

Environmental Impact Assessment Report (EIAR)

Cunlaghfadda Green
Energy Project, Co. Mayo

Chapter 6 - Biodiversity



6. BIODIVERSITY

6.1 Introduction

This chapter assesses the likely significant effects (both alone and cumulatively with other projects) that the Proposed Project may have on Biodiversity, Flora and Fauna, and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified. Mitigation by design was applied to the finalised Proposed Project layout wherever possible to avoid impacts on Biodiversity. The residual impacts on biodiversity are then assessed. Particular attention has been paid to species and habitats of ecological importance. These include species and habitats with national and international protection under the Wildlife Act, 1976 (as amended) and the EU Habitats Directive 92/43/EEC. Impacts on avian receptors are considered in Chapter 7 Birds of this EIAR. The full description of the Proposed Project is provided in Chapter 4 of this EIAR.

The chapter is structured as follows:

- The Introduction provides a description of the legislation, guidance and policy context applicable to Biodiversity.
- This is followed by a comprehensive description of the ecological survey and impact assessment methodologies that were followed to inform the robust assessment of likely significant effects on ecological receptors.
- A description of the baseline ecological conditions at the Site and receptor evaluation is then provided.
- This is followed by an assessment of effects which are described with regard to each phase of the Proposed Project: construction phase, operational phase and decommissioning phase. Potential cumulative effects in combination with other projects are fully assessed.
- Proposed mitigation and best practice measures to avoid, reduce or offset the identified effects are described and discussed. This is followed by an assessment of residual effects taking into consideration the effect of the proposed mitigation and best practice measures.
- The conclusion provides a summary statement on the overall significance of predicted effects on biodiversity.

6.1.1 Project Referencing

For the purposes of this EIAR:

- Where the 'Proposed Wind Farm' is referred to, this refers to turbines and associated foundations and hardstanding areas, including access tracks, underground cabling, permanent meteorological mast, temporary construction compound, peat and spoil management, biodiversity enhancement, tree felling, site drainage, operational stage signage, turbine delivery route and junction accommodation works, turbine delivery route and junction accommodation works, and all ancillary works and apparatus. The Proposed Wind Farm is described in detail in Chapter 4, Section 4.4.1 of this EIAR.
- Where the 'Proposed Grid Connection' is referred to, this refers to the proposed 110kV onsite substation, underground 110kV cabling and end masts connecting the proposed 110kV substation to the 110kV Castlebar to Cloon overhead line, access tracks and all ancillary works and apparatus. The Proposed Grid Connection Route is described in detail in Chapter 4, Section 4.4.2 of this EIAR.
- Where the 'Proposed Project' is referred to, this encompasses the entirety of the project (Proposed Wind Farm and Proposed Grid Connection) for the purposes of

this EIA in accordance with the EIA Directive. The Proposed Project is described in detail in Chapter 4 of this EIAR.

- Where ‘the Site’ is referred to, this relates to the primary study area for the EIAR, as delineated by the EIAR Site Boundary in green as shown on Figure 1-2 of the EIAR and encompasses an area of approximately 165 hectares.

In addition:

- **‘Key Ecological Receptor’ (KER)** is defined as a species or habitat occurring within the Zone of Influence of the Proposed Project upon which likely significant effects are anticipated.
- The **‘Zone of Influence’ (ZoI)** 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 extent of the ZoI can vary depending on the ecological feature in question, its sensitivity to environmental change and the nature of the proposed works or development. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. ZoIs differ depending on the sensitivities of particular habitats and species and were assigned in accordance with best available guidance and through adoption of a precautionary approach (CIEEM, 2018).

6.1.2 Requirements for Ecological Impact Assessment

National Legislation

The Wildlife Act, 1976 (as amended) (hereafter referred to as the Wildlife Act), is the principal piece of legislation governing protection of wildlife in Ireland. The Wildlife Act provides strict protection for species of conservation value. The Wildlife Act conserves wildlife (including game) and protects certain wild animals and flora. These species are therefore considered in this report as ecological receptors.

Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs) are heritage sites that are designated for the protection of flora, fauna, habitats and geological sites. Only NHAs are designated under the Wildlife Act. NHAs are legally protected from damage from the date that they are formally proposed for designation¹. A list of pNHAs was published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, these sites are considered to be of significance for wildlife and habitats as they may form statutory designated sites in the future.

The Flora (Protection) Order 2022 (S.I. No. 235) lists the species, hybrids and/or subspecies of flora protected under Section 21 of the Wildlife Act. It provides protection to a wide variety of protected plant species in Ireland including vascular plants, mosses, liverworts, lichens and stoneworts. Under the Flora (Protection) Order it is illegal to cut, pick, collect, uproot or damage, injure or destroy species listed or their flowers, fruits, seeds or spores or wilfully damage, alter, destroy or interfere with their habitat (unless under licence).

National Policy

Ireland's 4th National Biodiversity Action Plan 2023-2030 (Department of Housing, Local Government and Heritage, 2024) (the “NBAP”) strives for a “whole of government, whole of society” approach to the governance and conservation of biodiversity. It demonstrates Ireland’s continuing commitment to meeting and acting on its obligations to protect Ireland’s biodiversity for the benefit of future generations and will implement this through a number of key targets, actions and objectives.

¹ National Parks and Wildlife Service [online]. Available at: <https://www.npws.ie/protected-sites/nha> [Accessed 24/02/2026].

The Wildlife (Amendment) Act 2023 (hereafter referred to as the Wildlife 2023 Act) introduced a new public sector duty on biodiversity. The legislation provides that every public body, as listed in the Wildlife 2023 Act, is obliged to have regard to the objectives and targets in the NBAP. The NBAP sets out five key objectives as follows:

- **Objective 1: Adopt a Whole-of Government, Whole of-Society Approach to Biodiversity.** Proposed actions include capacity and resource reviews across Government; determining responsibilities for the expanding biodiversity agenda providing support for communities, citizen scientists and business; and mechanisms for the governance and review of this National Biodiversity Action Plan.
- **Objective 2: Meet Urgent Conservation and Restoration Needs.** Supporting actions will build on existing conservation measures. Efforts to tackle Invasive Alien Species will be elevated. The protected area network will be expanded to include the Marine Protected Areas. The ambition of the EU Biodiversity Strategy will be considered as part of an evolving work programme across Government.
- **Objective 3: Secure Nature's Contribution to People.** Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature's importance to our culture and heritage and recognising how biodiversity supports our society and our economy.
- **Objective 4: Enhance the Evidence Base for Action on Biodiversity.** This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts.
- **Objective 5: Strengthen Ireland's Contribution to International Biodiversity Initiatives.** Collaboration with other countries and across the island of Ireland will play a key role in the realisation of this Objective. Ireland will strengthen its contribution to international biodiversity initiatives and international governance processes, such as the United Nations Convention on Biological Diversity.

