County Development Plan 2023-2029

2.187. In accordance with European and National legislation, the Council carried out an AA under the Habitats Directive, which informed the preparation of the Clare County Development Plan 2017-2023.

2.188. The development was informed by recommendations outlined in the Stage 2 Appropriate Assessment NIR.

Flood Risk Management Plan (Shannon Upper & Lower)

2.189. The Flood Risk Management Plan for the Shannon Upper & Lower River Basin proposes national level, non-structural, governance and policy measures with no specific location or size, these measures generally aim to prevent development within flood zones.

2.190. As part of the development of Flood Risk Management Plan, an AA Screening was carried out to determine the potential benefits and impacts of the Plans on the environment, and to identify mitigation and monitoring measures necessary to avoid or minimise such impacts.

2.191. It was concluded that in the absence of mitigation the Plan for the Shannon Upper and Lower River Basin, in-combination with other plans or projects, could have likely significant effects on the Qualifying Interests of European sites within the catchment.

2.192. Therefore, a stage 2 NIS was required. The NIS for the Plan for the Shannon Upper and Lower River Basin concluded that, with mitigation in place, the Plan would have **no adverse effects on the integrity** of any European sites.

2.193. As the above plans **are not predicted to result in any significant effects** to any Natura 2000 sites, and there will be **no effects on Natura 2000 sites from the Proposed Development** it has therefore been concluded from the above assessments that there will be no in combination effect on the reviewed plans with the Proposed Development and associated future elements.

PROJECTS

2.194. A search of the Clare County Council online planning portal revealed that currently there is solar farm developments granted or pending within 5km of the Application Site. Other, similar developments within the 5km study area can be found in **Table 2-11.**

Table 2-11: Solar Developments within 5km of the Proposed Development

Planning Reference	Project Type	Distance and Direction	Planning Status	Date Granted
16925	For retention (Ref. No. P11-170) of an existing development which consists of an existing 24 metre high telecommunications support structure, antennas, equipment container and associated equipment within a fenced compound and access track. The development forms part of Vodafone Ireland Limited's existing GSM and 3G Broadband	4.44km southwest	Granted	27/02/2017
17617	to retain an existing 30 metres high telecommunications support structure (previously granted permission under reference P11-830) carrying antennas and link dishes together with associated equipment units and security fencing	4.56km southwest	Granted	04/11/2017
19180	The development will consist of a ten year permission for a solar farm on a site of approximately 12.0 hectares consisting of the following; up to 57,250sq.m of solar photovoltaic panels on ground mounted steel frames; electrical substation with electrical control building and associated compound with palisade fence; inverter/transformer stations; underground power and communication cables and ducts; boundary security fencing; new internal access tracks and associated drainage infrastructure; new site entrance to the public road which connects to the R352road; CCTV camera's and all associated site services and works	5.00km Northwest	Granted	17/08/2019

20562	The development will consist of a planning permission for a period of 5 years to construct and complete a Solar PV Energy development with a total site area of 99.2 hectares, to include a single storey electrical substation building, electrical transformer and invertor station modules, solar PV panels ground mounted on support structures, internal access tracks, security fencing, electrical cabling and ducting, CCTV and other ancillary infrastructure, drainage, additional landscaping and habitat enhancement as required and associated site development works including works relating to the access to the site. The Solar farm will be operational for 35 years. A Natura Impact Statement has been prepared in respect of this planning application.	2.77km Southwest	Granted	12/11/2020
21915	The development will consist of planning PERMISSION for a period of five years to construct and complete a Solar PV Energy development with a total site area of 16.08 hectares, to include inverter station modules, solar PV panels ground mounted on support structures, internal access tracks, watercourse crossing, security fencing, electrical cabling and ducting, CCTV and other ancillary infrastructure, drainage, additional landscaping and habitat enhancement as required and associated site development works including works relating to the access to the site. The solar farm would be operational for 35 years. A Natura Impact Statement has been prepared in respect of this planning application	3.05km southwest	Granted	30/11/2021

22586	For development at this site in the townlands of Ballyvonnavaum TD, Coolshamroge TD, Cloonmore TD, Deerpark TD, and Manusmore TD, Ennis, Co Clare. The development will consist of planning permission for a period of 10 years to construct and complete a Solar PV Energy development with a total site area of 27.34 hectares, to include inverter station modules, solar PV panels ground mounted on support structures, internal access tracks, security fencing, electrical cabling and ducting, CCTV and other ancillary infrastructure, drainage, additional landscaping and habitat enhancement as required and associated site development works including works relating to the access to the site. The solar farm would be operational for 35 years. A Natura Impact Statement has been prepared in respect to the application for planning permission.	Adjacent to Application Site Boundary	Granted	14/04/2023

2.195. The need for an Appropriate Assessment Screening was considered for both Planning applications (PA Ref: 16925 and 17617). However, the planner's reports for both applications outline that Appropriate Assessment Screening is not deemed necessary due to lack of connectivity with nearby Natura 2000 sites.

