# Technical Appendix 2: Ecological Impact Assessment

Ballydonagh Solar Farm Extension (Amendment Application)

11/12/2025

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# Contents

# EXECUTIVE SUMMARY

2.1. Neo Environmental Ltd has been appointed by RES on behalf of Ballydonagh Solar Limited (the "Applicant") to undertake an Ecological Impact Assessment ("EcIA") for an amendment planning application for minor modifications to the permitted solar PV development granted under Planning Reference 24/61749 (granted 08/07/2025) (the "Proposed Amendment") in the townlands of Ballydonagh, Cloonineen, Skecoor, Lisheenaguil, Kiltormer East, Co. Galway (the "Application Site").

2.2. Proposed AmendmentProposed AmendmentBaseline information within the ecological assessment comprises of an initial desk-based assessment and a Fossitt habitat survey, which was extended to identify the presence or likely absence of protected species, which have been outlined within the relevant sections of this report.

2.3. A Fossitt habitat survey of the site was undertaken in March 2023 and updated in October and November 2025. A total of 15 habitat types were noted, with only minor changes noted between the 2023 and 2025 surveys. The main impacts during the construction phase include the direct loss of habitat under the Proposed Amendment footprint and indirect loss of habitat due to disturbance and pollution. The loss of the improved agricultural grassland and arable land is considered to be of **negligible significance** for nature conservation within the local area.

2.4. Within the 5km zone of influence surrounding the Application Site there are three Natural Heritage Areas, Eskerboy Bog NHA, Cloonnoolish Bog NHA and Moorfield Bog NHA, and one pNHA, Ardgraigue Bog pNHA.

2.5. It has been assessed that due to their terrestrial nature and limited hydrological and ecological connectivity to the application site, these nationally designated sites, NHAs and pNHAs, will experience **no likely significant effects** due to the proposal.

2.6. Within the 15km zone of influence (ZOI) surrounding the Application Site there are ten European Designated sites. These consist of; four Special Protection Areas (SPAs); River Suck Callows SPA, River Little Brosna Callows SPA, Middle Shannon Callows SPA, and Lough Derg (Shannon) SPA and six Special Areas of Conservation (SACs); Ardgraigue Bog SAC, Glenloughaun Esker SAC, River Shannon Callows SAC, Redwood Bog SAC, Lough Derg, North-east shore SAC and Barroughter Bog SAC.

2.7. It has been concluded that there is ecological connectivity between the Application Site and the River Shannon Callows SAC. Due to the proximity of the River Suck Callows SPA, River Little Brosna Callows SPA and Middle Shannon Callows SPA to the Application Site, potential for ornithological connectivity has been closely considered. Lough Derg, North-east Shore SAC was briefly assessed for connectivity, and it was concluded that limited hydrological connectivity exists from the SAC to the Application Site due to the Ardultagh stream that intersects the site. However, this stream travels for 26.85km south before it reaches the SAC. Due to this distance and the dilution factor, it is unlikely that the SAC would be affected by

pollution due to the Proposed Amendment. This SAC has been scoped out from further assessment due to the limited hydrological connectivity. The main qualifying features of these sites have been outlined and assessed in full in this report.

2.8. These designated sites have been outlined and fully assessed within the supporting **Natura Impact Statement (NIS)** report. The findings of the NIS conclude that with the implementation of integral design measures, mitigation and best practice construction methods, there will be **no likely significant effects** for European designated sites within the ZOI.

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

2.10. Furthermore, a **Biodiversity Management Plan (BMP)** has been produced which encompasses enhancement and compensatory measures to ensure the solar farm will have a net beneficial effect for local wildlife (see **Appendix 2D** of this report).

# INTRODUCTION

## Background

2.11. Neo Environmental Ltd has been appointed by Renewable Energy Systems (RES) (the "Applicant") to produce an Ecological Impact Assessment ("EcIA") for an amendment planning application for minor modifications to the permitted solar PV energy development granted under Planning Reference 24/61749 (granted 08/07/2025) (the "Proposed Amendment ") to the Ballydonagh Solar Farm (Ref: 23/61049) in the townlands of Ballydonagh, Cloonineen, Skecoor, Lisheenaguil, Kiltormer East, Co. Galway (the "Application Site").

2.12. Please refer to **Figure 103** for the layout of the Proposed Amendment.

2.13. A Natura Impact Statement (NIS) and Biodiversity Management Plan (BMP) have also been undertaken for the Proposed Amendment and should be read in conjunction with this Ecological Impact Assessment.

## Background

2.14. The Application Site was confirmed as an appropriate location for solar energy development in July 2025 when Galway County Council granted permission under Planning Reference 24/61749.

2.15. Planning Permission was granted following a full planning and environmental assessment. The consented scheme includes ground mounted solar PV panels on metal support structures, electrical transformer and inverter substation modules, temporary construction compounds, internal access tracks (existing, upgraded and new), site accesses, watercourse crossing infrastructure, security fencing, underground cabling and ducting, interconnection cabling, CCTV infrastructure, drainage measures, landscaping and habitat enhancement, together with all associated site development works. The solar farm was approved for an operational period of 35 years and was accompanied by a Natura Impact Statement.

## Amendments

2.16. The Proposed Development will consist of an amendment to previously approved planning permission ref 24/61749 comprising the following;

- Combined central inverters and MV transformers are replaced by separate string inverters and central MV transformers which results in and a reduction in the extent of associated hardstanding areas; and

- Alteration to Condition 3(a) to extend the operational lifetime of the solar farm from 35 years to 40 years, reflecting the design life of the updated technology and contemporary industry practice for solar developments.

- Addition of tables in the former central inverter locations

2.17. By way of background, the solar panels and main infrastructure continue to occupy 17 fields across the Application Site. Please refer to **Figure 4, Volume 2** for the overall layout and **Figure 3, Volume 2** for the field numbers. Both of which can be found within the original application.

## Site Description

2.18. The area of the Proposed Amendment (the "Application Site") lies at an elevation of approximately 65.7 – 84m AOD and covers a total area of c. 56.2 hectares across 4 sections of land. It is centred at approximate Irish Grid Reference (IGR) X (ITM) X 584278 Y 718703 and is located c. 2.3 km west of the R355. It is approximately 11km south-southwest of Ballinasloe, 15.5km north of Portumna, 17km west-northwest of Banagher and 20km east of Loughrea.

2.19. The Application Site comprises of 17 fields (see **Figure 3, Volume 2 - Field Numbers,** part of the original application) of agricultural land primarily used for pastoral farming and bound by trees, hedgerows and post-and-wire fencing. The surrounding context is predominately agriculture with pockets of forestry and peatland and punctuated by individual properties, farmsteads and ribbon development associated with the minor and regional road network. Fields are typically small to medium in scale and similar in character to the Application Site lands.

2.20. However, nearby settlements within the study area including Kiltormer (c. 1km northwest) and Laurencetown (c. 3.9km northeast) contain a range of land uses including commercial, recreational and ecclesiastical. The Killoran river is c. 0.9km southwest of the site at its closest point.

2.21. Access to the northwest section of the Application Site will be gained from the L4322 to the north. Access to the southeast and southwest sections of the Application Site will be accessed from an unnamed road that connects to the L8716 which is c. 1km east-northeast.

## Adopted Design Principles

2.22. Measures incorporated into the Proposed Amendmentdesign include the following:

- A 5m buffer from hedgerows.
- 2m field drain buffer
- 10m OHL buffer
- 10m Arterial Drainage Scheme watercourse buffer
- 5 x 60m Zone of notification buffers
- Various residential setbacks
- Various tree buffers dependant on size of tree
- 9 x 30m badger sett buffers
- Flood Zone Area (Panels Only)

## Scope of the Assessment

2.23. An Ecological Appraisal was completed at the Application Site to inform the submission of a planning application to Galway County Council for an amended solar farm. The aims of this report are to:

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

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

## Statement of Authority

2.25. The assessment has been conducted by qualified ecologists. Laura Stenson was the main senior ecologist involved in the production of report. Additionally, senior ecologist (Louis Maloney), also provided Specialist input. All work has been carried out in line with the relevant professional guidance; CIEEM's Guidelines for Report Writing[1] and CIEEM's Guidance on Ecological Appraisals[2] .

2.1. Louis Maloney has five years of professional ecological experience. This includes terrestrial habitat, mammal and marine ecology surveys, and the management of Environmental Impact Assessment ("EIA"), Natura Impact Statement ("NIS"), Ecological Appraisal ("EcA"), 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 an Associate level membership with CIEEM.

2.2. Laura Stenson is an Ecologist with 2 years professional experience in the ecology sector, which includes terrestrial and marine ecology. Laura holds a BSc in Earth and Ocean sciences and in the process of applying for membership with CIEEM. Laura has experience in the completion of bird surveys, habitat surveys and ecological report writing having authored and co-authored a number of reports including Ecological Appraisals and Natura Impact Statements.

2.3. David Mulholland is a Graduate Ecologist with 1.5 years of experience working in the ecology and conservation sectors. David is a Qualifying member of CIEEM, holding a BSc (Hons) in Biological Sciences with Professional Studies, along with a MSc in Conservation Biology and Ecological Management. He has experience conducting Biodiversity Checklist Reports, Preliminary Roost Assessments, Dawn & Dusk Bat Surveys, Reconnaissance Bird Surveys along with aiding in the construction of Bat Survey Reports, Ecological Appraisals and Ornithology Reports.

2.4. Rhona Coghlan 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 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

[1] CIEEM, (2017). Guidelines for Report Writing. Available at www.cieem.net

[2] CIEEM (2022) Guidelines for Ecological Appraisal in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.2.

consultations and survey reports. Rhona has taken part in several training events organised by CIEEM, The British Trust for Ornithology and Birdwatch Ireland.

# LEGISLATION AND PLANNING POLICY CONTEXT

## European Legislation

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

Table 2-1: Relevant European Legislation

| Directive | Main Provisions |
|---|---|
| EU Habitats Directive 92/43/EEC | The EU Habitats Directive sets out the framework for the designation and protection of sites for nature conservation for species and habitats listed in Annex II, IV and V. The directive was adopted in 1992 as a response to the Bern Convention.<br>"*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*"<br>The protection of species outlined in the Habitats Directive is transposed into national legislation principally by 'EC (Natural Habitats) Regulations 1997 (amended)'[3]. |
| The Birds Directive 2009/147/EC | European Union members meet their obligations for bird species under the Bern Convention and Bonn Convention, and more generally by the means of the EU Birds Directive.<br>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].<br>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 precise legal mechanisms for their achievement are at the discretion of each Member State. |

[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

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

## National Legislation

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

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

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

- EC (Birds and Natural Habitats) Regulations 2011 (amended 2015)[6] - transposes the EU directives into law. It protects species and priority habitats considered to be of European interest.

- Flora Protection Order 2015[7] - this Order makes it illegal to cut, uproot or damage a listed species in any way. It is illegal to alter, damage or interfere in any way with their habitats. This protection applies wherever the plants are found.

- The EC (Water Policy) Regulations 2003[8] – transposes the Water Framework Directive into national law.

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

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

2.8. 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.*

*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.*

[6] Office of the Attorney General (2011) European Communities (Birds and Natural Habitats Regulations 2011 (amended 2015), available at www.irishstatutebook.ie
[7] Office of the Attorney General (2015) Flora Protection Order 2015, available at www.irishstatutebook.ie
[8] Office of the Attorney General (2003) European Communities (Water Policy) Regulations 2003, available at www.irishstatute book.ie
[9] Office of the Attorney General (2000) Planning and Development Act 2000, available at www.irishstatutebook.ie

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

*(a) one or more specific—*

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

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

*or*

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

## Part XIV

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

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

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

## Planning Policy Statement 2015[10]

2.9. 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."*

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

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

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

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

## Galway County Development Plan 2022 - 2028[11]

2.11. The main aim of the Development Plan is to provide direction and focus for development in the county, in accordance with the steps set out in the Planning and Development Acts. Chapter 10 of the plan addressed Natural Heritage, Biodiversity and Blue/Green Infrastructure.