In addition, the National Biodiversity Data Centre published guidance on Pollinator-friendly management of Wind Farms². This identifies an evidence-based action plan for wind farm operators that can help pollinators by employing changes to existing management strategies.

Such policies have informed the evaluation of ecological receptors recorded within the site and the ecological assessment process. Pollinator friendly measures have been incorporated into the Proposed Project and these are detailed within the Biodiversity Mitigation and Enhancement Plan (BMEP) (see Appendix 6-4).

European Legislation

Habitats and species of European importance are provided legal protection under the EU Habitats Directive 92/43/EEC (the Habitats Directive) and the EU Birds Directive 2009/147/EC (the Birds Directive) this legislation forms the cornerstone of Europe's nature conservation within the EU. It is built around two pillars: the Natura 2000 network of protected sites (hereafter referred to as European sites³) and the strict system of species protection. Both the Habitats and Birds Directives have been transposed into Irish law by Part XAB of the Planning and Development Acts 2000 (as amended) (from a land use

² <https://pollinators.ie/wp-content/uploads/2022/12/Wind-Farm-Pollinator-Guidelines-2022-WEB.pdf> [Accessed 24/02/2026].

³ The term Natura 2000 network was replaced by 'European site' under the EU (Environmental Impact Assessment and Habitats) Regulations 2011 S.I. No. 473 of 2011.

planning perspective) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended).

Annex I of the Habitats Directive lists habitat types whose conservation requires the designation of Special Areas of Conservation (SAC). Priority habitats, such as Turloughs, which are in danger of disappearing within the EU territory are also listed in Annex I. Annex II of the Habitats Directive lists animal and plant species (e.g. marsh fritillary, Atlantic salmon, and Killarney fern) whose conservation also requires the designation of SAC. Annex IV lists animal and plant species in need of strict protection such as all bat species and otter, and Annex V lists animal and plant species whose taking in the wild and exploitation may be subject to management measures. In Ireland, species listed under Annex V include Irish hare, common frog and pine marten. Species can be listed in more than one Annex, as is the case with otter and lesser horseshoe bat which are listed on both Annex II and Annex IV. Per Article 12 of the Habitats Directive, the disturbance of species (in particular the deliberate disturbance of Annex IV species during the period of breeding, rearing, hibernation or migration, and the deterioration or destruction of breeding sites or resting places) has been specifically assessed in this EIAR.

The Birds Directive instructs Member States to take measures to maintain populations of all bird species naturally occurring in the wild state in the EU (Article 2). According to Recital 1 of the Birds Directive, Council Directive 79/409/EEC on the conservation of wild birds was substantially amended several times and in the interests of clarity and rationality, the Birds Directive codifies Council Directive 79/409/EEC into Irish Law. Such measures may include the maintenance and/or re-establishment of habitats in order to sustain these bird populations (Article 3). A subset of bird species has been identified in the Birds Directive and are listed in Annex I as requiring special conservation measures in relation to their habitats. These species have been listed on account of inter alia: their risk of extinction; vulnerability to specific changes in their habitat; and/or due to their relatively small population size or restricted distribution. Special Protection Areas (SPAs) are to be identified and classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (Article 4). This Biodiversity Chapter assesses the potential for significant effects on all aspects of biodiversity, flora and fauna, excluding birds. The potential for significant effects on bird species is described in detail in Chapter 7 Birds of this EIAR.

In summary, the species and habitats provided National and International protection under these legislative and policy documents have been considered in this Biodiversity Chapter. A detailed assessment of the likelihood of the Proposed Project having either a significant effect or an adverse impact on any relevant European Sites (i.e. SACs, cSACs, SPAs or cSPAs) has been carried out in the Appropriate Assessment (AA) Screening Report and Natura Impact Statement (NIS), which are also submitted with the planning application for the Proposed Project. A separate assessment has not been carried out in this chapter, to avoid duplication of assessments. However, the relevant conclusions have been cross-referenced and incorporated.

In addition to the above, the following legislation applies with respect to habitats, fauna, invasive species and water quality in Ireland and has been considered in the preparation of this chapter:

- The International Convention on Wetlands of International Importance especially Waterfowl Habitat (Concluded at Ramsar, Iran on 2 February 1971)
- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 and S.I. No. 722 of 2003 European Communities (Water Policy) Regulations 2003 which give further effect to EU Water Framework Directive (2000/60/EC).
- The following legislation applies with respect to non-native species - Regulation 49 and 50 of European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024).

6.1.3 Review of Relevant Guidance and Sources of Consultation

The assessment methodology is based primarily upon the Transport Infrastructure Ireland's (TII, formerly the National Road Authority) *Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2* (TII, 2009) (referred to hereafter as the TII Ecological Impact Assessment Guidelines), and the survey methodology is based on the TII *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes* (TII, 2008a). Although these survey methodologies relate to road schemes, these standard guidelines are recognised survey methodologies that ensure good practice regardless of the development type.

In addition, the following guidelines were consulted in the preparation of this document to provide the scope, structure and content of the assessment:

CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester. This assessment has been carried out in accordance with the Environmental Impact Assessment guidance as outlined in Section 1.2.1 of Chapter 1 of this EIAR.

This assessment has been prepared with respect to the various planning policies and strategy guidance documents listed below:

- Mayo County Development Plan 2022-2028
- Northern & Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032
- Ireland's 4th National Biodiversity Action Plan 2023-2027
- National Planning Framework Ireland 2040
- National Development Plan 2021-2030.