2.196. A Stage 1 AA Screening Report was submitted for the consented solar farm at Knockanoura, Cranagher & Cahershaughnessy Co. Clare (PA Ref: 19180). The AA concluded that due to the lack of ecological connectivity there will be no direct, indirect or cumulative significant impacts will occur to European sites within 15km.

2.197. An Environmental Impact Statement and AA Screening report were produced in securing Manusmore Solar Farm (PA Ref: 20562). The AA concluded that the development would have no impact upon European sites.

2.198. Manusmore Solar Farm (PA Ref: 21915) is a granted solar farm within 2.77km of the Application Site boundary. An Ecological Impact Assessment, Natura Impact Statement (NIS) and Winter Bird Survey report was submitted with the Application. The NIS concluded that

with the implementation of integral design measures, mitigation and best practice construction methods, there will be no significant effects for all Natura 2000 designated sites within 15km.

2.199. The Coolshamrock Solar Farm (PA Ref: 22586) lies adjacent to the Application Site. An Ecological Impact Assessment, Natura Impact Statement and Winter Bird Survey report was submitted with the Application. The NIS concluded that with the implementation of integral design measures, mitigation and best practice construction methods, there will be no significant effects for all Natura 2000 designated sites within 15km.

2.200. Having assessed all aspects of the development project, it has been concluded that the Proposed Development will not have any significant direct or indirect cumulative impact on ecological features. This is due to the nature of the development, and the ecological conclusions reached in granting each cumulative development. No likely significant cumulative effects on ecological features are therefore predicted in combination with other proposed developments.

CONCLUSION

2.201. To minimise potential impacts on local wildlife, ecological measures have been incorporated into the Proposed Development as part of the iterative design process. These include buffers from potentially sensitive ecological receptors (see **Table 2-13** below). Standard best practice pollution prevention measures for the construction stage have also been outlined and considered as part of the impact assessment stage, prior to mitigation. These measures are also outlined within **Table 2-14** below.

2.202. A total of six habitat types were noted during the Fossitt habitat survey undertaken in August 2021 and March 2022. The main impacts during the construction phase include the direct loss of habitat under the Proposed Development footprint and indirect loss of habitat due to disturbance and pollution.

2.203. The desk-based assessment identified eighteen Special Areas of Conservation (SACs), three Special Protection Areas (SPA) and one Ramsar site within the 15km study zone. These designated sites have been outlined and fully assessed within the supporting Natura Impact Statement (NIS). It has also been concluded that Ecological connectivity exists between Old Domestic Building (Keevagh) SAC and Poulnagordon Cave. Along with hydrological and ornithological connectivity exists between the Application Site and the River Shannon and River Fergus Estuaries SPA and hydrological and ecological connectivity exists between the Application Site and the Lower River Shannon SAC. With the implementation of integral design measures, mitigation and best practice construction methods, there will be no significant effects for all Natura 2000 designated sites within the zone of influence (ZOI).

2.204. There are no Natural Heritage Areas (NHAs) and five proposed Natural Heritage Areas (pNHAs) located within 5km of the Application Site. The Fergus Estuary and Inner Shannon, North Shore pNHA has hydrological, and ornithological connectivity, however the findings in this EcIA conclude that the Proposed Development will have no adverse effects on any of the features within the pNHA.

2.205. Further surveys recommended as part of the relevant mitigation measures are provided within this report (please refer to **Table 2-13** below). These include pre commencement checks for badger, otter and birds.

2.206. It is considered that the short-term disturbance from the Proposed Development **will not be significant on all ecological features** if the best practice and recommended mitigation are implemented. With the implementation of the Biodiversity Management Plan (BMP), **the potential of the site to support local wildlife will increase**.

