



Technical Appendix 2: Ecological Impact Assessment

Colehill 110kV Substation and Grid Route

11/12/2025



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EXECUTIVE SUMMARY

- 2.1. Neo Environmental Ltd has been appointed by Renewable Energy Systems (RES) Ltd on behalf of Ballyteige Solar Limited (the “Applicant”) to undertake an Ecological Impact Assessment (EclA) for a Strategic Infrastructure Development (“SID”) Application for a new 110kV Substation, access road, interconnection cables and grid route (“the Proposed Development”) to connect into the existing Thornsberry Substation. The proposed substation, access road, interconnection cables and grid route is situated within the townlands of Ballyteige Little, Wood of O, Corndarragh, Derrynagall or Ballydaly, Ardan and Puttaghan, Co. Offaly (“the Proposed Development Site”). The Substation is to facilitate the Ballyteige Solar Farm (PA Ref: 2198) and Derrygrogan Solar Farm (PA Ref: 22378 and ABP 318041-23).
- 2.2. Please **see Figure 103, Volume 2** for the layout of the Proposed Development.
- 2.3. Baseline information within the ecological assessment comprises of an initial desk-based assessment and a Fossitt habitat survey, which have been outlined within the relevant sections of this report. An updated Fossitt habitat survey of the Proposed substation Site was undertaken on the 9th and 10th of October 2024 by Louis Maloney, a former Principal Ecologist at Neo Environmental. 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 the improved agricultural grassland is considered to be **negligible** for nature conservation within the local area.
- 2.4. From the current survey findings and impact assessment conducted, it is considered that the Proposed Development is unlikely to have any significant effects upon local wildlife. However, as a precaution, several measures have been outlined within this report to reduce any potential impacts on local ecology. Note, these measures are not relied upon in the conclusion within the Natura Impact Statement, i.e. in the absence of such measures the conclusion of the Natura Impact Statement would remain the same.
- 2.5. The desk-based assessment identified six Special Areas of Conservation (SACs) within a 15km zone of influence of the Proposed Development Site: Clara Bog SAC, Raheenmore Bog SAC, Split Hills and Long Hill Esker SAC, Lough Ennell SAC, River Barrow and River Nore SAC and Charleville Wood SAC. Two Ramsar Sites were also identified within 15km – namely Clara Bog Ramsar Site and Raheenmore Bog Ramsar site. Within 5km of the Proposed Development Site, one Natural Heritage Area (NHA): Daingean Bog NHA, and seven proposed Natural Heritage Areas (pNHAs):Charleville Wood pNHA, Ballyduff Esker pNHA, Derrygolan Esker pNHA, Murphy’s Bridge Esker pNHA, Rahugh Ridge (Kiltober Esker) pNHA, Ballyduff Wood pNHA and The Grand Canal pNHA were identified. These designated sites have been outlined and fully assessed below and (where appropriate) within the supporting Natura Impact Statement.
- 2.6. It has been concluded that hydrological connectivity exists between the Proposed Development Site and Charleville Wood SAC, ecological connectivity exists between the

Proposed Development Site and the River Barrow and River Nore SAC, and potential ecological connectivity exists with The Grand Canal pNHA, although it has been concluded there will be **no adverse effects** on the integrity of any European sites or other non-statutory designated sites from the Proposed Development Site. However, as a precaution, several measures have been outlined within this Ecological Impact Assessment and accompanying Natura Impact Statement (Volume 1) to mitigate any potential for residual impacts as a result of the Proposed Development.

INTRODUCTION

Background

2.7. Neo Environmental Ltd has been appointed by Renewable Energy Systems on behalf of Ballyteige Solar Limited (the “Applicant”) to undertake an Ecological Impact Assessment (‘EclA’) for a Strategic Infrastructure Development (“SID”) Application for a new 110kV Substation (“Colehill 110kV Substation”) and grid connection to the existing Thornsberry 110kV substation.

Development Description

2.8. “The Proposed Development” comprises of a 110kV substation, access road, interconnection cables and grid route. The Proposed Development is to facilitate the connection of Ballyteige (PA Ref: 2198) and Derrygrogan (PA Ref: 22378 and ABP 318041-23) solar farms to the national grid. The method of connection to the national grid for the new substation will be a 110kV tail-fed connection into the existing Thornsberry Substation.

2.9. The Proposed Development will consist of:

- 1No. substation compound comprising of No.3 work areas with CCTV and associated drainage which will be enclosed by 2.6m high palisade fencing and gates:
 - 1No. Eirgrid control building, 110kV bay arrangements, 4No. lightning poles, compound road,
 - Crane hardstand, 2No. transformers and 2. No auxiliary transformers, 110kV electrical equipment, back up generator,
 - 2No. Independent Power Purchaser (IPP) control buildings and compound including toilet, 2No. grid code compliance equipment, 2No. harmonic filters, car parking and telecoms pole),
- Property boundary fencing;
- Access tracks (upgraded existing and new);
- Temporary construction compound and temporary access track,
- Temporary and permanent road re-alignment of a section of O of Wood local road;
- c.7.5km of underground 110kV cabling with joint bays, over and under watercourse crossing and a potential horizontal directional drill on access track and local roads;

- c.610m of medium voltage underground interconnection cable with associated horizontal directional drill.
- All associated and ancillary site development, excavation, construction, landscaping and reinstatement works and the provision of site drainage.

2.10. Please see **Figure 103** in **Volume 2** for a layout of the Proposed Development.

Site Description

- 2.11. The Proposed Development is situated within the townlands of Ballyteige Little, Wood of O, Corndarragh, Derrynagall or Ballydaly, Ardan and Puttaghan, Co. Offaly.
- 2.12. The Colehill 110kV Substation is proposed to be located in one relatively flat agriculture field. The proposed 7.5km grid route will run in a northeast direction from the proposed Colehill 110kV substation to the existing ESB Thornsberry 110kV substation via private land and local roads. Interconnection cables from the eastern sections of Derrygrogan Solar Farm will be installed via horizontal directional drilling on a section of an agricultural field underneath the dry canal into the proposed access and track of Colehill 110kV Substation.
- 2.13. The Proposed Development lies at an elevation of c. 71.7 to 77.8m AOD and covers a total area of c. 11.2 hectares. The approximate Irish Grid Reference points (ITM) of the proposed Colehill 110kV substation are X 639234 and Y 727175. Access to the proposed substation will be from the Wood of O Road to the east of the Substation "Proposed Substation Site" which is the same entrance point for the consented Ballyteige Solar Farm (PA Ref: 2198).
- 2.14. The grid route and substation boundaries are approximately 250m and 5.8km northeast from Tullamore Town.

Scope of the Assessment

- 2.15. This Ecological Impact Assessment (EclA) has been completed in partial fulfilment of a planning submission to Offaly County Council. The aims of this report are to:
- Determine the main habitat types within and immediately adjacent to the Proposed Development Site in relation to the Proposed Development footprint;
 - Identify any actual or potential habitat or species constraints pertinent to the development of the Proposed Development 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 and operation 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.
- 2.16. This allows for the identification of potential ecological impacts and the compilation of appropriate mitigation measures where applicable.

Statement of Authority

- 2.17. The assessment has been managed by ecologists registered with the Chartered Institute of Ecology and Environmental Management (“CIEEM”). All work has been carried out in line with the relevant professional guidance: CIEEM’s Guidelines for Preliminary Ecological Appraisal¹ and the Environment, Heritage and Local Government’s Guidance on Appropriate Assessments².
- 2.18. Dara Dunlop who wrote part of this report, is a Principal Ecologist at Neo Environmental. Dara Dunlop is a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM), has circa 6 years’ experience in the ecology sector, including working for two ecological consultancies undertaking a range of protected species surveys and extended phase 1 habitat surveys for various project types including energy, residential, commercial and aggregate across the UK and Ireland. Dara has authored a number of reports for various developments including EclAs, Protected Species Reports, Appropriate Assessment and Natura Impact Statement Reports.
- 2.19. Louis Maloney, who conducted surveys for and wrote part of this report, is a former Principal Ecologist at Neo Environmental. He has circa seven years of professional ecological experience. This includes terrestrial and marine surveys covering a wide range of fauna and flora such as bird (2 years’ of surveying), mammal and vegetative surveys. In addition, Louis has been involved in the management of large variety of projects involving: Environmental Impact Assessment (“EIA”), Natura Impact Statement (“NIS”), Ecological Impact Assessment (“EclA”), Biodiversity Management Plan (“BMP”) and Net Gain Assessment (“NGA”) reports. He holds a BSc in Marine Science from the National University of Ireland, and an MSc in Conservation Behaviour – Marine and Terrestrial Science. Louis is in the process of applying for a Full level membership with CIEEM.
- 2.20. Rhona Coghlan who wrote part of this report, is an Assistant Ecologist with over 1 year experience in the ecology and conservation industry. Rhona has been awarded a 1:1 BSc in Environmental Science from the National University of Galway and is a Qualifying Member of

¹ CIEEM, 2017. *Guidelines for Preliminary Ecological Appraisal*. Available at: www.cieem.net

² Environment, Heritage and Local Government, 2009. *Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities*. Available at: www.npws.ie

the Chartered Institute for Ecology and Environmental Management. Rhona has conducted Fossitt Habitat surveys, Breeding and Wintering Bird surveys, Bat surveys, Otter surveys, and aquatic invertebrate surveys. Rhona has authored Natura Impact Statements, Ecological Impact Assessment, Biodiversity Management Plans, Q-value reports, Wintering Bird reports and more. Rhona is appointed ECoW for two wind farm development and has experience with client-facing consultations and survey reports. Rhona has taken part in several training events organised by CIEEM, The British Trust for Ornithology and Birdwatch Ireland.

- 2.21. Kellie Kerr, who assisted in the completion of this report, is an Assistant Ecologist with over 3 years of professional experience in the ecology and conservation sector. Kellie holds a BSc Environmental Science (Hons) with Diploma in Professional Practice, achieved qualifying Chartered Institute of Ecology and Environmental Management (CIEEM) membership and has valid Construction Skills Register (CSR), manual handling and first aid qualifications. Kellie has experience completing Phase 1, Fossitt, ornithological and bat protected species surveys. Kellie has authored and co-authored various ecological reports supporting various development types including Ecological Impact Assessment (EclA), Biodiversity Management Plan (BMP), Natura Impact Statement (NIS)/ shadow Habitats Regulations Assessment (sHRA) as well as species specific reports.

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
<p>EU Habitats Directive 92/43/EEC</p>	<p>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.</p> <p><i>“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”</i></p> <p>The protection of species outlined in the Habitats Directive is transposed into national legislation principally by ‘EC (Natural Habitats) Regulations 1997 (amended)’³.</p>
<p>The Birds Directive 2009/147/EC</p>	<p>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.</p> <p>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.</p> <p>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</p>

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	<p>The Environmental Liability Directive aims to make those causing damage to the environment (water, land and nature) legally and financially responsible for that damage.</p> <p>The directive covers environmental damage caused by or resulting from occupational activities to:</p> <p>Species and natural habitats protected under the 1992 Habitats Directive and the 1979 Wild Birds Directive. Damage to protected species and natural habitats is <i>“any damage that has significant adverse effects on reaching or maintaining the favourable conservation status of such habitats or species”</i>.</p>
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 are:

- 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 2015⁷ - 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, 2003⁸ - transposes the Water Framework Directive into national law;
- National Biodiversity Plan (2017-2021)⁹ - sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity', and follows on from the work of the first and second National Biodiversity Action Plans;
- Biodiversity Climate Change Sectoral Adaptation Plan (2019)¹⁰ - considers terrestrial, freshwater and marine biodiversity and ecosystem services. The goal is to protect biodiversity from the impacts of climate change and to conserve and manage ecosystems so that they deliver services that increase the adaptive capacity of people and biodiversity. This is achieved by identifying adaptation options that will help to protect biodiversity and ecosystem services from the impacts of changing climate.