6.1.3.1 Additional Relevant Guidance

In addition, the guidelines listed below were consulted in the preparation of this document to provide the scope, structure, and content of the assessment:

- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2022).
- Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester (CIEEM, 2017).
- Environmental Impact Assessment of National Road Schemes –A Practical Guide (TII, 2008c);
- The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments, Unpublished NPWS report (NPWS, 2025; 2019);
- The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments, Unpublished NPWS report (NPWS, 2025; 2019);
- Guidance on the Strict Protection of Certain Animal and Plant Species under the Habitats Directive in Ireland (NPWS, 2021);
- Guidelines for Consideration of Bats in Wind Farm Projects (Rodrigues *et al.*, 2015);
- Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation (NatureScot, 2021);
- Bat Mitigation Guidelines for Ireland – V2. Irish Wildlife Manuals, No. 134. (Marnell *et al.*, 2022);
- Bat Survey, Assessment and Mitigation Guidelines for Onshore Wind Turbines in Ireland (Bat Conservation Ireland, 2026);
- Guidelines for the Treatment of Bats during the Construction of National Road Schemes (TII, 2006a);

- Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes (TII, 2006b)
- Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes (TII, 2008b)
- The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII, 2020);
- IW-AMT-SOP-009 Information and Guidance Document on Japanese knotweed (Irish Water, 2016)
- Code of Practice for the Management of Japanese knotweed (Property Care Association, 2018)
- The Knotweed Code of Practice: Managing Japanese Knotweed on Development Sites (Environment Agency, 2013)
- Great Crested Newt Mitigation Guidelines. English Nature, Peterborough (English Nature, 2001)

6.1.4 Statement of Authority

This EIAR chapter has been prepared by Katy Beckett (B.A., M.Sc.). Katy is a Project Ecologist with MKO with close to three years' consultancy experience. She is an experienced ecologist with skills covering habitat and botanical assessments and specialist mammal (including all bat species) surveys. Katy has undertaken numerous Ecological Impact Assessments (EcIAs) and AA assessments for public and private sector clients. This report has been reviewed by Sarah Mullen (B.Sc., M.Sc., Ph.D., ACIEEM). Sarah has over ten years' experience in ecological consultancy. She is a skilled ecologist having authored and/reviewed numerous EcIAs, EIAR Biodiversity Chapters and Habitats Directive Assessment Reports for a variety of projects across a range of sectors. She is also an experienced field ecologist with experience in botanical, habitat and faunal surveys.

The baseline terrestrial ecological surveys were conducted by MKO ecologists Amy McDermott (B.Sc.), Caití Farren (B.A.), Chandra Walter (B.Sc.), Ciara Lynn Sheehan (B.Sc.), Deepali Mooloo (M.Sc.), Ellen Tuck (B.Sc.), Fiona Killeen (B.Sc.), Kate O'Donnell (B.Sc., ACIEEM), Katy Beckett, Mairead Kavanagh (B.Sc.), Rudraksh Gupta (B.Sc., M.Sc., ACIEEM), Ryan Connors (B.Sc., M.Sc.) and Sarah Mullen. All surveyors have relevant academic qualifications and are competent in undertaking habitat and ecological assessments.

MKO's Ecology team includes a dedicated bat unit with expertise in scoping, conducting, and reporting bat surveys, as well as preparing impact assessments. All ecologists hold relevant academic qualifications, licences, and training to meet required survey standards. Bat survey scope development and project management was overseen by Aoife Joyce (B.Sc., M.Sc., MCIEEM). Bat surveys were carried out by Clare Mifsud (Ph.D.), Marie Greaney (B.Sc., M.Sc.), and Kate Leahy (B.Sc.). Data manual ID were carried out by Marie Greaney. The Bat Report (included as Appendix 6-2) was prepared by Kate Leahy and Clare Mifsud and was reviewed and approved by Aoife Joyce. Staff's roles and relevant training are presented in Table 1-2 of the Bat Report in Appendix 6-2.

Aquatic surveys were undertaken by Triturus Environmental Ltd, as outlined in the Aquatic Baseline Report in Appendix 6-3.

The CVs of all surveyors and competent experts from the Ecology Project Team have been included in Appendix 6-6 of this EIAR.

6.2 Methodology

The following sections describe the methodologies followed to establish the baseline ecological condition of the Site and surrounding area. Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological baseline conditions are those existing in the absence of proposed activities (CIEEM, 2018).

6.2.1 Desk Study

The desk study undertaken for this assessment included a thorough review of available ecological data including the following:

- Review of National Parks and Wildlife Service (NPWS) Article 17 reporting and mapping 2025, 2019, 2013 and 2007.
- NPWS Site Synopses for Designated Sites within the Likely ZoI.
- Review of the Irish Ramsar Wetlands Committee⁴ web-mapper of Ramsar Sites in Ireland
- Review of online web-mappers: NPWS⁵, Environmental Protection Agency (EPA)⁶, Water Framework Directive (WFD) and Inland Fisheries Ireland (IFI)⁷.
- IFI Reports, where available.
- Data on potential occurrence of rare plant and bryophytes – as per NPWS online map viewers; Flora (Protection) Order Map Viewer – Bryophytes⁸ and Flora Protection Order 2022 Map Viewer⁹.
- Review of relevant Plans, including the NBAP and the All-Ireland Pollinator Plan 2021-2025.
- Records from the NPWS web-mapper and review of specially requested records from the NPWS Rare and Protected Species Database for the hectad in which the Proposed Project is located.
- Review of the NPWS Semi-Natural Grassland Survey 2007-2012, Grasslands Monitoring Survey 2015-2017, Floodplains and Callows Grasslands in Ireland 2023, National Survey of Native Woodlands 2003-2008 and Ancient and Long-Established Woodland datasets
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper¹⁰.
- Potential for in-combination effects have been considered in Chapter 2 of this EIAR and Section 6.7 of this Chapter. This was informed by a review of the planning files prepared for other plans and projects occurring in the wider area.

6.2.2 Scoping and Consultation

MKO undertook a scoping exercise during preparation of this EIAR, as described in Chapter 2, Section 2.7 of this EIAR.