2.12. Relevant County Development Plan Policies include:

### NHB 1: Natural Heritage and Biodiversity of Designated Sites, Habitats and Species

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

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

[11] Galway County Development Plan 2015-2021. Available at: http://www.galway.ie/en/services/planning/developmentplansandpolicy/galwaycountydevelopmentplan2015- 2021/

*European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI 94 of 1999). Support the protection, conservation and enhancement of natural heritage and biodiversity, including the protection of the integrity of European sites, that form part of the Natura 2000 network, the protection of Natural Heritage Areas, proposed Natural Heritage Areas, Ramsar Sites, Nature Reserves, Wild Fowl Sanctuaries (and other designated sites including any future designations) and the promotion of the development of a green/ ecological network.*

### NHB 2: European Sites and Appropriate Assessment

*To implement Article 6 of the Habitats Directive and to ensure that Appropriate Assessment is carried out in relation to works, plans and projects likely to impact on European sites (SACs and SPAs), whether directly or indirectly or in combination with any other plan(s) or project(s). All assessments must be in compliance with the European Communities (Birds and Natural Habitats) Regulations 2011. All such projects and plans will also be required to comply with statutory Environmental Impact Assessment requirements where relevant.*

### NHB 3: Protection of European Sites

*No plans, programmes, or projects etc. giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects.**

### NHB 4: Ecological Appraisal of Biodiversity

*Ensure, where appropriate, the protection and conservation of areas, sites, species and ecological/networks of biodiversity value outside designated sites. Where appropriate require an ecological appraisal, for development not directly connected with or necessary to the management of European Sites, or a proposed European Site and which are likely to have significant effects on that site either individually or cumulatively.*

### NHB 5: Ecological Connectivity and Corridors

*Support the protection and enhancement of biodiversity and ecological connectivity in non-designated sites, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, stonewalls, geological and geo-morphological systems, other landscape features and associated wildlife areas where these form part of the ecological network and/or may be considered as ecological corridors in the context of Article 10 of the Habitats Directive.*

NHB 6: Implementation of Plans and Strategies

*Support the implementation of any relevant recommendations contained in the National Heritage Plan 2030, the National Biodiversity Plan, the All-Ireland Pollinator Plan and the National Peatlands Strategy and any such plans and strategies during the lifetime of this plan.*

NHB 7: Mitigation Measures

*Require mitigating measures in certain cases where it is evident that biodiversity is likely to be affected. These measures may, in association with other specified requirements, include establishment of wildlife areas/corridors/parks, hedgerow, tree planting, wildflower meadows/marshes and other areas. With regard to residential development, in certain cases, these measures may be carried out in conjunction with the provision of open space and/or play areas.*

NHB 8: Increased Awareness of the County's Biodiversity and Natural Heritage

*Facilitate increased awareness of the County's biodiversity and natural heritage through the provision of information to landowners and the community generally, in cooperation with statutory and other partners.*

NHB 9: Protection of Bats and Bats

*Habitats Seek to protect bats and their roosts, their feeding areas, flight paths and commuting routes. Ensure that development proposals in areas which are potentially important for bats, including areas of woodland, linear features such as hedgerows, stonewalls, watercourses and associated riparian vegetation which may provide migratory/foraging uses shall be subject to suitable assessment for potential impacts on bats. This will include an assessment of the cumulative loss of habitat or the impact on bat populations and activity in the area and may include a specific bat survey. Assessments shall be carried out by a suitably qualified professional and where development is likely to result in significant adverse effects on bat populations or activity in the area, development will be prohibited or require mitigation and/or compensatory measures, as appropriate. The impact of lighting on bats and their roosts and the lighting up of objects of cultural heritage must be adequately assessed in relation to new developments and the upgrading of existing lighting systems.*

NHB 10: NPWS & Integrated Management Plans

*Article 6(1) of the Habitats Directive requires that Member States establish the necessary conservation measures for European sites involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans. The NPWS's current priority is to identify site specific conservation objectives; management plans may be considered after this is done. Where Integrated Management Plans are being prepared by the NPWS for European sites (or parts thereof), the NPWS shall be engaged with in order to ensure that plans are fully integrated with the Plan and other plans and programmes, with the intention that such plans are practical, achievable and sustainable and have regard to all*

*relevant ecological, cultural, social and economic considerations, including those of local communities.*

IS 1: Control of Invasive and Alien Invasive Species

*It is a policy objective of the Planning Authority to support measures for the prevention and eradication of invasive species.*

IS 2: Invasive Species Management Plan

*Ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are currently or were previously present, an invasive species management plan will be required. A landscaping plan will be required for developments near water bodies and such plans must not include alien invasive species.*

PO 1: Delivery of All Ireland Pollinator Plan

*To facilitate the delivery of the All-Ireland Pollinator Plan where possible. In the interest of preserving and enhancing biodiversity and working in conjunction with the All-Ireland Pollinator Plan.*

*It shall be the policy objective of the Planning Authority to ensure that at least 20% of the green space on all housing estates being built will have to be dedicated, developed and maintained as a pollinator zone. The area dedicated can be confined to one single lot or various lots around the site providing that the total area of the lots meets the minimum requirement of 20%. The pollinator zones should be planted with a mix of pollinator friendly-bulbs, self-seeding annuals and biennials, perennials, shrubs, trees, fruit trees and fruit bushes and the majority of this planting should consist of native plants.*

## Galway Heritage and Biodiversity Plan 2024-2030[12]

2.13. Galway has a rich biodiversity with a great variety of habitats and species including some which are rare in Ireland and the rest of the world such as turloughs, eskers, limestone pavement, river callows and machair grasslands. Flower rich seminatural grassland and raised and blanket bogs and wetlands are common with the latter, attracting over-wintering water birds, and the cuckoo, swallow and corncrake in the summer. The rivers and lakes host a variety of fish species, birds and otters and rare invertebrates such as the white-clawed crayfish and the freshwater pearl mussel. Many of Galway's most important natural and semi-natural habitats are afforded protection under European and national legislation byway of designation as National Heritage Areas (NHAs), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

[12]Galway County Heritage and Biodiversity Plan 2017-2022 (Draft 5 – 11 May 2017). Available at: https://www.galway.ie/en/media/Galway%20County%20Heritage%20and%20Biodiversity%20Plan%202017%20-2022.pdf

2.14. The Galway Heritage and Biodiversity Plan (2017—2022) is based on the National Heritage Plan[13] , the main objective of which is to:

*"Ensure the protection of our heritage and to promote its enjoyment for all. The key to achieving this goal is the preparation and adoption of Local Heritage Plans involving local heritage fora, bringing together communities, local authorities and the Government. Local heritage plans will identify the steps necessary for the protection and enjoyment of heritage at the local level…. […] … provide the means for a significant broadening of community participation in the protection of heritage.".*

2.15. The National Heritage Plan states that its key concept is to *"place the protection and enjoyment of heritage at the heart of public life"* and it aims to raise the profile of the countywide heritage and biodiversity as a priority.

2.16. Protected and notable species considered in Biodiversity Action Plan include: Red Grouse, Golden Plover, Curlew, Hen Harrier, Pyramidal Bugle, Pale Dog Violet, Green Winged Orchid, Spotted Rock-Rose, Marsh fritillary, Wood Bitter-Vetch, Lesser Horseshoe Bat, Fen Violet, Alder Buckthorn, Dropwort, Irish Lady's Tresses, Shrubby Cinquefoil, Arctic Char, Pollan, Fresh Water Pearl Mussel, White Clawed Crayfish, Whooper Swan, Wigeon, Lapwing, Greenland White-Fronted Geese, Foxtail Stonewort, Purple Sea Urchin, Bottlenose Dolphins, Underwater reefs, Chough, Little Tern, Narrow-leaved Helleborine, Bird Cherry, Yellow Birds Nest, brown Hairstreak, Red Squirrel, Pine Marten, Barn Owls, Swallow, Corn Flower, Darnel, Hairy Violet, Small Wood Reed.

[13] Department of Housing, Local Government and Heritage, February 2022. Heritage Ireland 2030, A framework for Heritage. Available at: https://www.gov.ie/en/publication/778b8-heritage-ireland-2030/

## Guidance Documents

2.17. Whilst the guidance documents and information outlined below refer specifically to Ecological Appraisals ("EcA"), the same guidance is relevant and has been taken into consideration when completing this Ecological Appraisal report.

### BS 42020:2013 Biodiversity[14]

2.18. 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.

2.19. BS 42020:2013 cites CIEEM EcA Guidelines as the acknowledged reference on Ecological Appraisal. 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

2.20. The Chartered Institute of Ecology and Environmental Management (CIEEM) have produced guidance on EcA[15] and Ecological Report Writing[16].

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

Table 2-2: EcA Process

| Task | Description |
|---|---|
| Scoping | Determining the matters to be addressed in the EcA, including consultation to ensure the most effective input to defining the scope. Scoping is an ongoing process – the scope of the EcA may be modified following further ecological survey/research and during impact assessment. |

[14] BS 42020:2013 Biodiversity. Code of practice for planning and development
[15] CIEEM (2019) Guidelines for Ecological Appraisal in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.1.
[16] CIEEM (2017) Guidelines for Ecological Report Writing

| | |
|---|---|
| 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. |

2.22. The aims of their EcIA guidelines are to:

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

# METHODOLOGY

## Zone of Influence (ZOI)

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

Table 2-3: Zone of Influence for ecological features

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

## Desk Study

2.24. A desk-based assessment was undertaken to collate available ecological information for the Application Site and the surrounding area. This included a search of statutory designated sites within a 15km radius of the Proposed Amendment, including: Special Protection Areas ("SPAs"), Special Areas of Conservation ("SACs"), RAMSAR Sites, Nature Reserves ("NRs"), Wildfowl Sanctuaries, Natural Heritage Areas ("NHAs") and proposed Natural Heritage Areas ("pNHAs"). The descriptions of each of these sites was obtained utilising the National Parks and Wildlife Service ("NPWS") website[17].

2.25. A NIS was undertaken to assess all European Designated sites within the ZOI of the Proposed Amendment boundary. The findings of which are contained within **Volume 1: Natura Impact Statement**.

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

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

boundary. The Application Site is located at approximate Irish National Grid Reference (IGR) (ITM) 583061 Y 718697.

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

## Field Survey

### Fossitt Habitat Survey

2.28. A Fossitt habitat survey of the granted solar farm site was undertaken from the 22nd to the 23rd of March 2023 and 12th November 2024 by Laura Stenson, BSc. Hons.

2.29. An updated Fossitt habitat survey was undertaken on the 20th, 21st, 28th, 29th, 30th October and 3rd November 2025 by Rhona Coghlan.

2.30. Survey work was carried out in accordance with Fossitt habitat survey guidance[18] with habitats mapped electronically in the field in order to produce a habitat map.

### Species Scoping Survey

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

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

2.33. 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.<br>Foraging areas – e.g. parkland, water bodies, streams, wetlands, woodland edges and hedgerow. | In or on potential roost sites: droppings stuck to walls, urine spotting in roof spaces, oil from fur staining round roost entrances, feeding remains (e.g. moth wings under a feeding perch). |

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

| | | |
|---|---|---|
| | Commuting routes – linear features (e.g.) hedgerows, water courses, tree lines). See **Appendix 2C** for preferred foraging and commuting habitat for individual species. | |
| Badger | Found in most rural and many urban habitats. | Excavations and tracks: sett entrances, latrines, hairs, well-worn paths, prints, scratch marks on trees. |
| Otter | Watercourses. | Holts (or dens), prints, spraints (droppings), slide marks into watercourses, feeding signs (e.g. fish bones). |
| Birds | Trees, scrub, hedgerow, field margins, grassland, buildings. | Nests, droppings below nest sites (especially in buildings of trees), tree holes. |
| Common lizard *(Zootoca vivipara)* | Rough grassland, log and rubble piles. | Shedded skins. |

## Wintering Bird Surveys

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

2.35. Three wintering bird surveys were undertaken between January 2023 and March 2023.

2.36. The results of the wintering bird surveys undertaken between January 2023 and March 2023 indicate that the proposed site predominantly supports common and widespread bird species typical of farmland habitats present.