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, 2024

2.25. *The Planning and Development Act 2024 was signed into law on 17 October 2024. It repeals and replaces the Planning and Development Act 2000 as amended (PDA).*¹¹

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.irishstatutebook.ie

⁹ Available at <https://www.npws.ie/legislation/national-biodiversity-plan>

¹⁰

¹¹ The Planning and Development Act 2024 - available at <https://www.mhc.ie/hubs/legislation/the-planning-and-development-bill-2023>

- 2.26. The Act will require further amendments, and detailed regulations will be required to implement it in stages before it can be fully commenced. The Government intends to publish a plan for the commencement of the new Act on a phased basis, possibly over a period of up to two years.
- 2.27. The 2nd day of December 2024 is appointed as the day on which the following provisions of the Planning and Development Act 2024 (No. 34 of 2024) shall come into operation:
- (a) sections 1 to 5
 - (b) Part 26
- 2.28. These provisions relating entirely to planning procedures and definition with little relevance to the assessment of ecology and nature conservation.
- 2.29. Additional provisions related to assessment of ecology and nature conservation are yet to be implemented.
- 2.30. Please refer to the Planning and Development Act, 2000 (as amended) for relevant or currently adopted provisions related to assessment of ecology and nature conservation.

Planning and Development Act, 2000 (as amended)¹²

- 2.31. 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.

¹² 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 2015¹³

2.32. 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."

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

¹³Environment, Community and Local Government (2015) *Planning Policy Statement 2015*. Available at: www.environ.ie

“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.”

Offaly County Development Plan 2021-2027¹⁴

2.34. The Offaly County Development Plan 2021-2027 outlines the development policies, core strategy and objectives for the sustainable development of County Offaly.

2.35. Chapter 4 of the plan addresses Biodiversity and Landscape. The strategic aim of which is to:
‘Protect and enhance Offaly’s natural assets of clean water, biodiversity, landscape, green infrastructure, heritage and agricultural land.’

2.36. A number of key policies (outlined below), have been outlined within this chapter.

BLP-01 *It is Council policy to protect, conserve, and seek to enhance the county’s biodiversity and ecological connectivity.*

BLP-02 *It is Council policy to conserve and protect habitats and species listed in the Annexes of the EU Habitats Directive (92/43/EEC) (as amended) and the Birds Directive (2009/147/EC), the Wildlife Acts 1976 (as amended) and the Flora Protection Orders.*

BLP-03 *It is Council policy to support and co-operate with statutory authorities and others in support of measures taken to manage proposed or designated sites in order to achieve their conservation objectives.*

BLP-04 *It is Council policy to protect and maintain the conservation value of all existing and future Natural Heritage Areas, proposed Natural Heritage Areas, Nature Reserves, Ramsar Sites, Wildfowl Sanctuaries and Biogenetic Reserves in the county.*

¹⁴ Offaly County Development Plan 2021-2027. Available at: <https://www.offaly.ie/eng/Services/Planning/County-Development-Plan-2021-2027/Stage-4-Final-Plan>

BLP-05 It is Council policy to ensure that development does not have a significant adverse impact, incapable of satisfactory avoidance or mitigation, on plant, animal or bird species protected by law.

BLP-06 It is Council policy to consult with the National Parks and Wildlife Service, and take account of any licensing requirements, when undertaking, approving or authorising development which is likely to affect plant, animal or bird species protected by law.

BLP-07 It is Council policy to support the implementation of the National Biodiversity Action Plan 2017- 2021 and the Offaly Heritage Plan Key Actions 2017-2021 and future editions in partnership with relevant stakeholders subject to available resources.

BLP-08 It is Council policy to work with all state agencies to promote the development of all aspects of park management in the Slieve Bloom Mountains.

County Offaly Biodiversity Action Plan –2025-2030¹⁵

2.37. The aim of the County Offaly Biodiversity Action Plan 2025-2030 is to build on previous works within the county to protect and enhance natural areas to benefit biodiversity and people. The strategic objectives of the plan are concerned with:

- Surveys and monitoring
- Actions for biodiversity
- Alien invasive species
- Building resilience
- Awareness and engagement

Guidance Documents

BS 42020:2013 Biodiversity¹⁶

2.38. The British Standards Institute has published BS 42020:2013 Biodiversity: Code of Practice for Planning and Development which offers a coherent methodology for biodiversity 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.

¹⁵ Offaly County Council (2025) *Offaly Biodiversity Action Plan 2025-2030*. Available at: <https://www.offaly.ie/app/uploads/Offaly-Biodiversity-action-Plan-2025-2030.pdf>

¹⁶ BSI (2013) *BS 42020 A Code of Practice for Biodiversity in Planning and Development*. Available at: <https://www.bsigroup.com>

- 2.39. BS 42020:2013 cites CIEEM EclA 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

- 2.40. The Chartered Institute of Ecology and Environmental Management (CIEEM) have produced guidance on Ecological Impact Assessment¹⁷ (EclA) and Ecological Report Writing¹⁸.
- 2.41. The EclA is a process of identifying, quantifying and evaluating potential effects from activities such as those related to development on habitats, species and ecosystems. This EclA process follows the tasks set out in **Table 2-2** below.

¹⁷ CIEEM (2024) *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine Version 1.3*. Available at: <https://cieem.net/wp-content/uploads/2018/08/EclA-Guidelines-v1.3-Sept-2024.pdf>

¹⁸ CIEEM (2017) *Guidelines for Ecological Report Writing*. Available at: <https://cieem.net/>

Table 2-2: EclA Process

Task	Description
Scoping	Determining the matters to be addressed in the EclA, including consultation to ensure the most effective input to defining the scope. Scoping is an ongoing process – the scope of the EclA 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.
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.

2.42. The aims of their EclA guidelines are to:

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

METHODOLOGY

Zone of Influence

2.43. The Zone of Influence (ZOI) is the area encompassing all predicted 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, was appropriate for gathering 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
National statutory designations	5km
Protected and Priority Species	2km
Extended phase one habitat survey	50m

Desk Study

2.44. A desk-based assessment was undertaken to collate available ecological information for the Proposed Development Site and the surrounding area. This included a search of statutory or non-statutory designated environmental sites: 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) website¹⁹.

2.45. A Stage 2: Appropriate Assessment (Natura Impact Statement) was undertaken to assess all European Designated sites within 15km of the Proposed Development Site. The findings of this are contained within the accompanying Volume 1 - Natura Impact Statement.

2.46. A data search was conducted through the National Biodiversity Data Centre (NBDC) to obtain information regarding protected/notable species within 2km of the Proposed Development Site boundary. The Proposed Development Site is centred at approximate Irish Grid Reference (IGR) N 39363 27330.

¹⁹ Available at: <http://www.npws.ie/protected-sites>.

- 2.47. 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.
- 2.48. A desktop survey was undertaken as part of the ecology assessment for the Proposed Substation Site to locate any records of rare or protected flora and fauna previously recorded for the Proposed Development Site and surrounding area.

Fossitt Habitat Survey

- 2.49. An updated Fossitt habitat survey was carried out on the 9th and 10th of October 2024 by Louis Maloney, a former Principal Ecologist at Neo Environmental, as part of the ecology assessment for the Proposed Substation Site and a 50m buffer around the site.
- 2.50. Survey work was carried out in accordance with the Joint Nature Conservation Committee (JNCC) guidelines (2010) and the Fossitt Guide to Habitats in Ireland (2000) in order to produce a Fossitt habitat map.
- 2.51. Both of these habitat classification methods provide a standardised system to record and map semi-natural vegetation and other wildlife habitats in order to assess their potential importance for nature conservation. The survey method used for both systems is comparable, apart from a slight variation in the naming of habitat types.

Species Scoping Survey

- 2.52. A species scoping survey was carried out on the 9th and 10th of October 2024 by Louis Maloney, a former Principal Ecologist at Neo Environmental to identify the presence of protected species, or the potential of the Proposed Development to support protected species. The aim of the survey was to provide an overview of the Proposed Development and to determine whether any further survey work was required.
- 2.53. **Table 2-4** below outlines the relevant habitat and field signs that indicate the potential presence of protected or notable species within the Ecological Survey Area (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.	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

Taxon	Indicative Habitat(s)	Field Signs (In Addition to Sightings)
	Foraging areas – e.g. parkland, water bodies, streams, wetlands, woodland edges and hedgerow. Commuting routes – linear features (e.g. hedgerows, water courses, tree lines). See Appendix 2C for preferred foraging and commuting habitat for individual species.	wings under a feeding perch).
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 or trees), tree holes.
Common lizard	Rough grassland, log and rubble piles.	Shedded skins.

Weather Conditions

2.54. **Table 2-5** describes the weather conditions at the time of surveys giving temperature (°C), Wind speed (mph), Cloud-cover (percentage cover) and precipitation.

Table 2-5: Weather conditions at the time of surveys

Survey date	Temperature (°C)	Wind Speed (m/s)	Cloud-Cover (%)	Precipitation
09/10/2024	10 - 13	5 - 7	90 %	None
10/10/2024	5 - 10	2 - 4	10h	None

Limitations

- 2.55. Results of the assessment undertaken by Neo Environmental are representative of the time that surveying was undertaken.
- 2.56. 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.
- 2.57. 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 preliminarily 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.
- 2.58. At the time of the initial survey, access was only permitted within the landownership boundary. The areas of land which formed the ESA which were not within the landownership boundary were viewed from field boundaries and publicly accessible lands (e.g. local roads or public paths) with the use of binoculars, where needed. It is considered that the limited access to areas of land directly adjacent to the Proposed Development Site has not impacted upon the findings of the habitat or species scoping surveys.

Evaluation Methods

- 2.59. The evaluation of ecological receptors is based upon the CIEEM guidelines²⁰ which suggest 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 that is also a designated site, is generally precise, as the designations themselves provide an indication of value.

Adopted Design Principles

- 2.60. 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. These include;
- 5m buffer from hedgerows within the proposed substation
 - 2m buffer from field drains

²⁰ CIEEM (2024) *Guidelines for Ecological Impact Assessment in the UK and Ireland*. Available at: <https://cieem.net/>

- 5m from boundary watercourse
- Tree buffers dependant on height
- 10m Office of Public Works (OPW) drain buffers
- 10m buffer for overhead lines

Impact Assessment

2.61. 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.

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

2.63. 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.

2.64. This ecological impact assessment has been concluded by an experienced ecologist following CIEEM guidance²¹.

²¹ CIEEM (2024) *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine.* Version 1.3 Available at: <https://cieem.net/wp-content/uploads/2018/08/EcIA-Guidelines-v1.3-Sept-2024.pdf>

BASELINE CONDITIONS

Designated Sites

- 2.65. The Proposed Development Site does not lie within or directly adjacent to any statutory or non-statutory designated environmental sites.
- 2.66. Within 15km of the Proposed Development Site boundary there are six Special Areas of Conservation (SACs), no Special Protection Areas (SPAs) and two Ramsar sites. There is one Natural Heritage Area (NHA) within 5km of the Proposed Development Site, and seven potential Natural Heritage Areas (pNHAs). These designated sites are outlined in **Table 2-6** below, and detailed within **Figure 2.1, Appendix 2A**.
- 2.67. The site descriptions of these designated environmental sites are derived from the original site citations available from the National Parks and Wildlife Service (NPWS)²². There are no other statutory or non-statutory designated environmental sites within the ZOI.
- 2.68. Please refer to the Natura Impact Statement report for further details of all European sites within the ZOI of the Proposed Development Site.

Table 2-6: Designated Sites within 15km of the Proposed Development Site.