Copies of all scoping responses are included in Appendix 2-1 of this EIAR. The recommendations of the consultees have informed the EIAR preparation process and the contents of this chapter. Table 2-12 in Chapter 2 of this EIAR describes where the comments raised in the scoping responses received have

⁴ Irish Ramsar Wetlands Committee [online]. Available at: <https://www.irishwetlands.ie/irish-sites/> [Accessed 24/02/2026]

⁵ NPWS Maps and Data [online]. Available at: <https://www.npws.ie/maps-and-data> [Accessed 24/02/2026]

⁶ EPA Maps [online]. Available at: <https://gis.epa.ie/EPA/Maps/> [Accessed 24/02/2026]

⁷ IFI Open Data Portal [online]. Available at: <https://opendata-ifeo.hub.arcgis.com/> [Accessed 24/02/2026]

⁸ NPWS FPO Bryophytes [online]. Available at: <http://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=71f8df33693f48e4dbb70369d7fb26b7e> [Accessed 24/02/2026]

⁹ NPWS Flora (Protection) Order 2022 Map Viewer [online]. Available at: <https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=a41ef4e10227499d8de17a8abe42bd1e> [Accessed 24/02/2026]

¹⁰ NBDC Biodiversity Maps [online]. Available at: <https://maps.biodiversityireland.ie/Map> [Accessed 24/02/2026]

been addressed in this assessment. Table 6-1 provides a list of the organisations consulted with regard to biodiversity during the scoping process, notes where scoping responses were received and provides details of the contents of the scoping responses. Responses received in to scoping undertaken in 2026 are included, with additional responses from 2023 included where no response was received in 2026.

Table 6-1 Organisations consulted with regard to biodiversity.

Consultee	Date Received	Response	
An Taisce	N/A	No response received at the time of writing.	N/A
Bat Conservation Ireland	N/A	No response received at the time of writing.	N/A
Butterfly Conservation Ireland	N/A	No response received at the time of writing.	N/A
Department of Agriculture, Food and the Marine	16 th of February 2026	➤ A Felling License must be obtained from this Department before trees are felled or removed. ➤ The factors considered by the Forest Service when assessing applications to fell trees was outlined, including the interaction of these proposed works with the environment locally and more widely, in addition to potential direct and indirect impacts on designated sites and water. Consultation with relevant environmental and planning authorities may be required where specific sensitivities arise (e.g. local authorities, National Parks & Wildlife Service, Inland Fisheries Ireland, and the National Monuments Service). ➤ It was highlighted that where developments are subject to an EIA procedure, Appropriate Assessment procedure or where the Proposed Project requires the felling and replanting of trees, deforestation for the purposes of conversion to another type of land use, or replacement of broadleaf high forest by conifer species, that there is a requirement inter alia under the EIA Directive for an overall assessment of the effects of the project or the alteration thereof on the environment to be undertaken, including the direct and indirect environmental impact of the project. ➤ Additionally, pursuant to Article 2(3) of the EIA Directive, the	As outlined in Chapter 4 Description of this EIAR, the 0.7ha of commercial forestry felling required as part of the Proposed Project will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments. An overall assessment of the effects of the Proposed Project and associated forestry and tree felling biodiversity, flora and fauna has been undertaken within this Biodiversity Chapter, including the direct and indirect environmental impacts. Where appropriate, an assessment of the potential impact of and measures to prevent, mitigate or compensate for any potential effects identified on biodiversity, flora or fauna arising from such felling and replanting of trees and deforestation for the purposes of conversion to another type of land use are included in Section 6.5 of this Biodiversity Chapter.

Consultee	Date Received	Response	
		Department of Agriculture, Food and the Marine strongly recommends that, notwithstanding the fact that a parallel consent in the form of felling licence may also have to be applied for, any EIAR and/or NIS produced in connection with the application for planning permission to the Local Planning Authority or An Bord Pleanála, should include an assessment of the impact of and measures, as appropriate, to prevent, mitigate or compensate for any significant adverse effects direct or indirect identified on the environment arising from such felling and replanting of trees, deforestation for the purposes of conversion to another type of land use, or replacement of broadleaf high forest by conifer species.	
Department of Climate, Energy and the Environment (Geological Survey Ireland)	5 th of March 2026	Geological Survey Ireland is the national earth science agency and is part of the Department of Climate, Energy and the Environment. ➤ It was recommended to use the various data sets available on the Geological Survey Ireland website when conducting the EIAR, SEA, planning and scoping processes for developments, plans and policies. ➤ No issues were raised in relation to biodiversity, flora or fauna.	Datasets provided by Geological Survey Ireland have been consulted during the preparation of this EIAR, as outlined in Section 6.3.1 below, where relevant to biodiversity. Further details are provided in Chapter 8 Land, Soils and Geology and Chapter 9 Water of the EIAR which accompanies this planning application. These data have been used to inform the ecological impact assessment within this Biodiversity Chapter, where appropriate.
Department of Housing, Local Government and Heritage	9 th of March 2026	<u>Active raised bog (7110) and Degraded raised bog still capable of regeneration (7120)</u> ➤ The Department notes that some areas of cutover bog are now considered to have potential to correspond to the Annex I habitat Active Raised Bog (7110), therefore the Department recommends that the habitat survey and assessment included in the EIAR uses the preliminary classification and assessment methodology for cutover bogs outlined in the document <i>The Habitats of Cut-over Bog</i> (Smith and Crowley, 2020) where appropriate. ➤ The Department recommends characterising the areas of cut-over bog within the zone of influence of	Detailed assessments have been undertaken to assess the potential for habitats within the Site to conform to Annex I habitats. These include remnant Active raised bog [7110] and Degraded raised bog still capable of regeneration [7120] in line with Fernandez <i>et al.</i> (2014), as well as Active raised bog occurring on cutover bog habitats per Smith and Crowley (2020). Species-rich grasslands with the potential to conform to the Annex I habitat <i>Molinia</i> meadows [6410] were also assessed in line with Martin <i>et al.</i> (2018), a guidance which builds upon and improves the methodologies employed by O'Neill <i>et al.</i> (2013).