2.37. The site itself does not support assemblages of wintering waders or wildfowl. One Annex 1 species were noted during the winter bird surveys, Hen Harrier (*Circus Cyaneus*). One BoCCI Red Listed species was also identified, Common Snipe (*Gallinago gallinago*)

2.38. The site supports small numbers of Skylark and Hen Harrier. With the implementation of habitat enhancement measures it is considered that the Proposed Amendment is unlikely have negative effect on their populations. As the development will improve habitats for common farmland species, there will likely be a positive effect on these as a result of the development.

2.39. Safeguards will be implemented to ensure any disturbance of such species is kept to a minimum.

2.40. Recommendations will be made in the Biodiversity Management Plan (Appendix 2D) for the improvement of the land under the solar panels to ensure that important habitats are not lost.

## Weather Conditions

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

Table 2-5: Weather conditions at time of survey

| Survey date | Temperature (°C) | Wind Speet (Beaufort no.) | Cloud-cover (Okta) | Precipitation |
|---|---|---|---|---|
| 22/02/2023 | 3 - 8 | 1 | 1 | None |
| 23/02/2023 | 2 - 9 | 1 | 4 | None |
| 12/11/2024 | 6-10 | 1 | 1 | None |
| 20/10/2025 | 11 | 1 | 8 | Light |
| 21/10/2025 | 11 - 12 | 1 | 7 | None |
| 28/10/2025 | 7 - 12 | 2 | 2 | None |
| 29/10/2025 | 7 - 11 | 2 | 2 | None |
| 30/10/2025 | 3 - 12 | 3 | 7 | Moderate |
| 03/11/2025 | 13 - 15 | 2 | 8 | Moderate |

## Limitations

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

2.43. 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.

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

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

2.45. 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, with the use of binoculars, where needed. It is considered that the limited access to areas of land directly adjacent to the Proposed Amendment boundary has not impacted upon the findings of the habitat or species scoping surveys.

## Evaluation Methods

2.46. The evaluation of ecological receptors is based upon the CIEEM guidelines[19] (2022) which suggests that the value or potential value of an ecological resource or feature (for example a habitat type, species or ecosystems) should be determined within a geographical context (e.g. rare at a local level). Attributing a value to a receptor, which is also a designated site, is generally precise, as the designations themselves provide an indication of value.

## Adopted Design Principles

2.47. The evaluation of the ecological baseline has enabled the inclusion of integral design measures which will ensure impacts from the Proposed Amendment on ecological receptors can be reduced or avoided through the development design. Adopted design principles have been listed above **(page 9).**

## Impact Assessment

2.48. 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.

[19] CIEEM (2022) Guidelines for Ecological Appraisal in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.2.

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

2.50. 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.

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

# BASELINE CONDITIONS

## Designated Sites

2.52. The Proposed Amendment in the townlands of Ballydonagh, Cloonineen, Skecoor, Lisheenaguil, Kiltormer East, Co. Galway does not lie within or directly adjacent to any statutory or non-statutory designated environmental sites.

2.53. Within 15km of the Application Site boundary there are four SPAs and six SACs. Within 5km of the Application Site boundary there is one pNHA and three designated NHAs. Each of these sites are outlined in **Table 2-6** below, and detailed within **Figure 1, Appendix 2A**.

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

2.55. Please refer to the supporting **NIS: Volume 1** for details of all European Designated sites within 15km of the Application Boundary.

Table 2-6 European Designated sites within 15km

| Site Code | Site Name | Qualifying Features | Distance (km) | Potential Connectivity with the Application Site |
|---|---|---|---|---|
| SPA | | | | |
| 004097 | River Suck Callows SPA | Whooper Swan (*Cygnus cygnus*) [A038] | 7.75km Northeast | Potential ornithological |

[20] CIEEM (2019) Guidelines for Ecological Appraisal in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.1.

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

| | | | | |
|---|---|---|---|---|
| | | Wigeon (*Anas penelope*) [A050]<br>Golden Plover *(Pluvialis apricaria*) [A140]<br>Lapwing (*Vanellus vanellus*) [A142]<br>Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]<br>Wetland and Waterbirds [A999] | | |
| 004096 | Middle Shannon Callows SPA | Whooper Swan (*Cygnus cygnus*) [A038]<br>Wigeon (*Anas penelope*) [A050]<br>Corncrake (*Crex crex*) [A122]<br>Golden Plover (*Pluvialis apricaria*) [A140]<br>Lapwing (*Vanellus vanellus*) [A142] | 9.17km<br>Southeast | Potential ornithological |
| 004086 | River Little Brosna Callows SPA | Whooper Swan (*Cygnus cygnus*) [A038]<br>Wigeon (*Anas penelope*) [A050]<br>Teal (*Anas crecca*) [A052]<br>Pintail (*Anas acuta*) [A054]<br>Shoveler (*Anas clypeata*) [A056]<br>Golden Plover (*Pluvialis apricaria*) [A140]<br>Lapwing (*Vanellus vanellus*) [A142] | 11.65km<br>Southeast | Potential ornithological |

| | | | | |
|---|---|---|---|---|
| | | Black-tailed Godwit (*Limosa limosa*) [A156]<br><br>Black-headed Gull (*Chroicocephalus ridibundus*) [A179]<br><br>Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]<br><br>Wetland and Waterbirds [A999] | | |
| 004058 | Lough Derg (Shannon) SPA | Cormorant (Phalacrocorax carbo) [A017]<br><br>Tufted Duck (Aythya fuligula) [A061]<br><br>Goldeneye (Bucephala clangula) [A067]<br><br>Common Tern (Sterna hirundo) [A193]<br><br>Wetland and Waterbirds [A999] | 14.14km South | Potential limited hydrological connectivity |
| SAC | | | | |
| 002356 | Ardgraigue Bog SAC | Active raised bogs [7110]<br><br>Degraded raised bogs still capable of natural regeneration [7120]<br><br>Depressions on peat substrates of the *Rhynchosporion* [7150] | 3.66km South | None |
| 002213 | Glenloughaun Esker SAC | Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] | 6.73km North | None |

| | | | | |
|---|---|---|---|---|
| 000216 | River Shannon Callows SAC | Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]<br><br>Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [6510]<br><br>Alkaline fens [7230]<br><br>Limestone pavements [8240]<br><br>Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* [91E0]<br><br>*Lutra lutra* (Otter) [1355] | 9.52km<br><br>Southeast | Ecological connectivity |
| 002353 | Redwood Bog SAC | Active raised bogs [7110]<br><br>Degraded raised bogs still capable of natural regeneration [7120]<br><br>Depressions on peat substrates of the *Rhynchosporion* [7150] | 10.95km<br><br>Southeast | None |
| 002241 | Lough Derg, North-east Shore SAC | Juniperus communis formations on heaths or calcareous grasslands [5130]<br><br>Calcareous fens *with Cladium mariscus* and species of the *Caricion davallianae* [7210]<br><br>Alkaline fens [7230]<br><br>Limestone pavements [8240]<br><br>Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion,* | 14.17km<br>South | Potential limited hydrological connectivity |

| | | | | |
|---|---|---|---|---|
| | | *Alnion incanae, Salicion albae*) [91E0]<br>Taxus baccata woods of the British Isles [91J0] | | |
| 000231 | Barroughter Bog SAC | Active raised bogs [7110]<br>Degraded raised bogs still capable of natural regeneration [7120]<br>Depressions on peat substrates of the Rhynchosporion [7150] | 14.7 South-West | None |
| **pNHA** | | | | |
| 001224 | Ardgraigue Bog pNHA | Designated as SAC, a proposed designation of Natural Heritage for bog habitat | 3.72km South | None |
| **NHA** | | | | |
| 001303 | Moorfield Bog NHA | Raised Bog with pool system and flushes.<br>Bog Moss *(Sphagnum pulcrum)* | 1.37km South-east | None |
| 000249 | Cloonoolish Bog NHA | Raised Bog habitat | 2.41km South | None |
| 001264 | Eskerboy Bog NHA | Raised Bog containing pools and flushes.<br>Silver Birch *(Betula pendula )*Scrub | 3.33km Southwest | None |

## Habitats

2.56. A Fossitt habitat survey was undertaken in March 2023, November 2024 and October and November 2025 which identified 11 habitat types within the survey boundary; each of these are outlined in **Table 2-7** below along with other relevant target notes.

2.57. In addition, the habitat map is shown within **Figure 2.2: Appendix 2A**.

Table 2-7: Habitat types on site

| Habitat Type | Species Present | Other Observations/ Potential for Species |
|---|---|---|
| Improved Agricultural Grassland (GA1) | Perennial rye grass (*Loliuam perenne),* creeping buttercup (*Ranunculus repens)*, common nettle *(Urtica dioica),* cock's-foot (*Dactylis glomerata*), vetch (*Vicia* sp.), thistle (*Cirsium sp*), broad-leaved dock (*Rumex obtusifolius*), red clover (*Trifolium pratense*), buttercup (*Ranunculus eschscholtzii*), primrose (*Primula vulgaris),* ground alder *(Aegopodium podagraria),* daisy (*Bellis perennis*). | Intensively managed and maintained grassland with low species diversity dominated by perennial rye grass.<br>Some potential for foraging badger and Irish hare. Considered to be of low ecological value.<br>Approx. Area: 1121.056m2 |
| Amenity Grassland (GA2) | n/a | Intensively managed and maintained grassland with low species diversity.<br>Considered to be of low ecological value.<br>Outside of site boundary.<br>Approx. Area: 2.239m2 |
| Tilled Land (BC3) | n/a | Intensively managed cropland.<br>Considered to be of low ecological value.<br>Outside of site boundary.<br>Approx. Area: **4.699m2** |
| (Mixed) Broadleaved Woodland (WD1) | Willow sps., common nettle *(Urtica dioica).* | These areas provide bird nesting and foraging opportunities, commuting corridors for bats, as well as providing shelter to mammals.<br>Considered to be of moderate ecological value.<br>Outside of site boundary.<br>Approx. Area: 8.857m2 |

| | | |
|---|---|---|
| Conifer plantation (WD4) | Sitka spruce (*Picea sitchensis*) | Uniform conifer plantation. Provides shelter to mammals.<br><br>Considered to be of low ecological value.<br><br>Outside of site boundary.<br><br>**Approx. Area: 3.637m2** |
| Hedgerow (WL1) | Ash (*Fraxinus excelsior*), hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus Spinosa*), ivy (*Hedera helix*), and bramble (*Rubus fruticosus agg.*) | These areas provide bird nesting and foraging opportunities, commuting corridors for bats, as well as providing shelter to mammals.<br><br>Considered to be of moderate ecological value.<br><br>**Approx. Area: 4980.47m** |
| Treelines (WL2) | Ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), willow (Salix Spp), blackthorn (*Prunus spinosa*), ivy (*Hedera helix*), and bramble (*Rubus fruticosus* agg) | Providing bat roosting and bird nesting opportunities as well as foraging opportunities for many species.<br><br>Treelines here do provide good connectivity to wider environs, which is of particular importance for bats.<br><br>**Approx. Length: 5977.17m** |
| Depositing Lowland Rivers (FW2) | n/a | Provides habitat for aquatic species such as fish and freshwater invertebrates. Could have potential habitat for otters.<br><br>Considered to be of moderate ecological value.<br><br>**Approx. Length: 936.47m** |
| Drainage Ditches (FW4) | Wetland plant species | The Application site contains drainage ditches. Drainage ditches created to divert water away from farmland. |

| | | |
|---|---|---|
| | | Considered to be of low to moderate ecological value.<br>**Approx. Length: 6517.24m** |
| Buildings and Artificial Surfaces (BL3) | n/a | Farmyard and roads considered to be of low ecological value<br>Ruin building considered to be of moderate ecological value<br>**Approx. Area: 77.943m2** |
| Spoil and Bare Ground (ED2) | n/a | Considered to be of low ecological value.<br>Outside of site boundary.<br>**Approx. Area: 0.625m2** |

## Target Notes

2.58. Target notes were produced and outlined in **Table 2-8** for areas of habitat too small to clearly identify within the habitat survey map (**Figure 2.2 and Figure 2.3; Appendix 2A**), or to note suitable habitat for protected/notable species.