Site Code	Site Name	Qualifying Features	Shortest Linear Distance (km), Direction	Potential Connectivity with the Proposed Development Site
000571	Charleville Wood SAC	<i>Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)</i> [91E0] <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016]	2.70km southwest	Hydrological
000582	Raheenmore Bog SAC	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120]	5.16km northeast	None

²² Available at: <https://www.npws.ie/protected-sites>

		Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]		
001831	Split Hills and Long Hill Esker SAC	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]	7.14km north	None
000572	Clara Bog SAC	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Bog woodland [91D0]	8.12km northwest	None
002162	River Barrow and River Nore SAC	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140]	12.22km south	Ecological

		<p>Reefs [1170]</p> <p>Salicornia and other annuals colonising mud and sand [1310]</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330]</p> <p>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]</p> <p>European dry heaths [4030]</p> <p>Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]</p> <p>Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p><i>Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)</i> [91E0]</p> <p><i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016]</p> <p><i>Margaritifera margaritifera</i></p>		
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		(Freshwater Pearl Mussel) [1029] <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Alosa fallax fallax</i> (Twaite Shad) [1103] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Trichomanes speciosum</i> (Killarney Fern) [1421]		
000685	Lough Ennel SAC	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] Alkaline fens [230]	14.17km north	None
Ramsar Sites				
31E019	Clara Bog Ramsar site	See qualifying features of the Clara Bog SAC	8.12km northwest	None
31E002	Raheenmore Bog Ramsar site	See qualifying features of the Raheenmore Bog SAC	5.16km northeast	None
Natural Heritage Areas (NHAs)				
002033	Daingean Bog NHA	Peatlands	4.7km east	None
Proposed Natural Heritage Areas (pNHAs)				
000571	Charleville Wood pNHA	Charleville Wood is a large woodland	3.49km southwest	Hydrological

		<p>surrounded by estate parkland and agricultural grassland located circa 3km south-west of Tullamore in Co. Offaly.</p> <p>The site includes a small lake with a wooded island, and a stream runs along the western perimeter. The woodland is one of very few ancient woodlands remaining in Ireland, with some parts undisturbed for at least 200 years</p> <p>For further information See qualifying features of the Charleville Wood SAC</p>		
000885	Ballyduff Esker pNHA	<p>Although many eskers have been severely damaged if not destroyed by gravel extraction in the past, this part of Ballyduff Esker has remained virtually intact.</p> <p>Mature scrub of Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crateagus monogyna</i>), Hazel (<i>Corylus avellana</i>) and willows (<i>Salix</i> spp.) is still frequent around Trumpet Hill itself (NPWS 2009)</p>	4.4km west	None
000896	Derrygolan Esker pNHA	<p>On top of an esker near Derrygolan, Co. Westmeath, a nationally</p>	4.2km Northwest	None

		<p>important population of the rare Green-winged Orchid (<i>Orchis morio</i>) is thriving. Although this plant has declined dramatically throughout the country in recent times, this site contains one of the largest known populations of this legally protected species.</p> <p>This site is also of conservation importance because it is one of the few remaining examples of an unexploited esker (NPWS 2009)</p>		
001777	Ballyduff Wood pNHA	<p>This is a small area of Beech (<i>Fagus sylvatica</i>) woodland on glacial drift to the east of the Tullamore-Clara road 6.5km north of Tullamore. Younger Beech trees, approximately 6m in height, are located around the south-western end together with some Ash (<i>Fraxinus excelsior</i>), Hawthorn (<i>Crataegus monogyna</i>), Blackthorn (<i>Prunus spinosa</i>) and Hazel (<i>Corylus avellana</i>). Inside the marginal belt is the older</p>	2.8km West	None

		woodland primarily composed of Beech and Hazel. Some Hazel trees reach a height of 9m (NPWS 2009)		
002104	Grand Canal pNHA	The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods (NPWS, 1995).	0km	Ecological and Hydrological
001775	Murphy's Bridge Esker pNHA	Esker ridge with calcareous grassland and supports the rare and protected hemp nettle.	3.0km	None
000918	Rahugh Ridge (Kiltober Esker) pNHA	The wood is exceptionally rich in species with several uncommon or rare species: Dogwood (<i>Cornus sanguineus</i>), Columbine (<i>Aquilegia vulgaris</i>), Purging Buckthorn (<i>Rhamnus catharticus</i>), Stone Bramble (<i>Rubus saxatilis</i>), Whitebeam (<i>Sorbus hibernica</i>), Wood Melick (<i>Melica uniflora</i>). The small existing gravel pits that have been allowed to become recolonised,	4.3km	None

		the southernmost now has a colony of a nationally rare and protected Hemp nettle (<i>Galeopsis agustifolia</i>)		
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- 2.69. As shown in **Table 2-6** above, the Proposed Development Site is not located within or directly adjacent to any designated sites. Two European Designated sites have pathways for potential impacts to the Proposed Development Site. There is one non-statutory (Proposed Natural Heritage Area) site with pathways for potential impacts with the Proposed Development Site.
- 2.70. The Proposed Development Site is hydrologically connected to Charleville Wood SAC. There is a shared hydrological pathway linking both elements (grid connection and substation) of the Proposed Development Site to the Charleville Wood SAC. Ballyteige Little, a stream that runs parallel with the west and north facing flanks of the substation boundary area flows into the Corndarragh Stream, a tributary of the Tullamore River²³. This river flows through Charleville Wood SAC. The hydrological pathway leading from the grid connection begins with the Corndarragh stream that flows underneath the Kilmurry road in a southward direction where it flows into the Tullamore River where it flows through the Charleville Wood SAC. As such the Charleville Wood SAC will be considered further for **hydrological connectivity** with the Proposed Development Site.
- 2.71. The Proposed Development Site is not hydrologically connected to the River Barrow and River Nore SAC as the SAC lies within a separate river catchment therefore qualifying features that are aquatic in nature have been scoped out for any significant impact and do not require further assessment. Ecological connectivity has been assessed with specific focus given to the semi -aquatic mobile species, otter. It is important to note that when assessing otter for connectivity the SAC is at a higher elevation, streams traversing the Proposed Development Site flow west towards Tullamore and lie within a separate river catchment to the River Barrow. Habitats within the Proposed Development Site boundary provide limited ecological value in the form of commuting and foraging habitat. The remaining terrestrial qualifying features (habitats) have also been assessed, no pathway for connectivity exists. It is considered that there is ecological connectivity between the SAC and the Proposed Development Site due to the qualifying mobile species, otter. As such the River Barrow and River Nore SAC will be considered further for **ecological connectivity** with the Proposed Development Site.
- 2.72. Clara Bog SAC, Split Hills and Long Hill Esker SAC and Raheenmore Bog SAC are all located upstream of the Proposed Development Site, therefore there is no hydrological pathway for the development to impact upon these SACs. Each of these sites are not designated for mobile species and therefore, there is no pathway for ecological connectivity. Therefore, there is no pathway for impacts. As a result, **Clara Bog SAC, Split Hills and Long Hill Esker SAC and**

²³ Available at: <https://gis.epa.ie/EPAMaps/>

Raheenmore Bog SAC have been scoped out and have not been assessed any further within this report.

- 2.73. Lough Ennell SAC just falls within the 15km study area. There is no hydrological or ecological pathway that connect this SAC to the Proposed Development Site. Therefore, there is no pathway for impacts. As a result, **Lough Ennell SAC has been scoped out and has not been assessed any further within this report.**
- 2.74. As both Clara Bog and Raheenmore Bog Ramsar sites in **Table 5-1** overlap SACs, conclusive statements regarding connectivity between the respective SACs and the Proposed Development Site apply to each associated Ramsar Site. No hydrological or ecological connectivity exists between the Proposed Development Site and the Clara Bog SAC and Raheenmore Bog SAC, therefore associated **Clara Bog Ramsar Site and Raheenmore Bog Ramsar Site have been scoped out and have not been assessed any further within this report.**
- 2.75. The Grand Canal pNHA is immediately adjacent to the Proposed Development Site Boundary is **hydrologically connected** to the Proposed Development Site via the Ballyteige Little and Corndarragh streams. In addition to this, due to proximity ecological connectivity is also considered. Although species that the Grand Canal pNHA is designated for are not identified for the particular section of canal that is in proximity to the Proposed Development Site, there is potential that some may use the Proposed Development Site to forage or commute. As such, the **Grand Canal pNHA is screened in for further assessment.**
- 2.76. The Charleville Wood pNHA is **hydrologically connected** to the Proposed Development Site and has been screened in for further assessment within this report. The Charleville Wood pNHA and SAC share the same hydrological pathway to the Proposed Development Site.

Habitats

- 2.77. The Fossitt Habitat survey of the Proposed Substation Site undertaken on the 9th and 10th of October 2024 identified nine habitat types.
- 2.78. Each habitat identified has been outlined in **Table 2-7** below along with other relevant target notes.
- 2.79. In addition, the phase 1 habitat map is shown within **Figure 2.2, Appendix 2A.**

Table 2-7: Habitat types on site

(Note: Fossitt Guide codes are indicated in brackets)

Habitat type	Species present	Observations/potential for species
Improved Agricultural Grassland (GA1)	Frequent species include; Yorkshire fog (<i>Holcus lanatus</i>), red and white clover sp. (<i>Trifolium pratense</i>) (<i>Trifolium repens</i>), common nettle (<i>Urtica dioica</i>),	The main habitat within the Development Boundary is improved agricultural grassland.

	thistle sp. (<i>Asteraceae</i>), common milkwort (<i>Polygala vulgaris</i>), and broadleaved dock (<i>Rumex obtusifolius</i>).	Potential for foraging badger.
Mixed Broadleaved Woodland (WD1)	Hawthorn (<i>Crataegus monogyna</i>), ash (<i>Fraxinus excelsior</i>), beech (<i>Fagus sylvatica</i>), grey willow (<i>Salix cinerea</i>), and hazel (<i>Corylus avellana</i>)	Potential for breeding birds and roosting bat.
Treelines (WL2)	Hawthorn (<i>Crataegus monogyna</i>), ash (<i>Fraxinus excelsior</i>), beech (<i>Fagus sylvatica</i>), grey willow (<i>Salix cinerea</i>), hazel (<i>Corylus avellana</i>), and dogrose (<i>Rose canina</i>) are abundant within the treeline, with nettles (<i>Urtica dioica</i>) and bramble (<i>Rubus fruticosus</i>) abundant among the trees.	Potential for breeding birds and roosting bats.
Hedgerow (WL1)	Within the hedgerows, bramble (<i>Rubus fruticosus</i>) and ivy (<i>Hedera helix</i>) are abundant as well as occasional creeping thistle (<i>Cirsium arvense</i>). Hawthorn (<i>Crataegus monogyna</i>), ivy (<i>Hedera helix</i>), bramble (<i>Rubus fruticosus</i>), hart's-tongue fern (<i>Asplenium scolopendrium</i>), and meadowsweet (<i>Filipendula ulmaria</i>).	Hedgerows are found on both outer and inner field boundaries. Potential for breeding birds and roosting bats.
Scrub (WS1)	Gorse (<i>Ulex europaeus</i>) and bramble (<i>Rubus fruticosus</i>).	Potential for breeding birds. Potential for foraging badger.
Depositing/Lowland Watercourses (FW2)	In places it is overgrown by dense bramble (<i>Rubus fruticosus</i>), creeping thistle (<i>Cirsium arvense</i>), nettle (<i>Urtica dioica</i>), guelder rose (<i>Viburnum opulus</i>), and hedge bindweed (<i>Calystegia sepium</i>).	Ballyteige Little is a first order stream that flows from the southeastern point of the substation boundary and flows in a westward direction towards Tullamore town. Potential for freshwater wildlife. Potential ecological corridor for local wildlife.
Drainage Ditches (FW4)	Most ditches are wet with steep banks, some filled with aquatic plants including watercress (<i>Nasturtium officinale</i>),	Field drains accompanied by either hedgerows or trees

	water parsnip (<i>Sium latifolium</i>), bramble (<i>Rubus fruticosus</i>), Yorkshire fog (<i>Holcus lanatus</i>), common reed (<i>Phragmites australis</i>), common rush (<i>Juncus effusus</i>), and iris sp. (<i>Iridaceae</i>).	border most fields in the Proposed Substation Site. Potential ecological corridor for local wildlife.
Dry Canals (FW3)	This section of the Canal is densely vegetated with common reed (<i>Phragmites australis</i>), bramble (<i>Rubus fruticosus</i>), nettle (<i>Urtica dioica</i>) and occasional willow tree sp. (<i>Salix</i>).	A section of the Dry canal is located close to the substation access and directly adjacent to the horizontal directional drilling location that joins to the site access. Potential for freshwater wildlife. Potential ecological corridor for local wildlife.
Buildings and Artificial Surfaces (BL3)	N/A	Considered to be of low ecological value.

Target Notes

2.80. Target notes were produced and are outlined in **Table 2-8** for areas of habitat too small to identify clearly within the Fossitt Habitat survey map (**Figure 2.2, Appendix 2A**), or to note suitable habitat for protected/notable species.

Table 2-8: Target Notes

Target Note	Description
TN1	Ash tree with low bat roost potential (N 39513 27295)

Protected and Notable Species

Desk Based

2.81. The potential presence of protected species within the study area was assessed through a data search conducted through the NBDC. This identified records of invasive, rare, scarce and protected species within 2km of the Proposed Development Site. The element of the Proposed Development Site that is located within greenfield land class is located within the

2km grid square N32Y. A database search was also carried out for adjacent grid squares to ensure a full assessment of the 2km radius (N32U, N32Z, N42E, N32T, N32Y, N42D, N32S, N32X, N42C), of the Irish National Grid Reference (ITM) N 39363 27330.