Consultee	Date Received	Response	
		any proposed infrastructure accordingly to help inform the design of any layout and demonstrate the implementation of the mitigation hierarchy as necessary. ➤ Areas of the Annex I habitat Active Raised Bog (7110) should be avoided where possible. If direct impacts on such areas are unavoidable, the effects of those impacts should be correctly characterised in the EIAR, and mitigation provided as necessary. ➤ The condition assessment for any Annex I Habitats present should also be used to inform any proposed compensation or enhancement measures being proposed as necessary ➤ The Department also recommends that the areas of high bog occurring both within the Site, and in the zone of influence of the Site, are characterised adequately to determine the presence of the Annex I habitats Active Raised Bog (7110) and Degraded Raised Bog still capable of natural regeneration (7120), in line with <i>Raised Bog Monitoring and Assessment Survey</i> (Fernandez et al., 2013) ➤ The presence, or absence, of any corresponding Annex I habitats should be established, and their condition assessed as necessary, to help inform the design of the layout and demonstrate the implementation of the mitigation hierarchy as necessary. ➤ The potential for indirect hydrological impacts on both the areas of high bog, and cutover bog, within the Site should be addressed. The proposed turbine bases, roads, and borrow pit, are located in areas of cut-over adjoining areas of high bog. There is potential to cause drainage effects which can indirectly impact on the adjoining areas of both cut-over and high bog and the vegetation communities thereon. Excavations, associated pumping, and the breeching of any impermeable layer may cause changes to the hydraulic gradients within the site which may affect vegetation communities, including those of any Annex I bog habitats	Methodologies for the assessment of Annex I habitats are outlined in Section 6.2.3.2 of this Biodiversity Chapter, and detailed survey results are provided in Section 6.4 and within Appendix 6-1 Botanical Assessment Report. The results of these surveys were used to inform the design of the Proposed Project and to inform appropriate enhancement measures as necessary. Full details on the ecological impact assessments, including the potential for drainage effects on Annex I habitats are included in Section 6 below.

Consultee	Date Received	Response	
		that may occur, on either the cut-over and high bog areas. <u>Species-rich grasslands</u> - It was highlighted that areas of species-rich grassland may occur within the Site, and recommended that any such areas are characterised using the Irish Vegetation Classification system. - Areas corresponding to Annex I habitats should be identified and their condition assessed using the appropriate methodology (O'Neill <i>et al.</i>, 2013) to inform the design and implementation of the mitigation hierarchy, and the design of any proposed compensation or enhancement areas as necessary.	
Environmental Protection Agency	N/A	No response received at the time of writing.	N/A
Fáilte Ireland	25 th of February 2026	Fáilte Ireland's 'Guidelines for the Treatment of Tourism in an ELA' was shared, which noted the following in relation to Biodiversity: - Landscapes which are 'unspoiled' can be attractors of tourism. However, the disturbance to ecology must be managed to minimise impacts. - Biodiversity is also a tourism asset and should be protected as such from other development and should be provided for in proposals where possible. - The assessment should also consider current Government policy on nature conservation as outlined in the National Biodiversity Action Plan 2017-2021 (NBAP) (and subsequent iterations (Including draft NBAP recently open for public consultation, to cover 2023 to 2027) which also includes Ireland's vision for biodiversity: '<i>That biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally.</i>'	The potential for the Proposed Project to result in significant effects on all aspects of Biodiversity have been assessed within this Biodiversity Chapter, and the potential for likely significant effects on European Sites is addressed within the accompanying NIS. The latest National Biodiversity Action Plan (2023-2030) has been fully reviewed and compliance of the Proposed Project with this Biodiversity Action Plan is considered within Section 6.6 below.

Consultee	Date Received	Response	
Geological Survey Ireland	5 th of March 2026	See above response received from the Department of Climate, Energy and Environment.	See above response received from the Department of Climate, Energy and Environment.
Inland Fisheries Ireland	23 rd of June 2023	➤ The River Robe is a brown trout fishery which feeds Lough Mask, site of Lough Mask SPA (004062) and Lough Carra/Mask Complex SAC (001774). Drumady lake is the source for the Ballynew stream. Ballynew is a trout spawning channel and IFI have a fisheries development project planned for the lower section of it in 2023. The Water Framework Directive has classed the Ballynew stream (Robe-030) as of good ecological status, a status which must be maintained. ➤ The proposed site crosses both the Meander River and Robe River catchments. The Meander River provides salmon and trout spawning and nursery habitat for the wider River Moy system. The Meander River forms part of the River Moy Special Area of Conservation which is designated for the protection of Atlantic salmon, white-clawed crayfish and lamprey species. This catchment has been allocated good ecological status and this status must be protected to comply with the Water Framework Directive. ➤ The EIS should assess the potential impacts the Proposed Project may have including, damage to the aquatic and associated riparian habitat, pollution of water, changes to hydrology, introduction of non-native species and interference with upstream and downstream movement of aquatic life. The assessment should include all aspects of the development. ➤ All watercourses that will receive drainage from the construction site including the turbines or the access roads must be assessed. IFI request an electrofishing fish survey and invertebrate sampling assessment are carried out. ➤ There must be no spread of invasive species as a result of the proposed development. A survey for the presence of invasive species should be carried out and a	Detailed baseline aquatic and fisheries assessments were undertaken during the preparation of this Biodiversity Chapter and accompanying NIS. The potential for the Proposed Project to result in significant effects on all downstream watercourses and associated aquatic habitats and species have been assessed within Section 6.5 of this Chapter as well as within Chapter 9 Water. Where there is the potential for likely significant effects on aquatic receptors associated with European Sites, those are also fully addressed within the accompanying NIS prepared for the Proposed Project. All aspects of the Proposed Project have been considered within this assessment. Mitigation measures for the protection of all downstream watercourses and designated sites are prescribed in Section 9.5 of Chapter 9 Water, and mitigation measures relevant to the protection of downstream European Sites are outlined within Section 6 of the NIS. A water quality monitoring program is detailed in the accompanying Construction Environmental Management Plan. Groundwater vulnerability is discussed in Section 6.3.1.9.5 of this Biodiversity Chapter and further detail is provided within Section 9.3.11 of Chapter 9 Water. The design phase of the Proposed Project also included detailed constraints mapping which applied 50m buffers to rivers and streams and 100m buffers to lakes. Where in-stream works are required along the proposed Turbine Delivery Route, these have been fully considered and mitigation measures for the protection of aquatic habitats and species prescribed within Section 6.5 of this Chapter, following best practice guidelines. Due to the presence of the invasive species Japanese knotweed (<i>Reynoutria</i>