Table 2-13: Integral design measures and standard best practice

Site/ Species	Potential Development Impacts	Phase of Development	Measures implemented
INTEGRAL DESIGN MEASURES			
Badger	Exclude from foraging habitat	Operational	Security fencing around the solar farm site only to have mammal gates at base to allow free movement of badger through the site.
Otter	Excluded from foraging habitat	Operational	Security fencing around the solar farm site only to have mammal gates at base to allow free movement of otter through the site.
STANDARD BEST PRACTICE MEASURES			
Aquatic environment	Pollution	Construction	Best practice pollution prevention measures implemented prior to and throughout the construction phase to prevent contaminants entering the aquatic environment.
Badger	Accidental trapping with excavations	Construction	All excavations should be securely covered, or a suitable means of escape provided at the end of each working day.
Otter	Accidental trapping with excavations	Construction	All excavations should be securely covered, or a suitable means of escape provided at the end of each working day.

Table 2-14: Recommended mitigation measures

MITIGATION MEASURES			
Breeding birds	Disturbance / destruction of nest (Only if works are undertaken between March and August)	Construction	Pre-construction breeding bird survey on any trees or hedgerow to be removed (Only if works are undertaken between March and August) (Measures dependant on survey findings).
Bats	Destruction of roosts	Construction	Pre-construction potential roost inspection surveys on any trees to be removed (Measures dependant on survey findings).

APPENDICES

Appendix A -Figures

- Figure 1- Environmental Designations Map
- Figure 2– Habitat Map

Appendix B – Site Photographs

Appendix C – Habitat of bat species in Ireland

Appendix 2A

Coolshamrock Substation
Designated Sites
Figure 1

Moyree River System SAC
Dromore Woods And Loughs SAC
Old Farm Buildings, Ballymacrogan SAC
Ballycullinan, Old Domestic Building SAC
Toonagh Estate SAC
Ballyallia Lough SPA/Ramsar Sites
Ballyallia Lake SAC
Slieve Aughty Mountains SPA
Old Domestic Buildings, Rylane SAC
Newgrove House SAC
Old Domestic Building (Keevagh) SAC/pNHA
Pouladatig Cave SAC
Poulnagordon Cave (Quin) SAC/pNHA
Newhall and Edenvale Complex SAC
Ballycar Lough pNHA
Kilkishen House SAC
Knockanira House SAC
Dromoland Lough pNHA
Danes Hole, Poulnalecka SAC
Fergus Estuary And Inner Shannon, North Shore pNHA
Ratty River Cave SAC
Lough Gash Turlough SAC
Lower River Shannon SAC
River Shannon and River Fergus Estuaries SPA

Key

- Application Site
- 15km Study Area
- 5km Study Area
- Special Protection Areas (SPAs)
- Special Areas of Conservation (SACs)
- proposed Natural Heritage Areas (pNHAs)

Neo Office Address:
Johnstown Business Centre, Johnstown House, Naas, Co. Kildare

Date: 23/01/2023
Drawn By: Dara Dunlop
Scale (A3): 1:125,000
Drawing No: NEO00848/001I/A