Table 2-8: Target Notes

| Target Note | Description |
|---|---|
| Target Notes from 2022/2023 Fossitt Habitat Survey | |
| TN1 | Bird nest in Ash tree |
| TN2 | Fox den |
| TN3 | Badger sett |
| TN4 | Badger sett |
| TN5 | Badger sett |
| TN6 | Badger sett |
| TN7 | Mammal push through |
| TN8 | Badger sett |
| TN9 | Fox den |
| TN10 | Buzzard flying |
| TN11 | Badger sett |
| TN12 | Badger sett & droppings |
| TN13 | Fox den |
| TN14 | Small mammal hole |
| TN15 | Fox den |
| TN16 | Snipe flushed |
| TN17 | Badger sett with tracks |
| TN18 | Badger sett |
| TN19 | Frog spawn |
| TN20 | Pheasant flushed |
| TN21 | Mammal push through |

| | |
|---|---|
| TN22 | Hedgehog faeces |
| TN23 | Standalone mature ash tree |
| TN24 | Standalone Hawthorn |
| TN25 | Standalone Hawthorn |
| **Target Notes from 2025 Fossitt Habitat Survey** | |
| TN1 | Bird species: GC, B., BF, WP, RO, HC, MP, BT, PW |
| TN2 | Tree with LBRP |
| TN3 | Pine Marten droppings |
| TN4 | Mammal burrow (potential badger sett) |
| TN5 | Tree with LBRP |
| TN6 | Tree with LBRP |
| TN7 | Mammal Push through |
| TN8 | Mammal Push through |
| TN9 | Irish Hare |
| TN10 | Tree with LBRP |

## Protected and Notable Species

### Desk Based

2.59. The potential presence of protected species within the study area was assessed through a data search conducted via Biodiversity Maps, NBDC in November 2025. This identified records of invasive, rare, scarce and protected species within 2km of the Proposed Amendment location. Records were sourced using the polygon report function. All records greater than fifteen years old are considered to be no longer relevant and were therefore discounted.

2.60. 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.

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

2.62. Table 2-9 below summarises the protected/notable species recorded within the search area, and their potential to be present within the amended Application Site boundary.

Table 2-9: Summary of Biological Records

| Species | Records within the 2km Buffer (Most Recent Record) | Potential For Species Within Application Site |
|---|---|---|
| **Mammals** | | |
| Badger (*Meles meles*) | Five records (2014) | Yes |
| Brown Long-eared Bat (*Plecotus auritus*) | Three records (2019) | Yes |
| Common Pipistrelle (*Pipistrellus pipistrellus*) | One record (2019) | Yes |
| Leisler's Bat (*Nyctalus leisleri*) | One record (2019) | Yes |
| Natterer's Bat (*Myotis nattereri*) | Two records (2019) | Yes |
| Soprano Pipistrelle (*Pipistrellus pygmaeus*) | Two records (2019) | Yes |
| **Birds** | | |
| Barn Owl (*Tyto alba*) | Four records (2011) | Yes |
| Black-billed Magpie (*Pica pica*) | Fourteen records (2011) | Yes |
| Blackcap (*Sylvia atricapilla*) | Two records (2011) | Yes |
| Black-headed Gull (*Larus ridibundus*) | Seven records (2011) | Yes |
| Blue Tit (*Cyanistes caeruleus*) | Thirteen records (2011) | Yes |
| Brambling (*Fringilla montifringilla*) | Three records (2011) | Yes |
| Bullfinch *(Pyrrhula pyrrhula*) | Thirteen records (2011) | Yes |
| Buzzard (*Buteo buteo*) | Two records (2019) | Yes |
| Chaffinch (*Fringilla coelebs*) | Eight records (2011) | Yes |

| | | |
|---|---|---|
| Coal Tit (*Periparus ater*) | Fourteen records (2011) | Yes |
| Common Buzzard (*Buteo buteo*) | Two records (2019) | Yes |
| Common Chiffchaff (*Phylloscopus collybita*) | Eight records (2011) | Yes |
| Common Cuckoo (*Cuculus canorus*) | Six records (2011) | Yes |
| Common Kestrel (*Falco tinnunculus*) | Nine records (2011) | Yes |
| Common Kingfisher (*Alcedo atthis*) | Five records (2011) | Yes |
| Common Linnet (*Carduelis cannabina*) | Eleven records (2011) | Yes |
| Common Moorhen (*Gallinula chloropus*) | Nine records (2011) | Yes |
| Common Pheasant (*Phasianus colchicus*) | Twelve records (2011) | Yes |
| Common Raven (*Corvus corax*) | Six records (2011) | Yes |
| Common Snipe (*Gallinago gallinago*) | Seven records (2011) | Yes |
| Common Starling (*Sturnus vulgaris*) | Fourteen records (2011) | Yes |
| Common Whitethroat (*Sylvia communis*) | Four records (2011) | Yes |
| Eurasian Curlew (*Numenius arquata*) | Seven records (2011) | Yes |
| Eurasian Jackdaw (*Corvus monedula*) | Fourteen records (2011) | Yes |
| Eurasian Treecreeper (*Certhia familiaris*) | Eight records (2011) | Yes |
| European Golden Plover (*Pluvialis apricaria*) | Three records (2011) | Yes |

| | | |
|---|---|---|
| European Goldfinch (*Carduelis carduelis*) | Ten records (2011) | Yes |
| European Greenfinch (*Carduelis chloris*) | Fourteen records (2011) | Yes |
| European Robin (*Erithacus rubecula*) | Thirteen records (2011) | Yes |
| Fieldfare (*Turdus pilaris*) | Five records (2011) | Yes |
| Goldcrest (*Regulus regulus*) | Thirteen records (2011) | Yes |
| Great Tit (*Parus major*) | Thirteen records (2011) | Yes |
| Grey Heron (*Ardea cinerea*) | Nine records (2011) | Yes |
| House Martin (*Delichon urbicum*) | Five records (2011) | Yes |
| House Sparrow (*Passer domesticus*) | Thirteen records (2011) | Yes |
| Jack Snipe (*Lymnocryptes minimus*) | Two records (2011) | Yes |
| Lesser Redpoll (*Carduelis cabaret*) | Eight records (2011) | Yes |
| Long-tailed Tit (*Aegithalos caudatus*) | Ten records (2011) | Yes |
| Mallard (*Anas platyrhynchos*) | Nine records (2011) | Yes |
| Meadow Pipit (*Anthus pratensis*) | Thirteen records (2011) | Yes |
| Mistle Thrush (*Turdus viscivorus*) | Thirteen records (2011) | Yes |
| Northern Lapwing (*Vanellus vanellus*) | Seven records (2011) | Yes |
| Redwing (*Turdus iliacus*) | Five records (2011) | Yes |
| Reed Bunting (*Emberiza schoeniclus*) | Nine records (2011) | Yes |
| Rook (*Corvus frugilegus*) | Fourteen records (2011) | Yes |

| | | |
|---|---|---|
| Sand Martin (*Riparia riparia*) | Six records (2011) | Yes |
| Skylark (*Alauda arvensis*) | Ten records (2011) | Yes |
| Song Thrush (*Turdus philomelos*) | Fourteen records (2011) | Yes |
| Spotted Flycatcher (*Muscicapa striata*) | Eight records (2011) | Yes |
| Sparrowhawk (*Accipiter nisus*) | Five records (2011) | Yes |
| Stonechat (*Saxicola torquata*) | Eight records (2011) | Yes |
| White-fronted Goose (*Anser albifrons*) | Two records (2011) | Yes |
| Whitethroat (*Curruca communis*) | Four records (2011) | Yes |
| Whooper Swan (*Cygnus cygnus*) | Two records (2011) | Yes |
| Wigeon (*Mareca penelope*) | Three records (2011) | Yes |
| Willow Warbler (*Phylloscopus trochilus*) | Nine records (2011) | Yes |
| Woodcock (*Scolopax rusticola*) | Three records (2011) | Yes |
| Wren (*Troglodytes troglodytes*) | Fifteen records (2011) | Yes |
| Yellowhammer (*Emberiza citrinella*) | Seven records (2011) | Yes |
| INVERTEBRATES | | |
| White-clawed Crayfish (*Austropotamobius pallipes)* | Seven records (2017) | No |

* indicates an invasive species

2.63. No herptiles, or bat species of note were identified in the data search.

2.64. Table 2-10 below details the results of the NBDC Bat Suitability Index search undertaken for the Proposed Amendment. The index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats.

Table 2-10: Bat Suitability Index

| Species | Index Score |
|---|---|
| Brown long-eared bat (*Plecotus auritus*) | 34 |
| Common pipistrelle (*Pipistrellus pipistrellus*) | 41 |
| Daubenton's bat (*Myotis daubentonii*) | 31 |
| Leisler's bat (*Nyctalus leisleri*) | 38 |
| Lesser horseshoe bat (*Rhinolophus hipposideros*) | 2 |
| Nathusius's pipistrelle (*Pipistrellus nathusii*) | 3 |
| Natterer's bat (*Myotis nattereri*) | 36 |
| Soprano pipistrelle (*Pipistrellus pygmaeus*) | 40 |
| Whiskered bat (*Myotis mystacinus*) | 21 |

## Field Survey

### Badger

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

2.66. Habitats within the Application Site, such as woodland, scrub areas, treeline and hedgerow have the potential to provide suitable foraging and sett building habitat for badger. One potential badger sett was discovered during the 2025 Fossitt habitat survey.

2.67. During the 2023 surveys, other signs of badger were found around the entrances such as footprints and droppings, see Target notes 3, 4, 5, 6, 8, 11, 12, 13, 17 and 18 (Table 2-8), Appendix 2A – Figure 2.2 – Habitat Map and Appendix 2B for pictures. No signs of active badger use at the site was noted during the 2025 surveys. When considering the "D" like shape of the "mammal caverns" and that badger are known to reside in the local area, as a precautionary measure, these "mammal caverns" have been treated as potential badger setts.

2.68. Other definitive signs of badger were discovered within the Application Site during the Fossitt habitat survey which included mammal push through (Target notes 7 and 21).

### Bats

2.69. The bat suitability index is presented in Table 2-10, with an average suitability index of 27, indicating the area being moderate in terms of suitability for bats. In addition to this relatively low index. The data search returned records of five species of bats within 2km of the Application Site, Brown Long-eared Bat, Common Pipistrelle, Leisler's Bat, Natterer's Bat, Soprano Pipistrelle.

2.70. Woodland, treelines and hedgerow habitats on site offer commuting pathways and foraging opportunities for bat species.

2.71. There were mature trees which could have had bat roosting potential, however, there were no tress of note in this survey.

### Otter

2.72. Following data search for species records within 2km of the Application Site, four records of otter were identified.