Consultee	Date Received	Response	
		management plan put in place where found. ➤ A construction and operational phase water quality and habitat monitoring programme must be put in place. The monitoring of all surface flows during construction is essential and remote sensing equipment should be considered as a normal precaution and extended into the post construction phase. ➤ Adequately sized aquatic buffer zones must be established along all watercourses. IFI recommends a minimum width of 15 metres from a minor watercourse to low-risk parts of the construction site with larger buffer zones required for more sensitive habitats and higher risk operations e.g., 50m from a turbine. ➤ Groundwater vulnerability ranges from moderate to extreme across the site. The location of turbines and main construction works must avoid high groundwater vulnerability areas. ➤ Watercourse crossings existing on site or along the proposed delivery routes must be assessed to determine if works will be required to facilitate site access and the potential impacts of such works. The locations and design of any proposed new watercourse crossings should be provided. All instream works or other works which may impact directly on a watercourse should only be carried out during the open season which is from 1st July to 30th of September (so as to avoid impacting on the aquatic habitat during the spawning season.)	<i>japonica</i>) within the Site, a site-specific Invasive Species Management Plan has been prepared, included as Appendix 6-4 of this Chapter, which outlines measures to prevent the potential spread of this species within the Site or to any potential pathways for spread beyond the Site.
Irish Peatland Conservation Council	N/A	No response received at the time of writing.	N/A
Uisce Éireann	10 th of March 2026	No issues raised in relation to biodiversity, flora or fauna.	N/A
Irish Wildlife Trust	N/A	No response received at the time of writing.	N/A

Consultee	Date Received	Response	
Mayo County Council – Environmental Department	N/A	No response received at the time of writing.	N/A
Office of Public Works	29 th of April 2026	No issues were raised in relation to biodiversity, flora or fauna.	N/A
The Heritage Council	N/A	No response received at the time of writing.	N/A
Waterways Ireland	29 th of May 2023	No comments were provided on the Proposed Project as the Site is not located within the Zone of Influence of any Waterways Ireland waterways.	N/A

6.2.3 Field Surveys

A comprehensive survey of the biodiversity within the Site was undertaken on various dates between 2023 and 2026, as outlined in Table 6-2. The following sections fully describe the ecological surveys that have been undertaken and provide details of the methodologies, dates of survey and guidance followed.

Table 6-2 Ecology surveys undertaken to inform the EIAR

Survey Type	Dates	Study Area	Guidance
Multi-disciplinary Ecological Walkover Surveys (including habitats, mammals, invasive species etc.)	22 nd and 28 th of June 2023 10 th of August 2023 20 th and 28 th of September 2023 19 th of October 2023 7 th of December 2023 31 st of July 2024 11 th of September 2024 23 rd of April 2025 17 th of June 2025 7 th of July 2025 25 th of February 2026	The Site	Smith <i>et al.</i> (2011); TII (2008a); TII (2020)
Dedicated Habitat and Vegetation	22 nd and 28 th of June 2023 25 th of July 2023	Targeted locations within the Proposed Project footprint, and within Annex I and high biodiversity value habitats.	Fossitt (2000); Martin <i>et al.</i> (2018); Smith and Crowley (2020); NPWS (2025); EC (2013); Irish Vegetation

Survey Type	Dates	Study Area	Guidance
Composition Surveys	17 th of June 2025 7 th of July 2025 14 th of April 2026		Classification (IVC) and ERICA: Engine for Relevés to Irish Communities Assignment.
Badger Surveys	22 nd and 28 th of June 2023 10 th of August 2023 20 th and 28 th of September 2023 19 th of October 2023 7 th of December 2023 31 st of July 2024 11 th of September 2024 23 rd of April 2025 17 th of June 2025 7 th of July 2025 25 th of February 2026	The Site	TII (2008a); TII (2006); CIEEM (2013)
Bat Surveys	17 th of April 2025 7 th of May 2025 4 th and 26 th of June 2025 21 st of August 2025 9 th of September 2025 25 th of February 2026	The Site	NatureScot (2021); NIEA (2021; amended 2024); Collins (2023)
Camera Trap Surveys	Camera traps were deployed under licence between the 25 th of July until the 10 th of August 2023	Areas identified as potential mammal breeding sites within the Site	TII (2005); TII (2008a)
Marsh Fritillary Surveys	19 th and 20 th of September 2023 11 th of September 2024 22 nd of September 2025	Areas identified as potential suitable habitat for marsh fritillary within the Site	TII (2008a); NBDC (online)
Aquatic Surveys (including otter)	10 th and 11 th of July 2023 23 rd of October 2023	Freshwater watercourses which could be affected directly or indirectly by the	CEN (2003); CFB (2008); EA (2003); Toner <i>et al.</i> (2005); TII (2008a); Reynolds <i>et al.</i>

Survey Type	Dates	Study Area	Guidance
	3 rd and 4 th of July 2025	Proposed Project (outlined in Appendix 6-2)	(2010); Gammell <i>et al.</i> (2021); IFI (2010)

6.2.3.1 Multi-disciplinary Ecological Walkover Surveys

Multi-disciplinary ecological walkover surveys were undertaken within the Site on a number of dates (refer to Table 6-2 above). These surveys were carried out in accordance with best practice TII *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna* on National Road Schemes (TII, 2008a).

The walkover surveys were designed to detect the presence, or likely presence, of a range of protected habitats and species. All habitats recorded within the Site and described in this EIAR chapter have been classified in accordance with ‘*A Guide to Habitats in Ireland*’ (Fossitt, 2000), which classifies habitats based on the vegetation present and management history. The extent of each habitat within the Site was mapped using aerial photography, handheld GPS and smartphone technology. A representative photograph was also taken for each of the habitats recorded on site, including all relevés (see Section 6.2.3.2 below). Plant nomenclature for vascular plants follows ‘*New Flora of the British Isles*’ (Stace, 2019), while mosses and liverworts nomenclature follows ‘*Mosses and Liverworts of Britain and Ireland - a field guide*’ (British Bryological Society, 2010). Habitat/vegetation survey timings fall within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith *et al.*, 2011).