- 2.82. 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, broad-scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species.
- 2.83. In addition, the Fossitt habitat survey included a species scoping survey in order to assess the potential of the site to support protected species.
- 2.84. **Table 2-9** below summarises the protected/notable species recorded within the search area, and their potential to be present within the Proposed Substation Site.

Table 2-9: Summary of Biological Records

SPECIES	GRIDS WITH RECORDINGS OF SPECIES	SUITABLE HABITAT OR FIELD SIGNS OBSERVED WITHIN ECOLOGICAL SURVEY AREA	POTENTIAL FOR SPECIES WITHIN PROPOSED SUBSTATION SITE
MAMMALS			
Eurasian pygmy shrew (<i>Sorex minutus</i>)	N32T	Yes	Yes
Eurasian red squirrel (<i>Sciurus vulgaris</i>)	N32U	Yes	Yes
European rabbit (<i>Oryctolagus cuniculus</i>)*	N32T	Yes	Yes
Greater white-toothed shrew (<i>Crocidura russula</i>)*	N32T, N32U	Yes	Yes
House mouse (<i>Mus musculus</i>)*	N32T	No	No
Pine marten (<i>Martes martes</i>)	N32X	No	No
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	N32U	Yes	Yes

West european hedgehog (<i>Erinaceus europaeus</i>)	N32T, N32U	Yes	Yes
Wild boar (<i>Sus scrofa</i>)*	N32U	No	No
BIRDS			
Barn swallow (<i>Hirundo rustica</i>)	N32S, N32T, N32U, N32Y, N42C, N42D, N42E	Yes	Yes
Blackcap (<i>Sylvia atricapilla</i>)	N32S, N32Y, N42E	Yes	Yes
Blue tit (<i>Cyanistes caeruleus</i>)	N32S, N32T, N42D	Yes	Yes
Chaffinch (<i>Fringilla coelebs</i>)	N32S, N32T, N32U, N42D	Yes	Yes
Coal tit (<i>Periparus ater</i>)	N32S, N32T, N32U	Yes	Yes
Common blackbird (<i>Turdus merula</i>)	N32S, N32T, N42D, N42E	Yes	Yes
Common bullfinch (<i>Pyrrhula pyrrhula</i>)	N32S, N32T, N42D, N42E	Yes	Yes
Common buzzard (<i>Buteo buteo</i>)	N32S, N32T, N32Z	Yes	Yes
Common chiffchaff (<i>Phylloscopus collybita</i>)	N32S, N42D	Yes	Yes
Common cuckoo (<i>Cuculus canorus</i>)	N32U, N32Y	Yes	Yes
Common linnet (<i>Carduelis cannabina</i>)	N32T, N42D	Yes	Yes
Common pheasant (<i>Phasianus colchicus</i>)	N32S, N32T, N32U, N42D	Yes	Yes
Common raven (<i>Corvus corax</i>)	N32T	Yes	Yes
Common snipe (<i>Gallinago gallinago</i>)	N32Y, N42D	Yes	Yes
Common starling (<i>Sturnus vulgaris</i>)	N32S, N32T, N42D	Yes	Yes

Common swift (<i>Apus apus</i>)	N32S	Yes	Yes
Common whitethroat (<i>Sylvia communis</i>)	N32S, N42D, N42E	Yes	Yes
Common wood pigeon (<i>Columba palumbus</i>)	N32S, N32T, N32U, N42D, N42E	Yes	Yes
Dunnock (<i>Prunella modularis</i>)	N32S, N32T, N42D, N42E	Yes	Yes
Eurasian collared dove (<i>Streptopelia decaocto</i>)	N32S, N32T	Yes	Yes
Eurasian jackdaw (<i>Corvus monedula</i>)	N32S, N32T, N32Z, N42D	Yes	Yes
Eurasian jay (<i>Garrulus glandarius</i>)	N32U	Yes	Yes
Eurasian sparrowhawk (<i>Accipiter nisus</i>)	N42D	Yes	Yes
Eurasian treecreeper (<i>Certhia familiaris</i>)	N42D	Yes	Yes
Eurasian wren (<i>Troglodytes troglodytes</i>)	N32S, N32T, N42D, N42E	Yes	Yes
European goldfinch (<i>Carduelis carduelis</i>)	N32S, N32T, N32U, N42E	Yes	Yes
European greenfinch (<i>Carduelis chloris</i>)	N32S, N32T, N32U	Yes	Yes
European robin (<i>Erithacus rubecula</i>)	N32S, N32T, N32Z, N42D, N42E	Yes	Yes
Fieldfare (<i>Turdus pilaris</i>)	N32S, N32T	Yes	Yes
Goldcrest (<i>Regulus regulus</i>)	N32S, N42D, N42E	Yes	Yes
Great tit (<i>Parus major</i>)	N32S, N32T, N42D	Yes	Yes
Grey heron (<i>Ardea cinerea</i>)	N32Y	Yes	Yes
Grey wagtail (<i>Motacilla cinerea</i>)	N32S	Yes	Yes

Hooded crow (<i>Corvus cornis</i>)	N32S, N32Z, N42D	Yes	Yes
House martin (<i>Delichon urbicum</i>)	N32S, N32T, N32U, N42C, N42D	Yes	Yes
House sparrow (<i>Passer domesticus</i>)	N32S, N32T, N32U, N42C, N42D	Yes	Yes
Lesser redpoll (<i>Carduelis cabaret</i>)	N42E	Yes	Yes
Long-tailed tit (<i>Aegithalos caudatus</i>)	N32T, N42E	Yes	Yes
Magpie (<i>Pica pica</i>)	N32S, N32T, N32Z, N42D	Yes	Yes
Meadow pipit (<i>Anthus pratensis</i>)	N32T, N42D	Yes	Yes
Mistle thrush (<i>Turdus viscivorus</i>)	N32S, N32T	Yes	Yes
Northern lapwing (<i>Vanellus vanellus</i>)	N32S, N32T	Yes	Yes
Pied wagtail (<i>Motacilla alba (yarrellii)</i>)	N32T	Yes	Yes
Redwing (<i>Turdus iliacus</i>)	N32S, N32T	Yes	Yes
Reed bunting (<i>Emberiza schoeniclus</i>)	N32S, N32T, N42D, N42E	No	No
Rook (<i>Corvus frugilegus</i>)	N32S, N32T, N32U, N32Z, N42D	Yes	Yes
Sedge warbler (<i>Acrocephalus schoenobaenus</i>)	N32S	No	No
Skylark (<i>Alauda arvensis</i>)	N32S, N42D	Yes	Yes
Song thrush (<i>Turdus philomelos</i>)	N32S, N32T, N42D, N42E	Yes	Yes
Spotted flycatcher (<i>Muscicapa striata</i>)	N42D, N42E	Yes	Yes
Stonechat (<i>Saxicola torquata</i>)	N32T	Yes	Yes

White wagtail (<i>Motacilla alba</i>)	N32S, N32T, N42D	Yes	Yes
Willow warbler (<i>Phylloscopus trochilus</i>)	N32S, N32T, N32Y, N42D, N42E	Yes	Yes
Yellowhammer (<i>Emberiza citrinella</i>)	N32T, N32U, N42C, N42D, N42E	Yes	Yes
PLANT			
Alder buckthorn (<i>Frangula alnus</i>)	N42E	Yes	Yes
Butterfly bush (<i>Buddleja davidii</i>)*	N32U	Yes	Yes
<i>Glebionis segetum</i>	N32U	Yes	Yes
Irish whitebeam (<i>Sorbus hibernica</i>)	N32X	Yes	Yes
Nuttall's waterweed (<i>Elodea nuttallii</i>)*	N32S, N32X, N42C	Yes	Yes
Sycamore (<i>Acer pseudoplatanus</i>)*	N32S, N32U, N32X, N42C	Yes	Yes
Traveller's joy (<i>Clematis vitalba</i>)*	N32S	Yes	Yes
Wall cotoneaster (<i>Cotoneaster horizontalis</i>)*	N32Z	No	No
INVERTEBRATES			
Gipsy cuckoo bee (<i>Bombus (psithyrus) bohemicus</i>)	N32Z	Yes	Yes
Large red tailed bumble bee (<i>Bombus (melanobombus) lapidarius</i>)	N32U, N32Y, N32Z	Yes	Yes
Small heath (<i>Coenonympha pamphilus</i>)	N32U, N32Z	Yes	Yes

CRUSTACEANS			
Freshwater white-clawed crayfish (<i>Austropotamobius pallipes</i>)	N32X	Yes	Yes
MOLLUSCS			
Jenkins' spire snail (<i>Potamopyrgus antipodarum</i>)*	N32X	Yes	Yes

2.85. Table 2-10 below details the results of the NBDC Bat Suitability Index search undertaken for the Proposed Development.

Table 2-10: Bat Suitability Index

Species	Index Score
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	42
Brown long-eared bat (<i>Plecotus auritus</i>)	31
Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	44
Lesser horseshoe bat (<i>Rhinolophus hipposideros</i>)	0
Leisler's bat (<i>Nyctalus leisleri</i>)	43
Whiskered bat (<i>Myotis mystacinus</i>)	12
Daubenton's bat (<i>Myotis daubentonii</i>)	34
Nathusius's pipistrelle (<i>Pipistrellus nathusii</i>)	6
Natterer's bat (<i>Myotis nattereri</i>)	35

Field Survey

Badger

- 2.86. Records of badger were identified within the 2km desk-study data search. No definitive signs of badger activity were noted during the survey.
- 2.87. Suitable habitats for badgers were observed, including treeline, hedgerow and scrub for sett-building and wet grassland and improved agricultural grassland for foraging badgers.

Bats

- 2.88. There are records of Soprano pipistrelle in the 2km data search of the site. Soprano pipistrelle records are from grid square N32U, the Proposed Substation Site is within grid square N32Y. Improved grassland forms the majority of this site, offering sub-optimal foraging habitat for bat species due to their limited prey abundance.
- 2.89. The woodlands, treelines and hedgerows provide more suitable foraging and roosting habitat, while the watercourse, drainage ditches, scrub and wet grassland will also provide some foraging opportunities.
- 2.90. One standalone mature ash tree (see **Table 2-8 & Appendix 2A – Figure 2.2**) within a hedgerow was identified as having Low Bat Roost potential adjacent to the Proposed Substation and along proposed substation track.
- 2.91. No sightings or definitive field signs of bats were observed within the survey area.

Otter

- 2.92. Records of otter were identified by the 2km desk-study data search.
- 2.93. No sightings or field signs of otter were noted during the site walkover. However, suitable habitat for foraging/commuting otter was noted in the survey area. The watercourse and drainage ditches within the Proposed Development Site may provide suitable habitat for foraging and commuting otters. However, most habitats within the Proposed Development Site are considered to be sub-optimal for otter, as these are predominantly Improved Agricultural grassland, bounded by hedgerows and treelines. Therefore, the use of the Proposed Development Site by otter is likely to be restricted to foraging/commuting otter.

Pygmy Shrew

- 2.94. Records of pygmy shrew were identified within the 2km desk-study data search. This species is adapted to a wide range of habitats including improved grassland and hedgerows.
- 2.95. No evidence of this species was identified during the walkover surveys.

Red Squirrel

- 2.96. Records of red squirrel were identified within the 2km desk-study data search.
- 2.97. Mixed broadleaf forest in the ESA may provide suitable habitat for red squirrel. However, most habitats within the Proposed Development Site are considered to be sub-optimal, as these are predominantly Improved Agricultural grassland, bounded by hedgerows and treelines. Therefore, the use of the Proposed Development Site by red squirrel is likely to be restricted to commuting along tree lines due to the abundance of optimal habitat outside of the Development Area.

Pine Marten

- 2.98. Records of pine marten were identified within the 2km desk-study data search.
- 2.99. Mixed broadleaf forest on the edge of the Proposed Development Site may provide suitable habitat for pine marten. However, most habitats within the Proposed Development Site are considered to be sub-optimal, as these are predominantly Improved grassland, bound by hedgerows and treelines.

Other Mammals

- 2.100. Records of Greater white-toothed shrew, House mouse, West European hedgehog were identified within the 2km desk-study data search. These species are adapted to a wide range of habitats. Treelines, mixed broadleaved woodland, hedgerow along the boundary of the site provide cover and foraging resources.
- 2.101. No evidence of these species were identified during the walkover surveys.
- 2.102. There were no direct observations of terrestrial mammals during either site walkover survey.