2.73. Most habitats within the Application Site are considered to be sub-optimal for otter, as these are predominantly agricultural grassland fields and with hedgerows and treelines. However, the Ardultagh stream that has been illustrated as Depositing Lowland River (FW2) habitat in the Fossitt habitat map (Appendix 2A – Figure 2.2) offers both foraging and commuting habitat for otter.

2.74. The Fossitt habitat survey conducted at the Application Site did not identify any field signs of otter.

### Hedgehog

2.75. No records of hedgehog were returned from the 2km desk study. Habitats on site including hedgerow, woodland, treelines and grassland provide foraging potential for hedgehog. One dropping was found on site that was indicative for the presence of hedgehog (TN22). No other direct evidence of hedgehog was identified on site.

### Pine Marten

2.76. No records of pine marten were returned from the 2km desk study.

2.77. Pine Marten droppings were noted during the 2025 survey. Small areas of deciduous woodland and conifer woodland outside of the site boundary have the potential to support this species. However, they are not considered substantial or large enough to support a population of breeding pine marten, it is considered likely that pine martens are foraging and commuting through the site.

## Other Mammal Species

2.78. European rabbit are a widespread invasive mammal species. Many rabbit burrows were identified (target notes - Table 2-8) along the understory of a treeline and along hedgerows. European rabbit was observed on multiple occasions within the agricultural fields.

2.79. No other records of mammal species were recorded in the data search. Habitats on site such as hedgerow, woodland and treeline have the potential to support small mammals such as bank vole, wood mouse and house mouse. No definitive signs of bank vole and or wood mouse were discovered during the Fossitt habitat survey.

2.80. During the Fossitt habitat survey four fox dens were discovered, as per the shape and size of entrances they indicate the potential for fox, in addition, there was a distinct smell surrounding the dens which is indicative of a fox inhabiting these dens. No other signs of fox were discovered during the Fossitt habitat survey.

## Birds

2.81. Three wintering bird surveys were conducted in January, February and March 2023.

2.82. The species scoping survey was completed to identify the presence of protected species, or the potential of the Application Site and ESA to support protected species. Any incidental observations of bird species during the walk over survey were recorded to provide information for the assessment of potential bird activity within the Application Site.

2.83. Table 2-11 below lists the bird species observed during the site visit. Species listed as amber or red in line with The Birds of Conservation Concern in Ireland 4: 2020-2026[22] list are considered to be in decline.

**Table 2-11: Bird Species Observed During the 2022/2023 Fossitt Habitat Survey**

| Scientific Name | Common Name | BoCCI Listed Species |
|---|---|---|
| Species recorded 2022/2023 Fossitt Habitat Survey | | |
| *Phasianus colchicus* | Pheasant | Green |
| *Gallinago gallinago* | Common Snipe | Red |
| Species recorded during 2025 Fossitt Habitat Survey | | |
| *Terdus merula* | Blackbird | Green |

[22] Gilbert et al.(2021) Birds of Conservation Concern in Ireland 4:2020-2026 *Irish Birds 43*:1-22(2021)

| | | |
|---|---|---|
| *Turdus viscivorus* | Blue Tit | Green |
| *Fringilla Coelebs* | Chaffinch | Green |
| *Prunella modularis* | Dunnock | Green |
| *Parus major* | Great Tit | Green |
| *Coloeus monedula* | Jackdaw | Green |
| *Pica pica* | Magpie | Green |
| *Corvus frugilegus* | Rook | Green |
| *Erithacus rubecula* | Robin | Green |
| *Palumba columbus* | Wood pigeon | Green |
| *Troglodytes troglodytes* | Wren | Green |
| *Certhia familiaris* | Eurasian Treecreeper | Green |
| *Regulus regulus* | Goldcrest | Amber |
| *Carduelis carduelis* | Goldfinch | Green |
| *Corvus cornix* | Hooded crow | Green |
| *Alauda arvensis* | Skylark | Green |

2.84. Common Snipe is a Red Listed species identified during the Wintering Bird Surveys, this species was also flushed during the 2023 extended Fossitt habitat surveys of the Proposed Amendment during the breeding period. None were observed during the 2025 surveys.

2.85. Hen harrier (Annex 1), skylark, starling and tree sparrow are all amber listed species identified during the Wintering Bird Surveys conducted on site. Our low observation count of snipe during the Extended Fossitt habitat survey was likely due to the incidental nature of these encounters, with a more detailed overview of snipe wintering activity being provided by the Wintering Bird Surveys **(Appendix B - Wintering Bird Survey Report: Volume 1 - NIS).**

2.86. Habitats on site are suitable for supporting farmland species (such as those noted above). Hedgerows and treelines are suitable for breeding birds.

2.87. The updated Fossitt Habitat Survey recorded an assemblage of common farmland birds which are described in **Table 2-11** above. No red-listed or Annex 1 bird species were identified during the Fossitt Habitat survey.

### Invertebrates

2.88. The data search identified seven records of white-clawed crayfish (*Austropotamobius pallipes*), no records of this species was identified within the Application Site.

2.89. Suitable habitat, although considered quite limited, was observed during the site visit in the form of Depositing Lowland Rivers (the Ardultagh stream) that intersects the site in the southwest.

2.90. No notable terrestrial invertebrate species were identified in the data search.

## Herptiles

2.91. Whilst no reptile or amphibians were identified during the site surveys, the Application Site offers potential habitat for common frog and Smooth newt in the form of wet grassland and drainage ditches.

2.92. Frog spawn (TN19) was found near a stream which is indicative that the Common Frog utilises the site. However, it is unlikely that the Proposed Amendment would have adverse effects on this species.

## Flora

2.93. No notable plant species were identified on site.

# IMPACT ASSESSMENT

## Best Practice Pollution Prevention Measures

2.94. 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.

2.95. Relevant measures include but are not limited to:

### Pollution Prevention

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

### Waste Management

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

### Environmental Monitoring

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

## Designated Sites

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

2.97. As outlined above in Table 2-6, of the six SACs identified within 15km of the Application Site, one of these SACs, the River Shannon Callows SAC, has ecological connectivity with the Application Site, and limited hydrological connectivity with the Application Site. Due to the distance, it has been concluded that the connectivity is low and the River Shannon SAC has been scoped out from further assessment. Six SPAs within lie within Zone of Influence of the Application Site, five of these SPA's have potential for ornithological connectivity. For further detail on Natura site connectivity with the Application Site, see Volume 1 – Natura Impact Statement.

2.98. The Glenloughaun Esker SAC, Redwood Bog SAC, Ardgraigue Bog SAC, Ardgraigue Bog pNHA, Cloonoolish Bog NHA, Eskerboy Bog NHA and Moorfield Bog NHA are all designated for terrestrial wetland habitats. It has been concluded that no connectivity exists. Where connectivity does not exist, there are no pathways for likely impacts, therefore the European Designated sites, pNHAs and NHAs within the study area that do not have connectivity with the Application Site will not be considered further within this assessment.

## In the Absence of Mitigation

### The River Suck Callows SPA

2.99. The River Suck Callows SPA is located approximately 7.75km northeast of the Application Site and has been designated for a number of important bird species of the E.U. Habitats Directive, which are detailed within Table 2-6 above.

2.100. The River Suck Callows SPA stretches from a section of the River Suck from Castlecoote, Co. Roscommon to its confluence with the River Shannon near the town of Shannonbridge, with a total distance of c. 70km. The site comprises of areas of seasonally-flooded semi-natural lowland wet callow grassland and the river itself.

2.101. Given the Proposed Amendment site's proximity to the SPA, potential for ornithological connectivity has been closely considered.

2.102. The ecology of the following qualifying bird species was assessed: Whooper Swan (*Cygnus cygnus*), Golden Plover (*Pluvialis apricaria*), Lapwing (*Vanellus vanellus*), Greenland White-fronted Goose (*Anser albifrons flavirostris*). The SPA has also been designated for wetland habitats; however, the Application Site does not contain any wetland habitats and as such is considered unlikely that the above-named qualifying bird species will utilise the Application Site. Although it is considered unlikely for these bird species to utilise the site, some of them are known to frequent grassland habitat, and at worst, will be subject to short term habitat displacement during construction. The surrounds of the Application Site mainly comprise of agricultural land, thus providing ample amount of suitable habitat for these species to be displaced to. In addition, these qualifying bird species' core foraging ranges were assessed. Research indicates that these species core foraging ranges are less than 5km[23][24][25], as the SPA is 7.75km northeast of the Application Site and provides richer feeding areas, **potential for significant adverse effects are considered unlikely** on these four qualifying species of bird as a result of the Proposed Amendment.

2.103. Wigeon (*Anas Penelope)* is the final qualifying feature that needs to be assessed. No scientific literature disclosing its core foraging range was found. The ideal habitat for this species is wetland habitat that is surrounded by sparse open forest, woodland and especially agricultural land[26][27]. When considering that the site is not immediately surrounding the wetland habitat of the SPA and the SPA provides a more suitable and richer feeding grounds for Wigeon, it has been concluded that Wigeon are unlikely to use the Application Site, therefore, there is **no potential for significant adverse effects** on this species as a result of the Proposed Amendment.

2.104. No significant loss of suitable habitat (direct or indirect) is anticipated for these species through the construction of the Proposed Amendment.

2.105. Given the level of suitable habitat within the wider landscape, it is considered that the potential noise disturbance from the construction and post-construction phases will not be significant for qualifying bird species associated with the SPA. It is considered that the Proposed Amendment, in the absence of mitigation, is unlikely to cause **significant adverse effects** for these qualifying bird species of the SPA.

2.106. The River Suck Callows SPA is also designated for wetland habitat as a resource for the regularly occurring migratory waterbirds, however no connectivity exists, therefore there is **no potential for significant adverse effects** on this qualifying habitat.

[23]Scottish Natural Heritage. Assessing Connectivity with Special Protection Areas (SPAs). Available at: file:///C:/Users/User/Downloads/Assessing%20connectivity%20with%20Special%20protection%20areas%20(4).pdf

[24] Spatial distribution of breeding meadow birds – implications for conservation and research. Available at: https://www.cr-reading.nl/V4/infopages/WaderStudyGroupPublication.pdf

[25] Managing grassland for wild geese in Britain: a review. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0006320798001347?via%3Dihub

[26] Kretchmar, A. V. 1994. Eurasian wigeon (*Anas penelope*) in north-eastern Asia. Zoologichesky Zhurnal 73(5): 68-79.

[27] MKear, J. 2005. Ducks, geese and swans volume 2: species accounts (Cairina to Mergus). Oxford University Press, Oxford, U.K.

## The Middle Shannon Callows SPA

2.107. The Middle Shannon Callows SPA is located approximately 9.17km southeast of the Application Site and has been designated for a number of important bird species of the E.U. Habitats Directive, which are detailed within **Table 2-6** above.

2.108. The Middle Shannon Callows SPA is a diverse site that stretches from the town of Athlone to Portumna and is approximately 50km in length. The site comprises of an extensive area of seasonally flooded semi-natural, lowland wet grassland, along both sides of the river and the river itself.

2.109. Given the Application Site's proximity to the SPA, and the qualifying bird species for which the SPA is designated, potential for ornithological connectivity has been closely considered.

2.110. The ecology of the following qualifying bird species was assessed: Whooper Swan (*Cygnus cygnus*), Golden Plover (*Pluvialis apricaria*) and Lapwing (*Vanellus vanellus*). The SPA has also been designated for wetland habitats; however, the Application Site does not contain any wetland habitats and as such is considered unlikely that the above-named qualifying bird species will utilise the Application Site as none were identified during the Wintering Bird Surveys (**Vol 1 – NIS; Appendix B**). Although it is considered unlikely for these bird species to utilise the site, some of them are known to frequent grassland habitat, and at worst, will be subject to short term habitat displacement during construction. The surrounds of the Application Site mainly comprise of agricultural land, thus providing ample amount of suitable habitat for these species to be displaced to. In addition, these qualifying bird species' core foraging ranges were assessed. Research indicates that these species core foraging ranges are less than 5km[28][29][30], as the SPA is 9.17km southeast of the Application Site and provides richer feeding areas, **potential for significant adverse effects are considered unlikely** on these three qualifying species of bird as a result of the Proposed Amendment.