The multi-disciplinary ecological walkover surveys included a search for evidence of or suitable habitat for a range of protected mammal species, including otter, badger, pine marten, Irish stoat, red squirrel, pygmy shrew, and hedgehog. In addition a search was conducted for signs of or areas of suitable habitat for amphibians, reptiles and lepidoptera within the Site. These surveys comprehensively covered the entire Site. Incidental records were also incorporated from other dedicated species/habitat specific surveys, where relevant.

During the multidisciplinary surveys, a search for Invasive Alien Species (IAS) listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) was conducted.

Based on the multi-disciplinary walkover survey findings, further detailed targeted surveys were carried out for a number of ecological receptors and these survey methodologies are described in the following subsections.

6.2.3.2 Dedicated Habitat and Vegetation Composition Surveys

Detailed botanical surveys were undertaken at a number of targeted locations within the Site on the dates set out in Table 6-2 above. Targeted locations included representative habitats at each turbine base and other Proposed Project infrastructure including the proposed temporary construction compounds, proposed borrow pit, proposed met mast and proposed onsite substation. In addition, detailed botanical surveys were also undertaken across the Site in areas of species-rich habitats of high biodiversity value, and within habitats identified as having potential to conform to habitats listed under Annex I of the EU Habitats Directive. A total of 26 no. relevés were undertaken, the full details and results of which are provided in Appendix 6-1. The locations of all relevés are shown in Figure 1-1 of Appendix 6-1. The size of all relevés were 2m x 2m with the exception of species-rich cutover bog, which was 10m x 10m in extent (in accordance with Smith and Crowley, 2020) and relevés within remnant raised bog were 4m x 4m in extent (in accordance with Fernandez *et al.*, (2014).

The data from all relevés undertaken were analysed in accordance with the Irish Vegetation Classification (IVC) system. The IVC is a project with aims to classify, describe, and map in detail all aspects of natural and semi-natural vegetation in Ireland within a single, unified framework. The National Vegetation Database (NVD), upon which the IVC is based, holds data for over 30,000 relevés and is the core resource upon which the classification system is based.

A fundamental requirement of the IVC is to “*aid in definition and **identification** of EU Habitat Directive (92/43/EEC) Annex I habitats*” and to “*inform the planning process, for example through environmental impact assessments*”.

The Engine for Relevés to Irish Communities Assignment (ERICA)¹¹ web application was used to analyse all relevés and to assign vegetation data to communities defined by the IVC. The quantitative vegetation cover data collected from relevés within the Site were uploaded to ERICA, checked for errors, analysed and the results were downloaded. ERICA covers grassland, woodland, duneland, saltmarsh, heath, bog, fen and mire, freshwater, saline water and rocky habitats, and weed communities (Perrin, 2025).

The ERICA analysis procedure uses a clustering process to assign classification affinity to vegetation plots based on a degree of membership to each of the communities defined by the IVC. Table 6-3 details the categorising types of plots utilising the clustering analysis (Perrin, 2025).

Table 6-3 Categorising types of plots using clustering analysis (after Wisser & de Cáceres, 2013).

Plot Type	Definition
Assigned	The plot has membership ≥ 0.5 for one of the vegetation communities and therefore relates to the core definition of that vegetation community.
Unassigned	The plot has membership ≥ 0.5 for the noise class and is poorly represented by the current classification scheme
Transitional	The plot has membership < 0.5 for all vegetation communities and for the noise class. It falls within the scope of the current classification scheme but does not relate to the core definition of any of the vegetation communities.

This categorising procedure was utilised to determine if the grassland, transition mire or species-rich bog plots within the Site had any affinity to Annex I habitats and whether further assessment was required. For those relevés undertaken within the Proposed Project footprint, the IVC classification data were used to provide more detail on the vegetation communities present within habitats proposed to be lost as part of the Proposed Project. These data were used to inform the design of the Proposed Project where relevant.

Where habitats were considered to have potential to conform to Annex I habitats, reference was made to the European Commission’s *Interpretation manual of European Union habitats* (2013)¹² and the latest NPWS Article 17 Habitats Assessments (NPWS, 2025)¹³. In addition, detailed habitat assessments were undertaken in line with the guidance documents outlined in the following subsections:

¹¹ Perrin, 2025, ERICA – Engine for Relevés to Irish Communities Assignment V6.4 User’s Manual [online]. Available at: https://biodiversityireland.shinyapps.io/vegetation-classification/w_9cd4889a/manual.pdf [Accessed 27/04/2026]

¹² European Commission (2013) *Interpretation manual of European Union habitats*. EUR 28. European Commission DG Environment.

¹³ NPWS (2025). *The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments*. Unpublished NPWS report. Edited by: Domhnall Finch, Aoife Delany, Fionnuala O’Neill and Deirdre Lynn.

Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]

The assessment of grassland areas within the Site identified as having potential to conform to the Annex I habitat *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] was undertaken in line with Irish Wildlife Manual No. 102 ‘*The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats*’ (Martin *et al.*, 2018)¹⁴ and the references therein.

The structure and function assessment of this habitat was undertaken according to the methodology described and implemented by Martin *et al.* (2018) and the Annex I grassland assessment criteria listed in Appendix 1 therein. This involved recording the presence/absence of high quality and positive indicator species within a 2m x 2m relevé area, percentage cover of negative indicator species, and detailed vegetation structure data including cover of scrub, forbs, graminoids and litter, sward height, as well as the cover of bare soil and signs of grazing or disturbance.

Transition mire and quaking bogs [7140]

One area of revegetating cutover bog was identified within the Site as having potential to conform to Annex I Transition mires and quaking bogs [7140]. According to Smith and Crowley (2020), well-developed transition mire on cutover bog may correspond to the Annex I habitat type Transition mires and quaking bogs [7140]. However, as outlined within that report, “*although transition mire was recorded in cutover bog in this study, there were too few relevé data collected from a range of transition mire communities to define a cutover bog transition mire habitat type*”. In the absence of a defined Annex I Transition mire and quaking bogs community on cutover bog, the relevé data collected from this habitat was analysed using the ERICA application. The IVC synopsis document for the resulting vegetation community was then consulted and the conservation value of the habitat within the Site was assessed based on the information presented therein.