Birds

- 2.103. A desk study was completed to identify any possible protected species on or within 2km of the site, and the potential of the Proposed Development Site to support protected species.
- 2.104. Hedgerows, treelines and mixed broadleaved woodland within the Proposed Development Site and ESA provide suitable habitat for breeding birds. Improved grassland may offer potential nesting and feeding habitat for farmland breeding birds as areas of the Proposed Development Site sward are between five and fifteen centimetres high due to grazing.

Herptiles

- 2.105. The 2km desk-study data search returned no records of herptile in the local area.
- 2.106. Hedgerows, woodland, treeline, scrub and depositing lowland rivers provide refuge, foraging and commuting habitats for herptile species.
- 2.107. No sightings or evidence of herptile activity was noted within the survey area.

Invertebrates

- 2.108. Gipsy cuckoo bee, Large red tailed bumble bee and Small heath were identified in the 2km desk study. These species are status 'Near Threatened' on the Irish Red List. There is available habitat on site for all three species, which are present in a wide range of habitats including woodland, treeline, hedgerow, depositing lowland river, wet grassland, scrub and improved agricultural grassland.

2.109. No notable invertebrate species were recorded during the Fossitt habitat survey.

Molluscs

2.110. The 2km desk-study data search returned records of the medium impact invasive mollusc – Jenkins' Spire Snail.

2.111. The depositing lowland river habitat (1st order stream) provides refuge and foraging and for this mollusc species.

2.112. No sightings or evidence of Jenkins' Spire Snail activity was noted within the survey area.

2.113. Standard design buffers to watercourses will act as an avoidance measure in the unlikely event that this species occurs within the first order stream that bounds the site. This species has not been considered any further within this report.

Freshwater Crustaceans

2.114. The 2km desk-study data search returned records of Freshwater White-clawed Crayfish an Annex II species from grid square N32X, it is important to note that the Proposed Development Site does not lie within this grid square.

2.115. No sightings or evidence of Freshwater White-clawed Crayfish activity was noted within the survey area.

2.116. In addition to this the 1st order stream is not a suitable habitat for this species and therefore has not been discussed any further within this report.

Flora

2.117. No notable flora species were recorded during the Fossitt habitat survey. Given the habitat recorded within the Proposed Development Site, it is considered likely to support a range of common plant species.

IMPACT ASSESSMENT

Best Practice Pollution Prevention Measures

- 2.118. 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.
- 2.119. 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 will be stored in secure containers to avoid potential contamination;
- 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;
- 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.

Horizontal Directional Drilling (HDD)

2.120. The use of horizontal directional drilling can pose indirect risks such as sediment and pollution risks. As such, HDD-specific mitigation is required to avoid adverse effects on ecological receptors and maintain habitat integrity. The following best-practice measures will be implemented along areas of HDD where appropriate:

- Drill entry and exit pits will be located a minimum of 10m from dry channels, with all excavated spoil also stockpiled at least 10m away to reduce the risk of runoff or sediment transport.
- Silt barriers, consisting of fencing fitted with geotextile fabric, will be constructed along the base of any spoil stockpiles and positioned on sloped ground to prevent surface water runoff.
- Filter fabric will be trenched into the ground to trap coarse particles in surface water, particularly during periods of heavy rainfall.
- The drill path will be designed to maintain a depth of at least 3m beneath the canal bed, to minimise the risk of ground fracture (frac-out) and to ensure the cable remains protected from any future re-watering or natural erosion.
- Although the canal is dry, an Ecological Clerk of works will be assigned to monitor the HDD alignment during drilling activities to detect any potential frac-out or surface migration of drilling fluid. If any signs are observed, all drilling will cease immediately.
- A precautionary containment boom will be placed downslope (if applicable) to intercept any accidental spills or drilling residues.
- Any groundwater or drilling fluid extracted from the pits will be temporarily stored in baffled settlement tanks and discharged to adjacent grassed areas, avoiding direct discharge into drainage channels or the canal bed.
- Excess drilling lubricant will be tankered off-site for recycling, with a tractor and tanker on standby at the entry pit throughout operations.

Adopted Design Principles

- Integral design measures will ensure that impacts on ecological receptors from the proposed development will be reduced. These are separate to mitigation measures, which are outlined later in this report. As part of the Proposed Development design, security fencing is to have 0.1m gap at the bottom mammal gates to allow free movement of otter through the site;
- Protection buffers of 2m along drainage ditches, 5m from boundary watercourse and a 10m buffer along the Ballyteige Little have been incorporated into the design of the Proposed Development.
- Buffers of 30m will be implemented around all badger setts to reduce any chance of disturbance to the species.

Designated Sites

- 2.121. Potential pathways for impact for these European Designated sites have been outlined within the Natura Impact Statement (Volume 1).
- 2.122. Within 15km of the Proposed Development Site boundary there are six Special Areas of Conservation (SACs), no Special Protection Areas (SPAs) and one Ramsar site. There is one Natural Heritage Area (NHA) within 5km of the Proposed Development Site, and seven potential Natural Heritage Areas (pNHAs).

In the Absence of Mitigation

- 2.123. River Barrow and River Nore SAC is located approximately 12.22km south of the Proposed Development Site and is designated for a number of important Annex I habitats and Annex II species (see **Table 2-6** above). Ecological connectivity exists between this SAC and the Proposed Development Site.
- 2.124. The coastal habitats of the SAC (Estuaries, Mudflats and sandflats not covered by seawater at low tide, Reefs, *Salicornia* and other annuals colonising mud and sand, Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) and Mediterranean salt meadows (*Juncetalia maritimi*) are located over 100km from the Proposed Development Site.
- 2.125. There is no hydrological pathway between the Proposed Development Site and the SAC. There will be no loss or contamination of any of the qualifying habitats of the SAC from the Proposed Development.
- 2.126. River lamprey (*Lampetra fluviatilis*), sea lamprey (*Petromyzon marinus*), brook lamprey (*Lampetra planeri*), twaite shad (*Alosa fallax fallax*), Atlantic salmon (*Salmo salar*), white-

clawed crayfish (*Austropotamobius pallipes*) and Nore pearl mussel (*Margaritifera durrovensis*) and freshwater pearl mussel (*Margaritifera margaritifera*) are species confined to the aquatic environment. As the Proposed Development Site is not hydrologically connected to the SAC there will be **no significant effect** on these qualifying species.

- 2.127. Otter is a highly mobile species and can hold territories from 2km to 20km. Although there is not a direct hydrological pathway, there are streams and habitats that offer limited commuting and limited foraging areas and connect to the boundary of the Proposed Development Site, and otter are capable of traversing overland to suitable habitat for feeding and resting. Although considered unlikely, there is potential that otter from the SAC could occasionally use the substation area of the Proposed Development Site. Other rivers and watercourses between the SAC and the site offer more suitable habitat and therefore it is unlikely they would commute as far as the Proposed Development Site. The section of the grid connection where the Corndarragh stream bisects does not provide foraging or commuting habitat for otter.
- 2.128. No evidence of otter was noted during the site walkover, however, suitable areas in the form of limited foraging/commuting habitat was noted in the survey area. It is therefore considered that any potential impacts for this species would be limited to foraging/commuting otter.
- 2.129. Potential impacts for otter include the loss of habitat, disturbance, fragmentation of habitat and pollution.
- 2.130. Best practice pollution prevention measures and integral design measures have been adopted to minimise any effects from pollution. The Proposed Development design includes 2m buffers from all field drains, 5m from boundary watercourse and a 10m buffer from Ballyteige Little EPA 1st order stream that runs parallel with the west and north facing flanks of the substation boundary.
- 2.131. Loss of habitat directly under the Proposed Development footprint will be relatively low, and will mainly comprise wet grassland, which is of low value for otter. As noted above, best practice pollution prevention measures and integral design measures 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.
- 2.132. 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 (**Volume 1**).

Charleville Wood SAC & proposed Natural Heritage Area

In the Absence of Mitigation

- 2.133. As the Charleville Wood SAC and Charleville pNHA overlap and are designated for the same qualifying features, they have been assessed in unison.
- 2.134. The Charleville Wood SAC & pNHA is located approximately 2.7km southwest of the Proposed Development Site and is designated owing to an Annex I habitat (Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)) and its importance for the Annex II species *Vertigo moulinsiana* (Desmoulin's whorl snail).
- 2.135. Charleville Wood is a large area of ancient woodland. The qualifying habitats of the SAC & pNHA are not present within the Proposed Development Site. Desmoulin's whorl snail is restricted to wetlands (usually bordering lakes and river, or in fens). Suitable habitat for supporting this species is not found within the Proposed Development Site.
- 2.136. As the Proposed Development Site has a direct hydrological pathway to Charleville Wood SAC & pNHA via the Ballyteige Little watercourse, Corndarragh Stream which flows into the Tullamore River, there is potential for the occurrence of contaminants outlined within **Table 6-1** above to enter the SAC.
- 2.137. Potential contaminants are capable of undermining water quality and the conservation objectives of each qualifying species and habitat occurring within the ZOI of the overall development.
- 2.138. Best practice pollution prevention measures and integral design measures have been adopted to minimise any effects from pollution. These include 2m buffers from all field drains, 5m buffers from watercourse and a 10m buffer from Ballyteige Little EPA 1st order stream. These integral design measures and construction measures that are to be adhered to (See **Technical Appendix 8: Outline Construction Environmental Management Plan (OCEMP)**) in addition to the dilution factor will limit any significant effects of pollutants on these ecological features.
- 2.139. Given the nature and design of the Proposed Development, it is considered that no significant effects will occur on the qualifying species of the SAC & pNHA. Therefore, **no significant effects** are predicted for the SAC & pNHA.

The Grand Canal pNHA

In the Absence of Mitigation

- 2.140. The ecological value of the Grand Canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods.

- 2.141. The Grand Canal is located directly adjacent to the grid element of the Proposed Development and is designated for its importance for the diversity of species it supports along its linear habitats.
- 2.142. The Proposed Development Site is potentially ecologically and hydrologically connected to the Proposed Development Site. Although this particular section of the Grand canal has no reference to names of species that occur in it, there is potential that some may use the Proposed Development Site to forage or commute.
- 2.143. However, in the absence of mitigation it is unlikely that the loss of a small proportion of the common habitats present within the Proposed Development Site will amount to any significant impact upon the assemblage of common species associated with the pNHA. Protected species are assessed in the relevant sections elsewhere in this report.
- 2.144. Best practice pollution prevention measures and integral design measures have been adopted to minimise any effects from pollution. Measures have been included within the overall development design to prevent pollution entering the aquatic and terrestrial environment. The recommended **standard pollution prevention measures** can be secured through a suitably worded planning condition requesting a Construction Environmental Management Plan (See **Technical Appendix 8 - Outline Construction Environmental Management Plan**).
- 2.145. It is therefore considered that there will be **no significant effect** upon the Grand Canal pNHA as a result of the Proposed Development.

Recommended Measures

- 2.146. Standard best practice pollution prevention measures will be adhered to reduce any potential impacts on ecology during the construction phase.
- 2.147. An **Outline Construction Environmental Management Plan (OCEMP)** has been produced in support of this application, outlining the best practice measures for protecting the local environment, including terrestrial and aquatic habitats. Best practice pollution prevention measures and integral design measures have been adopted to minimise any effects from pollution.
- 2.148. Protection buffers of 2m along internal drainage ditches, 5m from boundary watercourse and a 10m buffer along the Ballyteige Little have been incorporated into the design of the Proposed Development. Best practice pollution prevention measures and integral design measures have been adopted to minimise any effects from pollution. Adopted Design Principles included within the Proposed Development include SuDS in the form of harvesting tanks and soakaway pits outlined within the supporting **Technical Appendix 4: Flood Risk & Drainage Impact Assessment**. Operations and activities that have the potential to impact on the water environment will be regularly monitored throughout the construction of the Proposed Development by the Site Manager.

- 2.149. As outlined above, the Proposed Development will ensure the retention of habitats throughout the lifetime of the proposed substation. As part of the planning application for the Proposed Development, a Biodiversity Management Plan (BMP) will be submitted which will ensure the enhancement of the Proposed Development Site post-construction, which will in turn benefit an SAC qualifying species (otter).

Residual Effects After Design, Best Practice and Mitigation Measures

- 2.150. From the findings of the above assessment, it is considered that **no significant adverse effects** will arise for any of the designated sites.