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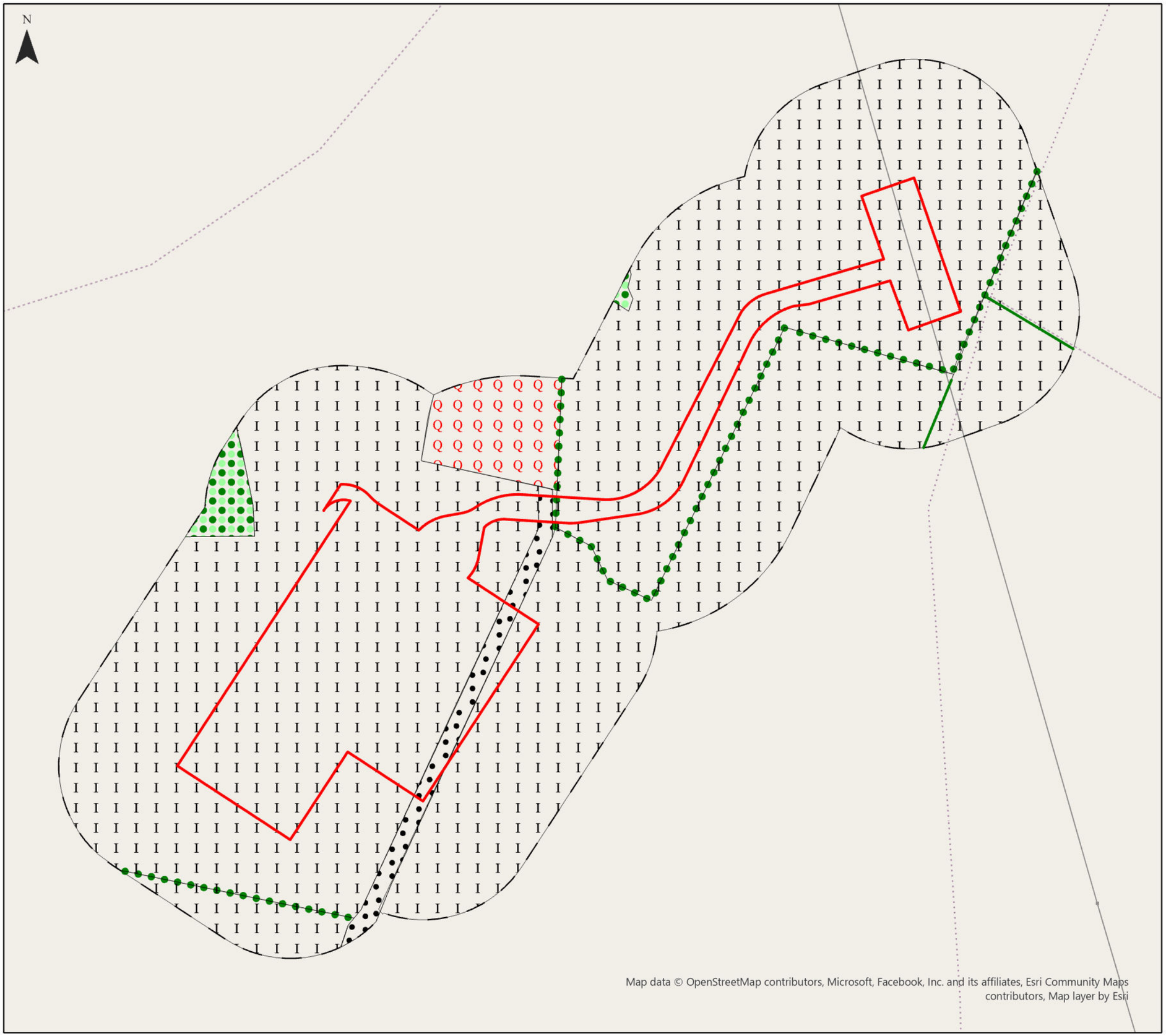
Coolshamrock Substation
Habitat Map
Figure 2



Key

- Application Site
- 50m Ecological Survey Area
- Improved Agricultural Grassland (GA1)
- Oak-Ash-Hazel Woodland (WN2)
- Spoil and Bare Ground (ED2)
- Active Quarries and Mines (ED4)
- Hedgerow (WL1)
- Treeline (WL2)

Neo Office Address:
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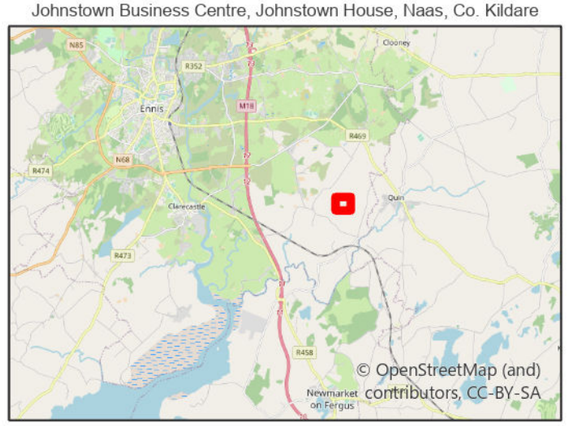

Date: 23/01/2023
Drawn By: Dara Dunlop
Scale (A3): 1:1,600
Drawing No: NEO00848/001I/A

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Appendix 2B: Site Photographs

Photograph 1: Improved Agricultural Grassland

Photograph 2: Treelines (WL2)

Photograph 3: Hedgerow (WL1)

Photograph 4: Oak-Ash- Hazel Woodland (WN2)

Photograph 5: Active Quarries

Appendix 2C

Appendix 2C– Habitat of Bat Species in Ireland

Table 2-9: General/Preferred Foraging and Commuting Habitats of Bat Species Returned by the Data Search