*2.111.* Wigeon (*Anas Penelope),* Corncrake (*Crex crex*), Black-headed Gull *(Chroicocephalus ridibundus)* and Black-tailed Godwit *(Limosa limosa)* are the remaining qualifying features that need to be assessed. No scientific literature disclosing its core foraging range was found for Wigeon (*Anas Penelope),* Corncrake (*Crex crex*) and Black-tailed Godwit *(Limosa limosa) and* Black-headed Gull *(Chroicocephalus ridibundus).*

[28]Scottish Natural Heritage. Assessing Connectivity with Special Protection Areas (SPAs). Available at: file:///C:/Users/User/Downloads/Assessing%20connectivity%20with%20Special%20protection%20areas%20(4).pdf
[29] Spatial distribution of breeding meadow birds – implications for conservation and research. Available at: https://www.cr-reading.nl/V4/infopages/WaderStudyGroupPublication.pdf

[30] Managing grassland for wild geese in Britain: a review. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0006320798001347?via%3Dihub

2.112. The ideal habitat for Wigeon is wetland habitat that is surrounded by sparse open forest, woodland and especially agricultural land[31][32]. When considering that the site is not immediately surrounding the wetland habitat of the SPA and the SPA provides a more suitable and richer feeding grounds for Wigeon, it has been concluded that Wigeon are unlikely to use the Application Site, therefore, there is **no potential for significant adverse effects** on this species as a result of the Proposed Amendment.

2.113. The habitat preferences of Corncrake (*Crex crex*), Black-headed Gull *(Chroicocephalus ridibundus)* and Black-tailed Godwit *(Limosa limosa)* was assessed.

2.114. Information gathered from birdwatchireland.ie indicates that Black-tailed Godwit *(Limosa limosa)* primarily reside around wetland habitats[33]. Considering that the SPA is a significant distance from the development area and that the Application Site does not contain wetland habitats, it is unlikely that Black-tailed Godwit *(Limosa limosa)* will use the terrain within the Application Site. It can be concluded that there is **no potential for significant adverse effects** on Black-tailed Godwit *(Limosa limosa)* as a result of the Proposed Amendment.

2.115. Black-headed gulls nest in wetland habitats, but are not confined to wetlands, and will forage in domestic waste and fields of crop. As there is there is no food waste or crop associated within the Application Site, it is considered there is no potential for gull species to scavenge within the site boundary.

2.116. Corncrake are known to frequent in grassland habitats managed for the production of hay[34]. At the time of the Fossitt habitat surveys the primary use of the land was for the production of grass for silage. This improved agricultural grassland maintained for silage is suboptimal for this species due to average height of vegetation being too small. Corncrake are known to frequent in habitats with vegetation height of 30cm to 2m[35].

2.117. There was no evidence of qualifying bird species of the Middle Shannon Callows SPA present within the Application Site during the time of the Fossitt habitat survey. These species were not identified during the Wintering Bird Surveys (**Vol 1 – NIS; Appendix B**). Therefore, there is no evidence to suggest that the habitats within the Application Site support significant numbers of qualifying species for Middle Shannon Callows SPA.

2.118. No significant loss of suitable habitat (direct or indirect) is anticipated for these species through the construction of the Proposed Amendment.

2.119. Given the level of suitable habitat within the wider landscape, it is considered that the potential noise disturbance from the construction and post-construction phases will not be

[31] Kretchmar, A. V. 1994. Eurasian wigeon (*Anas penelope*) in north-eastern Asia. Zoologichesky Zhurnal 73(5): 68-79.

[32] MKear, J. 2005. Ducks, geese and swans volume 2: species accounts (Cairina to Mergus). Oxford University Press, Oxford, U.K.

[33] https://birdwatchireland.ie/ - accessed on 12/08/2022

[34] Barnes, K. N. 2000. The Eskom Red Data Book of birds of South Africa, Lesotho and Swaziland. BirdLife South Africa, Johannesburg. https://www.iucnredlist.org/ - accessed on 31/08/2022

[35] Taylor, B.; van Perlo, B. 1998. Rails: a guide to the rails, crakes, gallinules and coots of the world. Pica Press, Robertsbridge, UK. - https://www.iucnredlist.org/ - accessed on 31/08/2022

significant for qualifying bird species associated with the SPA. It is considered that the Proposed Amendment, in the absence of mitigation, is unlikely to cause **significant adverse effects** for these qualifying bird species of the SPA.

2.120. The Middle Shannon Callows SPA is also designated for wetland habitat as a resource for the regularly-occurring migratory waterbirds, however no connectivity exists, therefore there is **no potential for significant adverse effects** on this qualifying habitat.

## The River Little Brosna Callows SPA

2.121. The River Little Brosna Callows SPA is located approximately 11.65km southeast of the Application Site and has been designated for a number of important bird species of the E.U. Habitats Directive, which are detailed within **Table 2-6** above.

2.122. The River Little Brosna Callows SPA stretches from its confluence with the River Shannon for c. 9km south-eastward and just past New Bridge located on the R438 road. The site comprises of areas of seasonally-flooded low-lying callow grassland and the river itself.

2.123. Given the Application Site's proximity to the SPA, and the qualifying bird species for which the SPA is designated, potential for ornithological connectivity has been closely considered.

2.124. The ecology of the following qualifying bird species was assessed: Whooper Swan (*Cygnus cygnus*), Golden Plover (*Pluvialis apricaria*), Pintail (Anas acuta), Lapwing (*Vanellus vanellus*), Greenland White-fronted Goose (*Anser albifrons flavirostris*). The SPA has also been designated for wetland habitats; however, the Application Site does not contain any wetland habitats and as such is considered unlikely that the above-named qualifying bird species will utilise the Application Site. None of the qualifying species outlined above were identified during the Wintering Bird Surveys (**Vol 1 – NIS; Appendix B**). Although it is considered unlikely for these bird species to utilise the site, some of them are known to frequent grassland habitat, and at worst, will be subject to short term habitat displacement during construction. The surrounds of the Application Site mainly comprise of agricultural land, thus providing ample amount of suitable habitat for these species to be displaced to. In addition, these qualifying bird species' core foraging ranges were assessed. Research indicates that these species core foraging ranges are less than 5km[36][37][38], as the SPA is 11.65km southeast of the Application Site and the SPA provides richer feeding areas, **potential for significant**

[36]Scottish Natural Heritage. Assessing Connectivity with Special Protection Areas (SPAs). Available at: file:///C:/Users/User/Downloads/Assessing%20connectivity%20with%20Special%20protection%20areas%20(4).pdf

[37] Spatial distribution of breeding meadow birds – implications for conservation and research. Available at: https://www.cr-reading.nl/V4/infopages/WaderStudyGroupPublication.pdf

[38] Managing grassland for wild geese in Britain: a review. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0006320798001347?via%3Dihub

[39] Spring Migration Ecology of Northern Pintails in South-Central Nebraska. Available at: https://bioone.org/journals/waterbirds/volume-34/issue-1/063.034.0102/Spring-Migration-Ecology-of-Northern-Pintails-in-South-Central-Nebraska/10.1675/063.034.0102.full#bibr34

**adverse effects are considered unlikely** on these five qualifying species of bird as a result of the Proposed Amendment.

2.125. The River Little Brosna Callows SPA is also designated for wetland habitat as a resource for the regularly-occurring migratory waterbirds, however no connectivity exists, therefore there is **no potential for significant adverse effects** on this qualifying habitat.

2.126. Wigeon (*Anas Penelope),* Teal *(Anas crecca),* Shoveler *(Anas clypeata),* Black-tailed Godwit *(Limosa limosa) and* Black-headed Gull *(Chroicocephalus ridibundus)* are the remaining qualifying features that need to be assessed. No scientific literature disclosing core foraging range of each species was available at the time of creating this report.

2.127. The ideal habitat for Wigeon is wetland habitat that is surrounded by sparse open forest, woodland and especially agricultural land[41][42]. None of the qualifying species outlined above were identified during the Wintering Bird Surveys (**Vol 1 – NIS; Appendix B** ). When considering that the site is not immediately surrounding the wetland habitat of the SPA and the SPA provides a more suitable and richer feeding grounds for Wigeon, it has been concluded that Wigeon are unlikely to use the Application Site, therefore, there is **no potential for significant adverse effects** on this species as a result of the Proposed Amendment.

2.128. The ecology of Teal (*Anas crecca*), Shoveler (*Anas clypeata*), Black-tailed Godwit (*Limosa limosa*) was assessed. Information gathered from birdwatchireland.ie indicates that these three species primarily reside around wetland habitats[43]. Considering that the SPA is a significant distance from the development area and that the Application Site does not contain wetland habitats, it is unlikely that these species will use the terrain within the Application Site. Although it is considered unlikely for these bird species to utilise the site, some of them are known to frequent grassland habitat, and at worst, will be subject to short term habitat displacement during construction. The surrounds of the Application Site mainly comprise of agricultural land, thus providing similar habitat for these species to be displaced to. It can be concluded that potential for significant adverse effects are considered unlikely on these species as a result of the Proposed Amendment.

2.129. Black-headed gulls nest in wetland habitats, but are not confined to wetlands, and will forage in domestic waste and fields of crop. As there is there is no food waste or crop associated within the Application Site it is considered unlikely that gull species will scavenge within the site boundary. There is wetland just outside of the Proposed Amendment boundary, however, it is unlikely that the gull species will utilise this land and at worst, will be subject to short term habitat displacement during construction.

2.130. No significant loss of suitable habitat (direct or indirect) is anticipated for these species through the construction of the Proposed Amendment.

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[41] Kretchmar, A. V. 1994. Eurasian wigeon (*Anas penelope*) in north-eastern Asia. Zoologichesky Zhurnal 73(5): 68-79.

[42] MKear, J. 2005. Ducks, geese and swans volume 2: species accounts (Cairina to Mergus). Oxford University Press, Oxford, U.K.

[43] https://birdwatchireland.ie/ - accessed on 12/08/2022

2.131. Given the level of suitable habitat within the wider landscape, it is considered that the potential noise disturbance from the construction and post-construction phases will not be significant for qualifying bird species associated with the SPA. It is considered that the Proposed Amendment, in the absence of mitigation, is unlikely to cause **significant adverse effects** for these qualifying bird species of the SPA.

2.132. The River Little Brosna Callows SPA is also designated for wetland habitat as a resource for the regularly-occurring migratory waterbirds, however no connectivity exists, therefore there is **no potential for significant adverse effects** on this qualifying habitat.

### River Shannon Callows SAC

2.133. The River Shannon Callows SAC is located approximately 9.52km southeast of the Application Site, this SAC has been designated for a number of important Annex I habitats and Annex II species. Ecological connectivity exists between this SAC and the Application Site.

2.134. Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*, alkaline fens, lowland hay meadows and Molinia meadows on calcareous peaty of clayey silt laden soils are qualifying features of the River Shannon Callows SAC. Theses habitats are not found within the Application Site boundary, and there is no hydrological pathway between the Application Site and the SAC. There will be no loss or contamination of any of the qualifying habitats of the SAC from the Proposed Amendment. The Proposed Amendment **will not result in significant adverse effects** for qualifying habitat features of the SAC.

2.135. Otter (*Lutra lutra*) are a qualifying feature of the River Shannon Callows SAC. Otter is a highly mobile species and can hold territories from 2km up to 40km. It is therefore possible that otter could be present within the Application Site. Potential impacts for otter include the loss of habitat, disturbance, fragmentation of habitat and pollution.