Habitats

In the Absence of Mitigation

- 2.151. The construction of the Proposed Development that occurs over greenfield contains mainly improved agricultural grassland, bounded by treelines, hedgerows and a drainage ditch. Lands within the 50m ESA mainly comprise of improved agricultural grassland. These habitats are of **low ecological value** and currently offer limited potential to support wildlife, these habitats are abundant within the greater area where the small percentage loss will not create a significant effect.
- 2.152. Habitat loss will only occur under the Proposed Development footprint in regard to structures such as a substation infrastructure including transformers, grid connection and HDD with cables. With the implementation of the Biodiversity Management Plan (BMP) under which habitats will be re-seeded with additional species specific to habitats within the Proposed Development Site, the overall biodiversity value of the Proposed Development Site will be increased.
- 2.153. It is therefore considered that the loss of habitat under the Proposed Development footprint **will not be significant**.

Recommended Measures

- 2.154. While the proposed substation, access tracks and cable route will result in the loss of habitats within the Proposed Development Site, as set out above these habitats are considered to be of generally low value. The measures set out within the BMP will ensure that retained areas are managed for the benefit of biodiversity to compensate for habitat loss occurring as a result of the Proposed Development.

Residual Effects after Enhancement Measures and Best Practice

- 2.155. With the implementation of compensatory measures (see Appendix 2D) and associated enhancement of retained habitats for biodiversity, it is considered that the small-scale loss of habitats which will occur as a result of the Proposed Development will be fully mitigated.

Residual effects to habitats are therefore considered to be **Negligible** and **Not Significant**. Additionally, such measures have potential to deliver ecological enhancements within the Proposed Development Site for habitat biodiversity generally and for a range of protected species in the medium to long term. Such enhancements are considered to represent a **net beneficial gain** for habitat biodiversity within the Proposed Development Site.

Protected and Notable Species

In the Absence of Mitigation

2.156. 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.

Badger

2.157. No definitive signs of badger activity were noted at the time of the Species Scoping survey, although habitats such as hedgerow and treeline within the substation boundary are suitable for sett building and improved agricultural grassland is suitable for foraging and commuting badger.

2.158. The construction phase has the potential to impact upon badger by causing disturbance or destruction of badger setts. During the construction phase, the Proposed Development can cause undue stress if accidentally trapped within any exposed excavations left overnight. During the operation phase the security fencing used within the Proposed Development can affect access to foraging areas within the Proposed Development Site which are part of a clan's territory. In the absence of mitigation, badgers may be significantly affected by the Proposed Development.

2.159. Foraging opportunities for Badger foraging habitat exist within the Proposed Development Site. This is largely confined to the 5 m buffer zones along hedgerows and treelines which provides suitable sett-building opportunities. The improved grassland habitat will largely be removed to facilitate the Proposed Substation; however, this has been considered with the implementation of measures within the associated BMP. This includes enhanced species-rich grassland, increasing the quality and extent of foraging habitat long term. However, in the absence of mitigation, there is the potential for effects for badger from the Proposed Development owing to the potential impacts of the construction phase.

Bats

2.160. There were no records of bats from the 2km data search of the site. Improved agricultural grassland forms the majority of the Proposed Development Site and this habitat offers sub-optimal foraging habitat for bat species due to their limited prey abundance. The loss of grassland under the Proposed Development footprint will not lead to a significant reduction

in foraging habitat for local bats. The Drainage ditch, treeline, hedgerow and stream may provide suitable habitat for foraging and commuting bats. Given the minimal loss of hedgerows and the abundance of suitable habitat in this area, the proposed losses are not expected to have a significant effect on bats.

- 2.161. One standalone mature ash tree within a hedgerow was identified as having Low Bat Roost potential adjacent to the Proposed Substation boundary and along the proposed track. The ash tree with Low Bat Roost Potential (target note 1) has been identified as potentially suitable for opportunistic use by bats. This may result in adverse effects upon bats utilising the tree if unmitigated.
- 2.162. In the event that Proposed Development necessitates the removal/trimming of the ash tree with Low Bat Roost Potential, soft felling techniques will be used, following the precautionary principle, if roost potential exists, to ensure that no cavities are cut through and branches or trunk sections with cavities are lowered carefully to the ground and left with the access hole upward-facing overnight to allow any bats potentially present to leave safely. Such works will also be overseen by a suitably qualified and experienced ECoW.

Otter

- 2.163. The movement of otter between suitable habitats cannot be fully ruled out, as otter are highly mobile species and can travel significant distances across land while foraging. No field signs of this species were observed during the survey work undertaken, and use of the Proposed Development Site by otter is likely to be restricted to foraging and commuting otter.
- 2.164. Pollution from contaminated surfaces 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.
- 2.165. There is potential for any otters using the site during the construction phase to become trapped in trenches excavated during works. However, in line with best practice, all excavations during the construction phase of the Proposed Development will be securely covered and will therefore prevent the accidental trapping of this species.
- 2.166. Standard best practise measures in regard to pollution prevention (as identified in **Technical Appendix 8: Outline Construction Environmental Management Plan**) will be implemented to prevent contamination of the aquatic environment during the construction phase of the Proposed Development.
- 2.167. With design measures in place and the use of standard best practice measures, there will be **no significant adverse effects** on otter from the Proposed Development.

Other mammals

2.168. The Proposed Development **will not lead to significant loss** of habitat for other mammal species. Small areas of treeline, scrub and hedgerow will be lost, but these are abundant within the local area.

Birds

2.169. Main impacts on bird species from developments include:

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

2.170. The Proposed Development will predominantly occur on land that is currently of low ecological value and is subject to a level of disturbance from current agricultural activities. However, potential nesting and feeding habitat is present for farmland breeding birds.

2.171. Where vegetation removal is required for access, mitigation measures are outlined within table 2-13 to include a pre-construction breeding bird survey (March to August inclusive) on all vegetation to be removed.

Herptiles

2.172. Drainage ditches offer potential habitat for supporting herptile species, particularly common frog. There will be buffers of 2m or more from all field drains, 5m from boundary watercourse and a 10m buffer from the Ballyteige little; therefore, it is considered that **potential effects will not be significant** for local herptile species.

Invertebrates

2.173. The Proposed Development **will not lead to significant loss** of habitat for invertebrate species. small areas of scrub, improved agricultural grassland habitats will be lost, but these are abundant within the local area.

Flora

2.174. The Proposed Development **will not lead to significant loss** of protected flora. No likelihood of rare or protected plant species present were identified during the baseline assessment.

Mitigation and Enhancement Measures and Further Survey

Bats

- 2.175. With the implementation of the supporting BMP (**Appendix 2D**) which proposes new hedgerow planting, infilling existing hedgerows, and outlines measures to increase the diversity of flora species within the Proposed Development Site, fauna diversity will also increase, including prey for foraging bat species. The installation of bat boxes will provide new roosting opportunities.
- 2.176. For any trees being removed, soft felling techniques will be used, following the precautionary principle, if roost potential exists, to ensure that no cavities are cut through and branches or trunk sections with cavities are lowered carefully to the ground and left with the access hole upward-facing overnight to allow any bats potentially present to leave safely. Such works will also be overseen by a suitably qualified and experienced ECoW.
- 2.177. It is therefore considered that **potential effects will not be significant** on local bat species as a result of the Proposed Development.

Badger

- 2.178. Given that badgers are a highly mobile species, and are known to be present within the Proposed Development Site, it is recommended that a pre-construction badger survey is undertaken to ascertain whether new badger setts have been excavated and assess potential impacts on badger at the time of construction. Appropriate buffers of 10m (in which no construction activities will take place), 20m (only light work will occur, with no use of wheeled vehicles) and 30m (no use of heavy machinery) will be implemented around any new badger setts present to reduce any chance of disturbance to the species. During the breeding period, all aspects of the proposed scheme design construction works will incorporate a buffer distance of 50m around the recorded sett entrances to protect these areas from excessive disturbance (if any badgers setts are identified during the pre- construction survey).
- 2.179. All excavations during the construction phase of the Proposed Development will be securely covered and will therefore prevent the accidental trapping of this species. Security fencing will contain mammal gates to allow free movement of badgers through the site.
- 2.180. With the implementation of these measures, **no significant effects** are predicted for badger from the Proposed Development.

Otter

- 2.181. No otter or field signs of otter were identified within the ESA. With design measures in place and the use of standard best practice measures, there will be **no significant adverse effects** on otter from the Proposed Development.

- 2.182. It is, however, recommended that a precautionary pre-commencement survey be undertaken prior to any construction works should otter be using the watercourse, drainage ditches or any of the terrestrial habitats present. This is to account for the possibility that any otters present locally (though considered unlikely to be those individuals associated with the River Barrow and River Nore SAC) may be using the site at the time of construction.
- 2.183. Enhancement measures include the creation of features to benefit invertebrate populations. This will provide an enhanced food resource for potential otter prey items such as amphibians. This will therefore lead to a **minor positive effect** on otter.

Other mammals

- 2.184. No 'other mammals' or field signs of other mammals were identified within the ESA. With design measures in place, the use of standard best practice measures, planting and enhancements to the site there will be **no significant adverse effects** on 'other mammals' from the Proposed Development.
- 2.185. Enhancement measures include the creation of features to benefit invertebrate populations. This will provide an enhanced food resources for other mammals such as worms, slugs, snails and other macroinvertebrates. This will therefore lead to a **minor positive effect** on other mammals.

Birds

- 2.186. During the construction phase (including site preparation), it is considered that potential impacts on bird species from disturbance are likely.
- 2.187. 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. A 5m buffer from hedgerows within the Proposed Substation will be in place, as well as tree buffers to ensure that disturbance is minimal. Where vegetation removal is required for access, mitigation measures are outlined within table 2-13 to include Pre-construction breeding bird survey on all vegetation to be removed.
- 2.188. However, the proposed BMP (**Appendix 2D**) proposes enhancement opportunities including enhancing the existing hedgerow boundaries by infilling gaps and planting new species-rich hedgerows. Other enhancing measures for nesting birds within the site include placing bird boxes throughout the Proposed Development Site, and this in turn will lead to a positive effect on the bird community.
- 2.189. Post construction, with the implementation of the measures outlined within the supporting BMP, the potential to support local bird species will therefore increase within the Proposed Development Site. The creation of invertebrate-rich habitats will also provide a suitable food source for many bird species and will therefore result in **positive effects** for birds.

Herptiles

- 2.190. Post-construction, measures included in the proposed BMP (**Appendix 2D**) will increase herptile prey abundance. The creation of species-rich invertebrate habitat will result in a **minor positive effect** for local herptile species.

Invertebrates

- 2.191. The implementation of the BMP will lead to a higher value habitat for invertebrate species within the Proposed Development Site, leading to a **minor positive effect**.

Residual Effects after Design, Best Practice and Enhancement Measures

- 2.192. With the implementation of design, best practice and enhancement measures, including further surveys prior to and during the construction phase of the Proposed Development, it is considered that there will be no **significant adverse effects** upon protected or notable species. Indeed, there will be potential for **positive effects** on certain species.

CUMULATIVE EFFECTS

2.193. There is no standard prescriptive method for assessing cumulative and combined effects of planning applications within a given area. Planning applications considered within this cumulative assessment have been screened by distance, scale and nature, and further determined by comparing potentially overlapping zones of influence from other in regards to species, habitats and designated sites.

2.194. There are numerous applications and developments within the 5km buffer. The vast majority of these relate to residential developments (chiefly improvements to dwellings and housing extensions). Given the small scale of these residential projects and a lack of connectivity and impacts to designated sites, it is not reasonably likely that any of these would result in significant cumulative effects on designated sites.

The 'zone of influence' for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. The zone of influence will vary for different ecological features depending on their sensitivity to an environmental change²⁴

2.195. When considering cumulative effects, the detail to which the effects of other developments can be assessed quantitatively is dependent on the level of information available. Where environmental assessment information regarding other developments is not available, data deficient or uncertain, the assessment and screening of planning applications is conducted on a qualitative level.

2.196. In specific regard to this cumulative impact assessment, following relevant guidance²¹ a zone of influence/cumulative impact assessment radius of 5km from the Proposed Development Site's boundary has been established.

2.197. A search of the Offaly County Council online planning portal was undertaken to identify any Projects or developments within 5km which could impact, either alone or in combination with the Proposed Development with any European Designated Sites. These developments are outlined in **Table 2-11**.