Species	Foraging and Commuting Habitat	Roosting Preferences
Common pipistrelle (*Pipistrellus pipistrellus*)	Shows a preference for deciduous woodland but a generalist using a wide range of habitats.	Maternity colonies are found mainly in buildings, usually roosting out of sight in crevices. Colonies may use a number of sites through the summer but are often loyal to the same sites for many years. Maternity colonies are extremely variable in terms of numbers, from 20 to over 1,000 bats. Males roost singly or in small groups in the summer, in buildings or trees. Bat boxes are used by both males and females but generally only males use them in the summer. These species do not use underground sites for hibernation but are sometimes found in the cracks and crevices of buildings in the winter.
Soprano pipistrelle (*Pipistrellus pygmaeus*)	Tends to select riparian habitats over other habitat types available.	
Nathusius' pipistrelle (*Pipistrelle nathusii*)	Riparian habitats, broadleaved and mixed woodland and parkland, occasionally found in farmland but always near water. Found over lakes and rivers.	The very few known Irish roosts are in buildings, with hibernation roosts in hollow trees and crevices in cliffs, walls and caves.
Leisler's bat (*Nyctalus leisleri*)	Recorded foraging in woodland edges, scrub or woodland-lined roads and over pasture. Also recorded over drainage canals, lakes and coniferous forests. Recorded as selecting parkland/amenity grasslands, deciduous woodland edge and river/canals but avoiding improved grassland.	Roosts in trees, bat boxes and buildings such as houses; for example around the gable end of lofts, under tiles, under soffit boards and in disused chimneys. Often uses a variety of sites in the summer. Hibernates in holes, buildings and sometimes in caves and tunnels.

Brown long-eared bat (*Plecotus auritus*)	Strongly associated with tree cover, prefers woodland with cluttered understory, including native species, particularly deciduous. Also forages in mixed woodland edge and among conifers. Use of hedgerows increase through the active season.	Maternity roosts found in the voids of large, old buildings and bat boxes in woodland. Usually roosts against wooden beams at the roof apex in attics or farm buildings. Bats often cluster at the highest part of the roof and require enough space for unobstructed, internal flight. Shows high roost fidelity. Common uses feeding perches and night roosts in porches or outbuildings separate from the main roost. Hibernate in underground sites, trees holes and buildings.
Whiskered bat (*Myotis mystacinus*)	Whiskered bats use mixed woodland, riparian vegetation, arable and rough grassland habitats although select the first two as core foraging habitats. One study found that whiskered bat selected pasture with hedgerows for foraging. A German study showed that whiskered bats favour areas near rivers and more open habitats with hedges and coppices.	Can roost in trees and a wide range of buildings in the summer. Hibernates in caves or other underground sites, where they can be found in the open or in cracks and crevices.
Natterer's bat (*Myotis nattereri*)	Preferred foraging habitat is semi-natural broad-leaved woodland, tree-lined river corridors and ponds, but also uses grassland. Avoids dense coniferous plantation. An autumn study revealed that the species use woodland and mixed agricultural areas.	Roost sites include tree holes and different types of buildings but has also been found in bridges. Usually roost in attics between late May and mid-July and often roosts have enough space for internal flights. This species also breeds in bat boxes. Timber-framed barns built between 12th and 19th centuries may be particularly important to this species, with roosts found in mortise joints in both summer and winter.

		Hibernates in cracks and crevices in caves and mines. Other hibernations sites recorded are canal and railway tunnels, ice houses and tree cavities.
Daubenton's bat (*Myotis daubentonii*)	Preferred foraging habitat is over water; this species favours riverine habitats but is also known to forage in woodland.	Roosts are found in hollow trees, bridges or sometimes buildings generally close to water. Nursery roosts are not exclusively female – males make up 25% or more of the colony and large male-only colonies have also been recorded. Hibernation sites are usually underground including caves, mines and suitable tunnels where bats are found both in crevices and on open walls. They may also hibernate in tree cavities.
Lesser horseshoe bat (*Rhinolophus hipposideros*)	Preferred foraging habitats include broad-leaved woodland well connected by commuting routes such as hedge, woodland edge and riparian trees. This species has also been recorded in coniferous woodland. Probably reluctant to cross open space as recorded very low (less than 1m) in open habitats. This species can remain active during the hibernation periods.	Roost sites include attics, chimneys and boiler rooms of buildings, rural houses and out buildings in the summer, and cellars, tunnels, disused mines and caves for hibernation. Also found in industrial buildings. This species prefers to fly directly into roost sites and into their roosting position.

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