2.136. Most habitats within the Application Site are considered to be sub-optimal for otter, as these are predominantly agricultural grassland and, bound by hedgerows and treelines. the Ardultagh stream waterbody (Depositing Lowland River (FW2) – **Appendix 2A – Figure 2.2 Fossitt Habitat Map**) which exist within the red line boundary of the site offers both foraging and commuting habitat for otter. As such the species could be found within the Proposed Amendment boundary.

2.137. Loss of habitat directly under the Proposed Amendment footprint will be relatively low, and will mainly comprise agricultural land (agricultural grassland), which is of low value for otter. Post-construction, the Proposed Amendment will ensure the retention of habitats throughout the lifetime of the proposed solar farm. Recommendations made in the **Biodiversity Management Plan (BMP)** (please see **Appendix 2D**) will ensure the enhancement of the Application Site post-construction, which will increase the potential prey sources for otter, particularly herptile species.

2.138. No works will occur within or directly adjacent to waterways. Protection buffers of 2m along any field drains and 2m from any streams within the site have been incorporated into the design of the Proposed Amendment. Other Adopted Design Principles **(see page 9)** included

within the Proposed Amendment include SuDS. Operations and activities that have the potential to impact on the water environment will be regularly monitored throughout the construction of the Proposed Amendment by the Site Manager.

2.139. Best practice pollution prevention measures and integral design measures have been adopted minimise any effects from pollution, as listed above. It is however recommended that further mitigation be provided in relation to this species, as in the absence of mitigation, this qualifying feature of the SAC otter may experience temporary negative effects in relation to noise and disturbance.

## Recommended Measures

2.140. It is recommended that a pre-construction otter survey is undertaken within 48 hours of construction.

2.141. All waterways should be buffered, and construction pollutants drained away as outlined in the Flood Risk and Drainage Impact Assessment (See **Technical Appraisal 4; Volume 3 on consented planning: EF 24/61749**).

## Residual Effects

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

2.143. By ensuring potential pollution from construction is managed, there will be will **a negligible effect** upon Annex I habitats and Annex II species, of the above-named designated sites.

## Habitats

### In the Absence of Mitigation

2.144. The proposed solar farm will occur over land which has been identified as mostly improved agricultural grassland. These habitats are of **low ecological value** and currently offer limited potential to support wildlife.

2.145. Habitat loss will only occur under the Proposed Amendment footprint in regard to structures such as access tracks, cable trenches and hardstanding for buildings and inverters. Overall, the proposed footprint constitutes a relatively small percentage of the total area of the Application Site (c. 56.2ha). The total ground disturbance area resulting from the Proposed Amendment is therefore **16,550.3m$^2$** or c. **2.94%** of the Application Site area. As the panels will be raised off the ground, **over 97.09%** of the land will be accessible for plant growth and wildlife enhancement measures will be put in place as described within this report and the BMP **(Appendix 2D).**

2.146. It is therefore considered that the loss of habitat under the Proposed Amendment footprint **will not be significant**.

### Recommended Mitigation Measures

2.147. With the correct management in place during the lifespan of the Proposed Amendment, the potential of the site to support wildlife could be increased. The supporting BMP (see **Appendix 2D**) outlines the management proposals to enhance the sites ecological value and therefore increase the Application Site's potential to support local wildlife.

### Residual Impacts

**2.148.** With implementation of measures included in the Proposed Amendment design, best practice measures implemented during the Proposed Amendment and the habitat management outlined that there will be **no significant negative residual impacts**. With the proposed enhancement measures outlined in the BMP (See **Appendix 2D**) there is the potential for **net beneficial gains** for the local biodiversity.

## Protected and Notable Species

### In the Absence of Mitigation

2.149. Each section below details the potential impacts in the absence of mitigation for protected and notable species during the construction phase (9 months) and the operational phase (c. 40 years) of the Proposed Amendment.

## Bats

2.150. Appendix 2C of this report details the general/preferred foraging and commuting habitat of each bat species. Many species of bats in Ireland generally commute and forage along linear features, such as streams/river, hedgerow or woodland edges (this is true for *Pipistrelle* and *Myotis* species). However, on occasion they will cross open features, particularly species with strong echolocation such as Leisler's bat (*Nyctalus leisleri*).

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

2.152. Drainage ditches, hedgerows, treelines and the Ardultagh stream provide suitable habitat for foraging and commuting bats. A 5m buffer around hedgerows, tree buffers (dependent on tree height), 2m buffer from all field drains has been included as part of the design of the Proposed Amendment.

## Badger

2.153. One potential badger setts were identified during the Fossitt habitat survey in 2025.

2.154. Given that badgers are a highly mobile species and new setts may be built prior to construction, it is recommended that a pre-commencement badger survey is carried out as a precautionary measure.

2.155. There is the potential for the disturbance of badger during the construction phase of the Proposed Amendment. During the construction phase, the Proposed Amendment can cause undue stress in a number of ways. Installation of security fencing or hoarding can disrupt badger paths and cut off foraging areas within a clan's territory. Excavations can destroy badger setts, and any excavations lefts overnight can trap badgers.

2.156. It is considered likely that the Proposed Amendment will have **a moderate effect on the local badger population.** Given the nature of the construction of the panels, length of time before the construction phase is complete, disturbance to the local population of badger is likely through a reduction in foraging areas, and disturbance caused by noise and vibration during construction. However, these effects are considered to be temporary. Furthermore, as precautionary integral design measure all identified potential badger setts will have a buffer of 30m to reduce potential of the species being disturbed by ongoing works during construction and a buffer of 50m during breeding season (December to June).

## Otter

2.157. The Ardultagh stream, which bisects the site provides good habitat for foraging and commuting otter. All other drains on site are considered to be too dry, shallow and narrow to support otter.

2.158. Most habitats within the Application Site are considered to be sub-optimal for otter, predominantly being agricultural grassland bound by hedgerows and treelines, with narrow, shallow field drains. It is considered that the use of the Application Site by otter is likely to be restricted to foraging and commuting otter using the stream identified.

2.159. Like badger, otter is also a highly mobile mammal with large territories between 2km and 20km +, using watercourses and ditches to commute to suitable foraging areas. Although no otter or field signs of otter were identified within the ESA it is recommended that a pre-commencement otter survey is carried out as a precautionary measure.

2.160. Pollution from contaminated surface or ground waters can potentially enter the aquatic system and affect otter indirectly. Best practice pollution prevention and integral design (i.e. not mitigation) measures have been adopted to minimise any effects from pollution. In addition to indirect impacts from pollution, foraging areas may be reduced by the installing of security fencing, otter can become trapped in trenches, and holt creation opportunity reduced by direct loss of habitat.

2.161. A 10m arterial drainage scheme watercourse buffer and both 2m buffers from field drains have been incorporated within the redline boundary of the site.

2.162. In the absence of mitigation, it is considered that the Proposed Amendment will have **a negligible effect upon the local otter population** as the habitats that will be impacted are suboptimal for otter.

## Other Mammals

2.163. In the absence of mitigation, no significant effects are considered likely on other mammals of nature conservation value. Fencing around the substation will have a 10cm gap at base and other fencing used on site will have mammal gates to allow free movement of mammals, including pine marten, red squirrel and hedgehog through the site.

## Birds

2.164. Main impacts on bird species from developments include:

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

2.165. The Proposed Amendment will occur on land that is currently of low ecological value and is subject to a level of disturbance from current agricultural activities. Common Snipe *(Gallinago Gallinago)* was identified during the Wintering Bird Surveys (Vol 1 – NIS; Appendix B) as utilising the site. Common Snipe is a ground nesting species and relies on tall swards of wet grassland and improve agricultural grassland to hide its nests. Due to the overall low footprint of the Proposed Amendment and the efforts made as part of the BMP to improve grassland management and grassland planting, it is considered there will be no significant impact on this species (see Appendix 2D).

2.166. Post construction, it is considered that with the implementation of the BMP, it will increase the ecological value of the Application Site and therefore, enhance the local area for birds. The majority of trees and hedgerows will be retained post construction.

2.167. It is considered that given the short construction phase, the abundance of similar habitat within the local area and the implementation of the BMP post-construction, no significant impacts will occur for these species.

### Invertebrates

2.168. The majority of the identified habitat types (improved agricultural grassland) within the Application Site are considered to be of very limited value to invertebrates as it is species-poor, with high levels of herbicide and fertilizer inputs. However, tree-lines, hedgerow and woodland are all considered likely to support a more diverse invertebrate assemblage. In addition, the Ardultagh stream and drainage ditches within the Proposed Amendment are also likely to support an assemblage of aquatic invertebrates.

2.169. Although white-clawed crayfish were returned in the 2km desk study from a grid square that is located outside of the Application Site's boundary, the Ardultagh stream has been considered to have limited potential for this species.

2.170. Pollution from contaminated surface or ground waters can potentially enter the aquatic system and affect white-clawed crayfish indirectly. Best practice pollution prevention and integral design (i.e. not mitigation) measures have been adopted to minimise any effects from pollution.

2.171. A buffer of 10m will be in place for the Ardultagh stream and a 2m buffer for all field drains within the redline boundary of the site.

2.172. Impacts on these species are likely to be limited to dust and other pollution emitted during the construction phase of the Proposed Amendment.

2.173. In the absence of mitigation, it is considered that the Proposed Amendment will have a negligible effect upon the local, white-clawed crayfish population.

## Flora

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

## Mitigation Measures and Further Survey

### Bats

2.175. As mentioned previously, a 5m buffer around hedgerows, tree buffers (dependent on tree height), a 10m buffer surrounding the streams within the Application Site and a 2m buffer from all field drains have been included as part of the design of the Proposed Amendment. This will minimise disturbance to commuting and foraging routes for bat species within the area of the Proposed Amendment.

2.176. In the event that a mature tree may require trimming or felling, the tree will need to be surveyed for Potential Roost Features (PRF) prior to removal, In line with Bat Conservation Trust guidelines[44]. Further surveys will be required should this PRF check determine the tree to be of medium or high bat roosting potential. Soft felling techniques will be used if low potential exists to ensure that no cavities are cut through, and branches or trunk pieces with cavities are lowered carefully to the ground and left with the access hole upward facing over night to allow any bats to leave.

2.177. In addition, the enhancements designed into the Proposed Amendment (see **Appendix 2D - Biodiversity Management Plan**) include the following measures for bats:

- Installation of bat boxes on retained trees of suitable size and location (including designs suitable for locally-present bat species identified by the desk study);
- Creation of new species-rich grassland, wildflower areas, treelines and hedgerows providing new bat foraging opportunities;
- Measures to increase invertebrate numbers, increasing potential bat prey availability

2.178. It is therefore considered that the Proposed Amendment will have a **positive significant effect** on bats post-construction.

### Badger

2.179. Given that badger is a highly mobile species and known to be present within the Application Site, it is recommended that a **pre-construction badger** survey is undertaken to assess the presence of badger two weeks before construction.

2.180. In addition, fencing used on site will have a combination of mammal gates and 10cm gaps at the base to allow free movement of mammals, including badgers, through the site as well as the installation of mammal gates to facilitate movement of species.

[44] Collins, J. (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 4th edition. Bat Conservation Trust, London.

2.181. Furthermore, securely covering all excavations at the end of each working day to prevent accidental trapping of badger, otter or other small mammals has been included in **Appendix 2D - Biodiversity Management Plan**, as an extra measure to reduce any potential negative impact construction could have on badgers within the area of the Proposed Site.

2.182. Buffers around the badger sets have been incorporated as an integral design measure, see **Table 2-13**.

### Otter

2.183. Otter presence is likely to be restricted to areas directly adjacent to the Ardultagh stream as other habitat types within the proposed site were identified as being sub-optimal for use by the species.