²⁴CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3

Table 2-11: Cumulative Developments to within 5km

Planning Reference	Project Type	Planning Status	Distance and Direction	Date Granted
N/A	Solar PV development with a total site area of 28.10 hectares, to include solar PV ground mounted support structures, transformer stations, electrical cabling and ducting, internal access tracks and hardstanding areas, perimeter fencing and access gate, CCTV, a temporary construction compound and other ancillary infrastructure.	N/A	1.54km northeast	N/A
2198	Ballyteige Solar Farm – 50.53-hectare solar development and substation building	Conditional	0.00km	03/03/2022
Amendment to Planning Ref (2198)	Amendment to the previously consented Ballyteige Solar Farm – 50.53-hectare solar development and substation building	N/A	0.00km south	N/A
218	Battery Energy Storage System – Solar farm, battery storage and grid connection	Conditional	2.7km northeast	12/01/2022
1711	A 10 year permission (to construct development). the development will consist of a solar farm comprising: the installation of photovoltaic panels on ground mounted frames in rows on a site of c. 17.7 hectares	3.15km northwest	Conditional	31/08/2017

18167	0.84-hectare Battery Storage unit	Conditional	0.27km east	10/07/2018
16356	82 no. residential units comprising 66 no. houses (6 no. 2-storey 2-bed terraced / end of terrace / semi-detached, 20 no. 2-storey 3-bed terraced / end of terrace, 28 no 2-storey 3-bed semi-detached, 2 no, 2-storey 3 bed detached, 10 no. 3-storey 4-bed semi-detached), and 8 no. 3-bed duplexes	Conditional	1.55km southwest	10/07/2017
20465	Amendments to permitted residential development, (under reg. Ref. 1175 and as extended under reg. Ref. Ex16007) by the replacement of permitted 22 no. Dwellings (bungalows & dormer bungalows) with 30 no. Dwellings comprising 4 no. 2 storey 4 bedroom	Conditional	1.4km northwest	07/01/2021
22378	A period of 10 years to construct and complete a solar pv energy development with a total site area of 73.9 hectares, to include a control building, inverter substations, modules, solar pv ground mounted on support structures, temporary construction compounds, 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	Conditional	0.80km east	24/08/2023

	development works relating to access of the site. A natura impact assessment (nis) has been submitted with this application. The solar farm will be operational for 35 years.			
22523	A large-scale residential development (lrd). The proposed development will consist of 102 no. Dwellings in a mix of houses, duplex and apartment dwellings.	Conditional	1.00km south	16/05/2023
23112	Amendments to a previously permitted development, under abp-301489-18, which consisted of the construction of 12 two storey dormer semi-detached houses, 1 detached two storey dormer house and 7 terraced two storey dormer houses, roads, footpaths, sewers, and all ancillary services on a site at Daingean road, Puttaghaun, Tullamore, Co. Offaly. The amendments sought are for alterations to previously permitted floor plans and elevations, under abp-301489-18, to house types and for minor alterations to site layout and parking arrangements	Conditional	1.00km southwest	03/08/2023
23315	The replacement of a permitted single storey terminal electrical station and separate permitted switchgear enclosure (both previously permitted as part of a solar farm permission by Offaly County Council under	Conditional	3.25km west	24/08/2023

	planning ref. 17/11) with 1 no. proposed single storey 20kv substation building on the site of the previously permitted terminal station and switchgear enclosure.			
2460250	The construction of a solar PV development with an installed capacity of up to 2.6 MWdc (MEC=0) to provide electrical power to the existing distillery comprising approximately 4,100 no. photovoltaic panels on ground mounted frames	Conditional	3.8km south	13/11/2024
20579	A compound containing 2 no. Energy storage containers with a capacity of up to 10mw and associated transformers, inverters, a switchroom building of approximately 88m2 (containing switch and control rooms), internal cabling, electrical and communications	Conditional	3.5km south	09/02/2021
2360059	A Large-Scale Residential Development (LRD). The proposed development consists of 126 no. residential units comprised of 102 no. dwelling houses and 24 no. apartments and a childcare facility/creche. The houses are arranged as 7 no. two-story, detached houses (5 no. 3-bedroom, and 2 no. 4-bedroom), 50 no. two-storey, semi-detached houses (2 no., 4-bedroom, 44 no. 3-bedroom and 4 no. 2-bedroom), 21 no. two-storey terraced houses (in 7 terraces	Conditional	1.34km northwest	12/02/2024

	each with 3 no. 2-bedroom houses) and 24 no. three-story (third floor in roof/dormer space), semi-detached houses (containing 4 bedrooms).			
2460514	A new prefabricated substation building within the existing car park to cater for 5no. electric car charging points for 10no. electric car parking spaces, along with all associated ancillary site works	Conditional	2.1km south	18/02/2025
ABP Number	Development	Planning Status	Distance and Direction	Date Granted
309488	A renewable biogas facility on a 2.1379-hectare site to produce renewable energy and organic fertiliser.	Conditional	3.00km west	17/02/2022
311741	349 no. residential units (196 no. houses, 153 no. apartments), creche and associated site works.	Live Case	2.85km south	N/A
317341	The construction of 95 no. Houses comprising of 30 no. Two storey three bedroom terrace (house type c), 17no. Two storey three bedroom terrace (house type c1), 9no. Two storey two bedroom terrace (house type c2), 8no. Two storey three bedroom terrace (house type d), 11no. Two storey three bedroom semi-detached/terrace (house type e), 3no. Two storey two bedroom terrace (house type f), 6no. Two storey two bedroom semi-detached/detached (house	Conditional	1.85km southwest	04/03/2024

	<p>type g), 1no. Two storey three bedroom semi-detached (house type h), 4no. Two storey three bedroom detached (house type h1), 3no. Two storey three bedroom semi-detached (house type h2), 3no. Single storey one bedroom terrace (house type k) and all associated siteworks</p>			
311101	<p>Development of 4 storey nursing home, step down facility and rehabilitation and convalescence unit to accommodate a total of 244 bedrooms, communal spaces, dining areas, administration, ancillary service spaces and meeting and consulting rooms. Site to accommodate 197 car park spaces, new site entrance, security kiosk, pump station, plant rooms and associated site works.</p>	Conditional	0.20km west	09/12/2021
318041	<p>A period of 10 years to construct and complete a solar PV energy development with a total site area of 73.9 hectares, to include a control building, inverter substations, modules, solar PV ground mounted on support structures, temporary construction compounds, internal access tracks, security fencing, electrical cabling and ducting, CCTV and other ancillary infrastructure, drainage, additional landscaping and</p>	Conditional	0.00km east	26/06/2024

	habitat enhancement as required and associated site development works relating to access of the site. A natura impact assessment (NIS) has been submitted with this application. The solar farm will be operational for 35 years.			
22387	10 year permission (to construct development) for a solar farm comprising the installation of photovoltaic panels on ground mounted frames in rows on an area of c.83.55ha and all associated infrastructure. The application seeks permission for the solar farm to remain for 40 years and for permanent permission for the substation	Conditional	1.87km northwest	06/11/2024
318339	Construction of Large-Scale Residential Development (LRD) comprising 148 residential units and creche.	Conditional	0.15km southwest	26/01/2024

2.198. The majority of planning applications within the area of the Proposed Development Site are residential or agricultural developments of a smaller scale. A selection of relevant projects with potential for in-combination effects have been recorded above and include other substation developments.

2.199. The proposed Derrygrogan Little solar development located approximately 1.54km northeast of the Proposed Development has been subject to an ecological assessment with accompanying Natura Impact Statement. The status of this application is not determined at the time of assessment however, due to the nature and proximity this has been considered for potential in-combination effects. This application is not anticipated to give rise to any likely significant impacts on any priority habitats or species. The only shared pathway for potential connectivity is with the Grand Canal pNHA. Best practice pollution prevention and integral design measures have been adopted to minimise any effects from pollution. With the implementation of measures recommended in both assessments, no residual impacts are anticipated on any designated sites.

- 2.200. Given its location, Ballyteige Solar farm (**Planning consent 2198**) assessed the Charleville Wood SAC for its hydrological connectivity with the site and the River Barrow and River Nore SAC for its ecological connectivity in respect to otter in the form of an AA Screening report. When assessing potential impacts for ecological features associated with European Designated site via a hydrological route, it was found any negative impacts would not be significant or effect the integrity of the Charleville Wood SAC as a result of construction mitigation measures and integral design measures, which include 2m buffers from field drains, 5m from boundary watercourse and 10m OPW drain buffers. Regarding the River Barrow and River Nore SAC, particularly its qualifying species of otter, potential impacts of Planning Consent 2198 for otter included loss of habitat, disturbance, fragmentation of habitat and pollution. It was deduced that given the nature and design of the Proposed Development the potential impacts for the qualifying features of the SAC would not be significant and the development would therefore **not affect the integrity** of the River Barrow and River Nore SAC.
- 2.201. It has therefore been concluded for **Planning consent 2198**, that with mitigation measures implemented and design measures adhered to, there is unlikely to be **significant cumulative impacts on** European Designated sites, their conservation objectives, or qualifying interests, in combination with the Proposed Development.
- 2.202. The adjacent Ballytiege solar farm (Planning Ref: 2198) is proposed for amendment, and this will be submitted at the same time as this application. An updated ecological assessment and Natura Impact Statement have been submitted alongside this application. There were no additional European Sites identified and the potential hydrological pathway to Charleville Wood SAC and ecological pathway with qualifying otter species of the River Barrow and River Nore SAC have been reassessed with appropriate implemented mitigation. An updated walkover has been completed and with the proposed design, best practice and mitigation it has been concluded there will be no changes from the conclusions of the original submission. In line with the consented solar farm, as there are no further impacts anticipated from the proposed amendment **it was determined that this development would not have any significant impacts on any sensitive ecological receptors**. An assessment of in-combination effects was also undertaken, and **it was found that, in combination with other projects, this development would not have a significant cumulative impact**.
- 2.203. **Planning Consent 218** involved a Battery Energy Storage System and Solar Farm, an NIS was produced to review any potential direct, indirect or cumulative impacts the development may have on European Designated Sites or their designated species or habitats. This NIS concluded that with the implementation of the mitigation measures and further measures within the CEMP report, **any adverse effects which could impact the integrity of any European Designated site as a result of the development would not be significant**.
- 2.204. Solar farms have a relatively minor footprint, due to the panels being mounted on piles and are designed to prevent biodiversity loss. Biodiversity Management Plans (BMPs) were included in the planning applications for both **Planning consent 2198** and **Planning Consent 218**. The implementation of BMPs provides suitable habitat and management regime to

- enhance the solar farms ecological value for local wildlife, which include herptile hibernacula, bat boxes, pollinator rich grass and wildflower areas and enhancement of pre-existing hedgerow to name a few. Therefore, alongside the BMP submitted as part of this application (see **Appendix 2D of Technical Appendix 2: Ecological Appraisal**) there will be no cumulative loss of habitat if the Proposed Development is consented.
- 2.205. Planning Consent 2198 and 218 were assessed for likelihood of impact on associated European Designated sites, and **both were determined to have no likely significant impact on their conservation objectives or qualifying interests**. In-combination effects were also considered in these assessments, and **it was found that, in combination with other projects, there was unlikely to be any significant cumulative impact**.
- 2.206. **Planning Consent 1711** involved a conditionally consented solar farm on a site of c.17.7ha. An ecological report was produced to review any potential direct, indirect or cumulative impacts the development may have on European Designated sites or their qualifying interests as well as protected species and habitats. The ecology report concluded that with the implementation of mitigation measures, **no significant negative effects were predicted upon internationally designated sites, habitats or protected species**.
- 2.207. It can therefore be concluded that **Planning Consent 1711 is unlikely to have significant cumulative impacts on European Designated sites, their conservation objectives or qualifying interests, habitats and protected species in combination with the Proposed Development**.
- 2.208. **Planning Consent 18167** is a battery storage unit over 4km northwest of the substation location and approximately 200m east of the proposed grid route. Appropriate Assessment Screening report was produced in order to assess the potential impacts on European Designated sites. It was deduced that **no negative effects would result from the development though direct habitat loss or damage, no negative effects for the qualifying species of the European Designated designation sites and no negative effects on these designated sites arising from water quality impacts**. Furthermore, it was stated there would be **no potential negative impacts** on European Designated sites as a result of **Planning Consent 18167** in combination with other plans and projects.
- 2.209. **Planning Consent 16356** consists of 82 residential units with 66 houses, 8 3-bed Duplexes and 8 apartments, with all associated works, and a car park. The development was granted permission with conditions and was put through Appropriate Assessment Stage 1 Screening. It was found that the development was **unlikely to have any significant impacts on European Designated sites, their conservation objectives or their qualifying interests**. It was also stated that the **in-combination effects of this development and its contribution to cumulative impacts would be insignificant due to a lack of surrounding projects**. Planning Consent 20465 involves amendments to permitted residential development, (under reg. ref. 1175 and as extended under reg. ref. ex16007). A Stage 1 Appropriate Assessment Screening was carried out and it was concluded that **there was unlikely to be any significant effects on European Designated sites, their conservations objectives or qualifying interest from the development**. In-combination effects were also considered, and it was found that **contribution to cumulative**

impact would be non-existent due to lack of surrounding developments due to a lack of surrounding projects. Planning Consent 22378 (ABP-318041) involves the construction of a solar farm comprising of photovoltaic panels mounted on support structures, access tracks, construction compounds, security fencing, electric cabling, and all other associated works. A Natura Impact Statement was produced which states that, with the implementation of mitigation measures, this development **will not have a significant impact on any European Designated sites, their conservation objectives or qualifying interests**. A cumulative impact assessment was also undertaken which determined that **this development, in combination with other surrounding projects, will not have a significant cumulative impact on any European Designated sites due to a lack of surrounding projects**.

- 2.210. **Planning Consent 22523 (ABP-317318)** involves the construction of a large-scale development consisting of 102 dwellings, with a mix of houses, duplex and bungalows, and a creche, as well as all other associated works. A Natura Impact Assessment was produced which stated that, with the implementation of mitigation and restrictive measures, **this development is unlikely to have a significant effect on any European Designated sites, their conservation objectives, and qualifying interests**. An assessment of in-combination effects was undertaken, and it was determined that **this development, in combination with other surrounding projects, would not have a significant cumulative effect due to a lack of surrounding projects**.
- 2.211. **Planning Consent 23112** involves construction a previously permitted development which involves the construction of 20 houses, with a mix of semi-detached, detached and dormer houses, as well as roads and footpaths, sewers and all other ancillary and associated works. An Appropriate Assessment Stage 1 Screening was conducted, and it was determined that **there would be no significant impact on any European Designated sites, their conservation objectives, or qualifying interests**. In-combination effects were also considered and determined that **this development, in combination with other surrounding projects, was unlikely to have a significant cumulative impact due to a lack of surrounding projects**. **Planning Consent 23315** involves the replacement of a permitted electrical station and permitted switchgear enclosure with a proposed substation. An Appropriate Assessment Stage 1 Screening was carried out and it was determined that **there would be no likely effects on the conservation objectives or qualifying interests of any European Designated sites**. In-combination effects were assessed, and it was **found that, in combination with other projects, this development was unlikely to have a significant cumulative impact sue to a lack of surrounding projects**.
- 2.212. **Planning Consent 2460250** involves the construction of a solar PV development with an installed capacity of up to 2.6 MWdc (MEC=0) to provide electrical power to the existing distillery comprising approximately 4,100 no. photovoltaic panels on ground mounted frames. An Appropriate Assessment Stage 1 Screening was carried out and it was determined that **there would be no likely effects on the conservation objectives or qualifying interests of any European Designated sites**. In-combination effects were assessed, and it was **found that, in combination with other projects, this development was unlikely to have a significant cumulative impact sue to a lack of surrounding projects**.

- 2.213. **Planning Consent 20579** involves a compound containing 2 no. Energy storage containers with a capacity of up to 10mw and associated transformers, inverters, a switchroom building of approximately 88m² (containing switch and control rooms), internal cabling, electrical and communications. An Appropriate Assessment Stage 1 Screening was conducted, and it was determined that **this development would not have any significant impact of the conservation objectives or qualifying interests of any European Designated sites**. In-combination effects were also considered, and it was **found that, in combination with other projects, there would be no cumulative impact due to a lack of surrounding projects**.
- 2.214. **Planning consent 2360059** involves a large-scale residential development consisting of 126 residential units composed of houses and apartments, as well as a creche and other ancillary works. An Appropriate Assessment Stage 1 Screening was conducted, and it was determined that **this development would not have any significant impact of the conservation objectives or qualifying interests of any European Designated sites**. In-combination effects were also considered, and it was **found that, in combination with other projects, there would be no cumulative impact due to a lack of surrounding projects**. **Planning Consent 2460514** involves a new prefabricated substation building within the existing car park to cater for 5no. electric car charging points for 10no. electric car parking spaces, along with all associated ancillary site works. Due to the nature and scale of the development, an Appropriate Assessment Stage 1 Screening was not required for the development. As the Proposed Development will include mitigation measures, it is **unlikely that in-combination effects from these developments will have a significant cumulative impact due to a lack of surrounding projects**.
- 2.215. **ABP-309488 (Planning Consent 20321)** involves the construction of a renewable biogas facility for the production of renewable energy and organic fertiliser. This development will include site entrances, grid injection unit, feedstock reception hall, boiler and plant room, weighbridge, storage tanks, and all other ancillary and associated works. An Appropriate Assessment for this development was conducted and **it was determined that the conservation objectives or qualifying interests of surrounding European Designated sites would not be affected by the development**. In-combination effects were also considered, and **it was found that, in combination with other developments, this development was unlikely to have a significant cumulative impact due to the lack of surrounding developments**. **ABP-311741** involves the construction of 349 residential units comprising of 196 houses and 153 apartments, a crèche and all other ancillary and associated works. A Natura Impact Assessment was produced for this development and within this report, **it was concluded that this development would not have a significant impact on the conservation objectives or qualifying interests of any European Designated sites**. In-combination effects were also considered, and **it was determined that this project, in combination with other developments, would not have a significant cumulative impact**.
- 2.216. **ABP-317341** involves the construction of 95 residential units comprising of terraced and semi-detached houses and all other associated siteworks. An Appropriate Assessment Stage 1 Screening was conducted, and **it was determined that this site would not adversely impact the conservation objectives or qualifying interests of any European Designated sites**. In-combination effects were also considered, and **it was concluded that this project, in**

- combination with other projects, would not have a significant cumulative impact. ABP-311101** involves the construction of a nursing home, facility and rehabilitation and convalescence unit with 224 bedrooms, a communal space, dining area and other facilities, a car park, site entrance, pump station and other associated works. An Appropriate Assessment Stage 1 Screening was carried out and **it was concluded that this development would not have any significant impact on the conservation objectives or qualifying interests of any European Designated sites.** In-combination effects were also considered during assessment, and **it was determined that, in combination with other projects, there would be no significant cumulative impact.**
- 2.217. **ABP-318041** involves the construction of a solar farm containing mounted photovoltaic panels, a substation, control building, inverter substations, temporary construction compounds, access tracks, security fencing and other associated works, which will remain in place for a period of 35 years. A Natura Impact Assessment was produced for this development, and **it was concluded that, with implementation of mitigation measures, this development would not have any significant impact on the conservation objectives or qualifying interest of European Designated sites.** In-combination effects were also assessed in this report, and **it was determined that, in combination with other projects, there would be no likely significant cumulative impact.**
- 2.218. **ABP-22387** involves the construction of a solar farm comprising the installation of photovoltaic panels on ground mounted frames in rows on an area of c.83.55ha and associated infrastructure. A Stage 1 AA screening report was produced for this development, and **it was concluded that, the development has no potential pathways for connectivity to impact any European Sites and Stage 2 AA was not required.** In-combination effects were also assessed in this report, and **it was determined that, in combination with other projects, there would be no likely significant cumulative impact.**
- 2.219. **ABP-318339** involves the construction of Large-Scale Residential Development (LRD) comprising 148 residential units and creche. A Stage 1 AA screening report was produced for this development, and **it was concluded that, the development has no potential pathways for connectivity to impact any European Sites and Stage 2 AA was not required.** In-combination effects were also assessed in this report, and **it was determined that, in combination with other projects, there would be no likely significant cumulative impact.**
- 2.220. These applications outlined above share the conclusion that there would be no significant effects on European Designated sites. It has been concluded that, due to the nature of the Proposed Development, the conclusive statements for the above developments, that the Proposed Development will **not have any significant direct or indirect cumulative impact on the conservation objectives any associated European Designated site.**
- 2.221. As described above in the mitigation section above, measures put in place within the Proposed Development Site will ensure no impacts to the connected European Designated sites occur.

- 2.222. **No likely significant cumulative effects** on any European Designated sites are expected as a result of the planning developments listed in **Table 2-11**. Therefore, it is considered that the Proposed Development in combination with other proposed developments in the wider area, will have **no likely significant cumulative effect**.

CONCLUSION

- 2.223. To minimise potential effects 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 2-12** 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.
- 2.224. A total of nine habitat types were noted during the Fossitt habitat surveys undertaken in October 2024. 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 construction of the Proposed Substation will occur over land which has been identified as mainly improved agricultural grassland. The habitats proposed for removal are broadly of low intrinsic ecological value and are abundant within the wider area. The loss of small amounts of these is considered **not significant** in terms of effects on nature conservation.
- 2.225. The desk-based assessment identified six Special Areas of Conservation (SACs) within a 15km zone of influence of the Proposed Development Site: Clara Bog SAC, Raheenmore Bog SAC, Split Hills and Long Hill Esker SAC, Lough Ennell SAC, River Barrow and River Nore SAC and Charleville Wood SAC. Two Ramsar Sites were also identified within 15km – namely Clara Bog Ramsar Site and Raheenmore Bog Ramsar site. Within 5km of the Proposed Development Site, one Natural Heritage Area (NHA): Daingean Bog NHA, and seven proposed Natural Heritage Areas (pNHAs): Charleville Wood pNHA, Ballyduff Esker pNHA, Derrygolan Esker pNHA, Murphy's Bridge Esker pNHA, Rahugh Ridge (Kiltober Esker) pNHA, Ballyduff Wood pNHA and The Grand Canal pNHA were identified. These designated sites have been outlined and fully assessed below and (where appropriate) within the supporting Natura Impact Statement.
- 2.226. It was concluded that hydrological connectivity exists between the Proposed Development Site and Charleville Wood SAC/pNHA, ecological connectivity exists between the Proposed Development Site and the River Barrow and River Nore SAC, and potential ecological and hydrological connectivity exists with The Grand Canal pNHA, although there will be **no adverse effects** on the integrity of any European sites or non-statutory designated sites as a result of the Proposed Development. However, as a precaution, several measures have been outlined within this Ecological Impact Assessment to reduce any potential on European sites or any non-statutory designated sites.
- 2.227. It is considered that the disturbance from the Proposed Development will **not be significant**, if the recommended measures are implemented. With the implementation of the Biodiversity Management Plan (BMP), the potential of the site to support local wildlife will increase.
- 2.228. Further survey work as part of the relevant mitigation measures has been provided within this report (please refer to **Table 2-13** below).

Table 2-12: Integral Design and Standard Best Practice Measures

Site/ Species	Potential Development Impacts	Phase of Development	Measures implemented
INTEGRAL DESIGN MEASURES			
Aquatic environment	Pollution	Construction	2m buffer around drainage ditches 5m from boundary watercourse 10m from OPW watercourse
Badger	Exclusion from foraging habitat	Operational	Security fencing is to have mammal gates to allow free movement of badgers through the site.
Otter	Exclusion from foraging habitat	Operational	Security fencing is to have mammal access to allow free movement of otters 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 2-13: Recommended Mitigation Measures

MITIGATION MEASURES			
Badger	Destruction of badger setts	Pre-construction	<p>Pre-commencement survey (Measures dependant on survey findings).</p> <p>(If a badger sett or setts are found buffers will be required):</p> <p>10m (no construction activities) / 20m (only light work, with no use of wheeled vehicles) / 30m (no use of heavy machinery)</p> <p>During the breeding period, all aspects of the proposed scheme design construction works will incorporate a buffer distance of 50m around the recorded sett entrances to protect these areas from excessive disturbance (if any badgers setts are identified during the pre- construction survey).</p>
Otter	Disturbance	Pre-construction	<p>Pre-commencement survey (Measures dependant on survey findings).</p>
Breeding birds	Disturbance / destruction of nest (Only if works are undertaken between March and August)	Construction	<p>Pre-construction breeding bird survey on all vegetation to be removed</p> <p>(Only if works are undertaken between March and August)</p> <p>(Measures dependant on survey findings).</p>

APPENDICES

Appendix 2A -Figures

- Figure 2.1 – Environmental Designations Map
- Figure 2.2 – Fossitt Habitat Map

Appendix 2B – Site Photographs

Appendix 2C – Habitat of Bat Species in Ireland

Appendix 2D – Biodiversity Management Plan



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