2.184. However, there is potential for any otters using the site during the construction phase to become trapped in trenches excavated during works. In line with construction best practice, all excavations during the construction phase of the Proposed Amendment will be covered securely; this will therefore prevent the accidental trapping of otters.

2.185. In addition, it is suggested that a **pre-commencement otter survey** be carried out for presence of otters prior to construction.

### Birds

2.186. Breeding birds are highly susceptible to disturbance. As the constructive phase may have a significant impact on breeding birds within and adjacent to the Application Site, the following measure has been recommended to ensure that no significant impacts occur:

- Pre-construction breeding bird survey on hedgerow to be removed and nest checks in grassland (only if works are undertaken between **March and August inclusive**).

2.187. Proposed enhancements (see **Appendix 2D - Biodiversity Management Plan**) include the following measures for birds:

- Planting of new species-rich grassland, species-rich hedgerow and areas of native trees providing new nesting and foraging resources;
- Measures to increase invertebrate numbers, increasing potential prey availability for insectivorous birds;
- Erection of varied bird boxes.

### Invertebrates

2.188. As part of ecological enhancement measures within the BMP, invertebrate hotels will be created. The implementation of the BMP will lead to the creation of an enhanced range of habitats for terrestrial invertebrate species within the Application Site, leading to a **significant positive effect.**

2.189. Regarding aquatic invertebrates such as white-clawed crayfish, it is envisaged through the correct implementation of pollution prevention measures, that there will be **no significant effects** as a result of the Proposed Amendment.

2.190. No further survey is required for invertebrates.

### Flora

2.191. Floristic diversity on site will increase through enhancements to the existing hedgerow network, use of native species and sowing of species rich grassland. This will lead to a **long-term positive effect** on the site's flora.

## Residual Impacts

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

# CONSIDERATION OF CUMULATIVE EFFECTS

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

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

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

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

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

## Plans

### National Planning Framework 2040

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

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

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

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

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

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

## Regional Spatial and Economic Strategy for the Northern and Western Regional Assembly

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

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

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

2.206. Therefore, adopting the precautionary principle, it was concluded that a NIR should be prepared. The NIR (prepared by RPS on behalf of the Northern and Western Regional Assembly) considered the potential for the Regional Spatial and Economic Strategy to adversely affect the integrity of any Natura 2000 site(s), with regard to their qualifying interests, associated conservation status, the structure/function of the site(s) and the overall site(s) integrity.

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

2.208. In accordance with European and National legislation, the Council carried out an AA under the Habitats Directive, which informed the preparation of the Galway County Development Plan. The Stage 2 AA NIR was also use to inform the preparation of the Draft Galway County Development Plan 2022-2028.

2.209. It concluded that with the incorporation of mitigation measures, the Plan is **not foreseen to give rise to any significant effects** on designated European sites, alone or in combination with other plans or projects.

## Projects

2.210. 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.

2.211. 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.

2.212. 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 change[45] 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 is on a qualitative level.

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

2.214. A search of the Galway County Council online planning portal revealed that currently only one other solar farm is within the 5km buffer zone.

Table 1-9: Developments within 5km of the Proposed Amendment

| Planning Reference | Project Type | Distance and Direction | Planning Status |
|---|---|---|---|

[45]CIEEM (2018) Guidelines for Ecological Appraisal in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2 Available at: https://cieem.net/wp-content/uploads/2018/08/ECA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf

| | | | |
|---|---|---|---|
| 151487 | Expansion of an existing 30m high antenna support structure (previously granted permission under reference 09/1468 & An Bord Pleanala ref PL 07.235071 which was a temporary permission for a period of 5 years which has expired) carrying antennas and transmission dishes. | 1.4km West | Application granted Conditional |
| 19775 | Reconstruction of a prefabricated building providing afterschool facility approved under planning reference no. 171855 at Lawrencetown National School to a permanent single storey building with revised building layout, septic tank, connection to all essential | 4.5km North East | Application granted Conditional |
| 2360827 | Development of a 240MWh battery energy storage systems facility within a total site area of up to 3.02 hectares, the site will include 1no. 38KV substation compound including 1no. single storey electrical substation building with an area of 69 hectares | 2.5km North East | Application granted - Conditional |
| 2361049 | A planning application for a development that will last for a period of 10 years to construct & complete a Solar PV Energy development with a total site area of circa 81.9 hectares, to include, solar PV panels ground mounted on support structures, | 0.0km | Application granted – Conditional |

2.215. The majority of planning applications within the area of the Application Site are small residential or agricultural developments. These have been screened out due to a lack of hydrological, ornithological and ecological connectivity, along with their overall small scale.

2.216. Planning Application 151487 is for retention of an existing 30m high antenna support structure, carrying transmission dishes, antenna, security fencing and an access track. Requirement for Appropriate Assessment has been screened out for this Proposed Amendment having regard to the scale and nature of the proposal and the lack of any physical or hydrological connection between the development site and any European Site. Therefore, it is considered that this development in combination with other Proposed Amendments in the wider area, will have no likely significant cumulative effects.

2.217. Planning Application 19775 is for reconstruction of a prefabricated building into a single-story building with an attached septic tank. Requirement for Appropriate Assessment has been screened out for this Proposed Amendment having regard to the scale and nature of the proposal and the lack of any physical or hydrological connection between the development site and any European Site. Therefore, it is considered that this development in combination with other Proposed Amendments in the wider area, will have no likely significant cumulative effects.

2.218. Planning Application 2360827 is for a proposed Battery energy storage system facility and a single-story substation cover 3.09ha, and 61ha respectively. Requirement for Appropriate Assessment has been screened out for this Proposed Amendment having regard to the scale and nature of the proposal and the lack of any physical or hydrological connection between the development site and any European Site. Therefore, it is considered that this development in combination with other Proposed Amendments in the wider area, will have no likely significant cumulative effects.

2.219. Planning Application 2361049 is for a proposed solar PV panel array consisting of no. solar PV panels on ground mounted steel frames on a c. 81.9-hectare site. Limited hydrological connection exists between this application and the River Shannon Callows SPA and ornithological connectivity exists between River Little Brosna Callows SPA and Middle Shannon Callows SPA. No connectivity exists between the other European designated sites, within 15km of the planned development. It was concluded that with the implementation of integral design measures, mitigation and best practice construction methods, this development will not have a significant effect upon any qualifying features, and therefore the integrity, of any European Designated sites connected with the Application Site. An amendment application of this solar farm will also be submitted, and an updated NIS has been produced by Neo Environmental. The proposed changes are minor, and will not alter the conclusions of the NIS for the original proposed solar farm application. Therefore, it is considered that this development in combination with other Developments in the wider area, will have no likely significant cumulative effects.

2.220. To minimise the impact to European Designated sites, design measures have been incorporated such as 2m buffers on all drainage ditches, further bird survey efforts and best

practice pollution reduction. Therefore, it is considered that this development in combination with other Proposed Amendments in the wider area, will have **no likely significant cumulative effects**.

2.221. With the implementation of mitigation and integral design measures during the construction and operation of the Proposed Amendment and grid route, at worst the development will have a negligible effect upon any individual receptor. For the purposes of this this assessment, **it is therefore confirmed that no likely significant cumulative effects will occur upon any nearby environmental designated site, habitats or protected and Priority species.**

## Projects

2.222. A search of the Galway County Council online planning portal revealed that currently is one pending solar farm and three similarly sized developments conditionally granted within 5km of the Application Site.

2.223. The solar farm, planning Application **2361049,** has had a suite of ecological assessments undertaken in support of its planning application and conclusion of no adverse impacts were made following best practice pollution mitigation and the completion of further bird surveys.

2.224. Planning applications **151487, 19775** and **2360827** are all for single buildings or continued renovations of existing properties. They all lack hydrological or ecological connectivity to any Designated site, combined with their limited scope means they will likely have a negligible impact.

2.225. The majority of planning applications within the area of the Application Site are small residential or agricultural developments.

2.226. With the implementation of mitigation and integral design measures during the construction and operation of the Proposed Amendment, at worst the development will have a negligible effect upon any individual receptor. For the purposes of this this assessment, it is therefore confirmed that **no likely significant cumulative effects** will occur upon any nearby environmental designated site, habitats or protected and Priority species.

## Conclusion

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

2.228. A total of 15habitat types were noted during the Fossitt habitat surveys.. The main impacts during the construction phase include the direct loss of habitat under the Proposed Amendment footprint and indirect loss of habitat due to disturbance and pollution.

2.229. The desk-based assessment identified four Special Areas of Conservation (SACs) and six Special Protection Areas (SPA) within the 15km study zone. These designated sites have been outlined and fully assessed within the supporting Volume 1 Natura Impact Statement (NIS). It has been concluded that there is potential for ecological connectivity between the Application Site and the River Shannon Callows SAC and potential for ornithological connectivity exists between the Application Site and the River Suck Callows SPA, River Little Brosna Callows SPA and Middle Shannon Callows SPA providing a pathway for potential impacts. **With the implementation of integral design measures, mitigation and best practice construction methods, there will be no significant effects for all Natura 2000 designated sites within the zone of influence (ZOI).**

2.230. There are three Natural Heritage Areas (NHAs) and one proposed Natural Heritage Area (pNHA) located within 5km of the Application Site. Considering their terrestrial nature, only one site is within 1.5km (Moorfield Bog NHA), with the remaining three all being over 2.5km. Combined with best practice mitigation measures, **the Proposed Amendment will have no adverse effects on any of the features of the identified pNHA and the three NHAs.**

2.231. Further surveys recommended as part of the relevant mitigation measures are provided within this report (please refer to Table 2-14 below). These include pre-commencement checks for badger, otter and birds.

2.232. It is considered that the short-term disturbance from the Proposed Amendment **will not be significant on any ecological features** if the best practice and recommended mitigation are implemented. With the implementation of the Biodiversity Management Plan (BMP) (See Appendix 2D), **the potential of the site to support local wildlife will increase**.

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

| Site/ Species | Potential Development Impacts | Phase of Development | Measures implemented |
|---|---|---|---|
| **INTEGRAL DESIGN MEASURES** | | | |
| Aquatic environment | Pollution | Construction | 2m buffers around field drains |
| Badger | Destruction / Disturbance of setts | Construction | Buffers around potential badger sett: 10m (no construction activities) / 20m (only light work, with no use of wheeled vehicles) / 30m (no use of heavy machinery)/ 50m in breeding season |
| | Exclude from foraging habitat | Operational | Security fencing to have mammal gates at base to allow free movement of badger through the site. Security fencing around substation will have a 10cm gap to allow free movement. |
| Otter | Excluded from foraging habitat | Operational | Security fencing to have mammal gates at base to allow free movement of badger through the site. Security fencing around substation will have a 10cm gap to allow free movement. |
| **STANDARD BEST PRACTICE MEASURES** | | | |
| Aquatic environment | Pollution | Construction | Best practice pollution prevention measures implemented prior to and throughout the construction phase to prevent contaminants entering the aquatic environment. |

| | | | |
|---|---|---|---|
| Badger | Accidental trapping with excavations | Construction | All excavations should be securely covered, or a suitable means of escape provided at the end of each working day. |
| Otter | Accidental trapping with excavations | Construction | All excavations should be securely covered, or a suitable means of escape provided at the end of each working day. |

Table 2-14: Recommended mitigation measures

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

# APPENDICES

## Appendix 2A -Figures

- Figure 2.1- Environmental Designations Map
- Figure 2.2– Fossitt Habitat Map (2025)
- Figure 2.3 – Fossitt Habitat Map (2024)

## Appendix 2B – Site Photographs

## Appendix 2C – Habitat of bat species in Ireland

## Appendix 2D – Biodiversity Management Plan


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