Active raised bog [7110] on Cutover Bog

Where areas of species rich cutover bog with high *Sphagnum* cover were recorded within the Site, these areas were assessed for their potential to conform to Annex I Active raised bog [7110]. The assessment of the Annex I habitat Active raised bog [7110] located on cutover bog habitat was undertaken in line with Irish Wildlife Manual No. 128 ‘*The habitats of cutover raised bog*’ (Smith and Crowley, 2020)¹⁵ and the references therein.

Per this guidance document, to qualify as Annex I Active raised bog, a relatively homogenous area of cutover bog must meet the following criteria:

- Total *Sphagnum* cover >40%
- Presence of all eight constant species (see Table 19; Smith and Crowley, 2020) within a 100 m² plot
- Presence of an additional four indicator species, or species groups, (see Table 19; Smith and Crowley, 2020) within a 100m² plot
- Absence of calcareous fen species, such as brown mosses
- <10% cover of species not typical of ombrotrophic raised bog

As such, a 10m x 10m relevé was undertaken and conformity with each of the above criteria was assessed.

¹⁴ Martin, J.R., O'Neill, F.H. & Daly, O.H. (2018) *The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats. Irish Wildlife Manuals, No. 102. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.*

¹⁵ Smith, G.F. & Crowley, W. (2020) *The habitats of cutover raised bog. Irish Wildlife Manuals, No. 128. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.*

Active raised bog [7110] and Degraded raised bogs still capable of natural regeneration [7120]

Where areas of remnant, uncut raised bog were identified within and/or adjacent to the Site, detailed relevés and vegetation assessments were carried out in line with Irish Wildlife Manual 81 ‘*Raised Bog Monitoring and Assessment Survey 2013*’ (Fernandez *et al.*, 2014)¹⁶ and the references and appendices therein. These surveys were undertaken in order to assess the conformity of these habitat areas to the Annex I habitats Active raised bog [7110] and Degraded raised bogs still capable of natural regeneration [7120].

Per this guidance document, 4m x 4m relevés were undertaken within areas of remnant uncut raised bog. As well as this vegetation cover data, the following data were collected:

- Ground firmness;
- Physical indicators (i.e. burning, bare peat, erosion channels, algae);
- *Calluna vulgaris* height and cover;
- Macro-topography (i.e. steep slope, slight slope, flat, depression);
- Micro-topography (i.e. hummocks, flats, hollows, pools);
- Pools type (i.e. regular, interconnected, tear) and cover (if present);
- Tussocks type (*Trichophorum cespitosum* or *Eriophorum vaginatum*);
- Evidence of degradation or regeneration;
- Cover of *Cladonia* and *Sphagnum* species and *Narthecium ossifragum*;
- Dominant species cover and
- Any additional comments.

Following this, these data were collated and the habitats were aligned with an ecotope (face-bank, marginal, sub-marginal, sub-central, central) based on the local physical characteristics and characteristic/dominant species - see Table 2.2 of Fernandez *et al.* (2014) for details on the criteria for each ecotope classification.

These assessments, together with reference to Article 17 Reporting (2025, 2019), were used to assess the Annex I status of the areas of raised bog within the Site.

6.2.3.3 Terrestrial Fauna Surveys

The results of the desk study, scoping replies and incidental records of protected species recorded during the multidisciplinary ecological walkover surveys described above were used to inform the scope of targeted faunal surveys required. Dedicated surveys for bats, badger and marsh fritillary butterfly were undertaken at the times set out below with the methodologies followed also provided below. The Meander River, a lowland/depositing river, flows along the southern boundary of the Site. No other EPA mapped watercourses are located within the Site. Drumady Lough is located adjacent to the eastern boundary of the Site. An unnamed stream outfalls from the south of this lake and discharges to the River Robe approximately 5.6km downstream. Dedicated surveys for otter were carried out by Triturus Environmental Ltd at downstream locations along the Meander River, the unnamed tributary of the River Robe and at Drumady Lough. Following the completion of multi-disciplinary ecological walkover surveys described above, no requirement for further dedicated faunal surveys was identified.

6.2.3.3.1 Badger Survey

¹⁶ Fernandez, F., Connolly K., Crowley W., Denyer J., Duff K. & Smith G. (2014) *Raised Bog Monitoring and Assessment Survey 2013. Irish Wildlife Manuals, No. 81. National Parks and Wildlife Service, Department of Arts, Heritage and Gaeltacht, Dublin, Ireland.*

Areas identified as providing potential habitat for badger were subject to specialist targeted survey. The badger surveys covered all suitable habitats within the Site, in order to inform the layout of the Proposed Project.

The badger surveys were conducted in order to determine the presence or absence of badger within the Site. This involved a search for all potential badger signs as per TII (2008a) (latrines, badger paths and setts). If encountered, setts would be classified as per the convention set out in TII (2008a) (i.e. main, annexe, subsidiary, outlier).

The badger survey was conducted adhering to best practice guidance (TII, 2008a) and followed the ‘Guidelines for the Treatment of Badger Prior to the Construction of National Roads Schemes’ (TII, 2006) and CIEEM best practice competencies for species surveys (CIEEM, 2013¹⁷).

Camera traps were also deployed under licence between the 25th of July and 10th of August 2023 at mammal burrows identified as potential breeding locations for mammals within the Site. These locations showed signs of activity and likely use by mammal species, therefore camera traps were deployed in order to identify any species present and verify activity levels.

6.2.3.3.2 Otter Survey

In the south of the Site, the Meander River flows in a southerly direction along the southern boundary of the Site. Drumady Lough is located adjacent to the eastern boundary of the Site. A small unnamed watercourse outfalls from the south of Drumady Lough and discharges to the River Robe approximately 5.6km to the south of the Site. Additionally, an unmapped watercourse classified as an Eroding/upland river (FW1) was identified along the proposed Turbine Delivery Route and a small pond was recorded in an area of agricultural grassland within the Site.

Otter surveys were carried out by Triturus Environmental Ltd. at locations on the Meander River, , in the north and south basins of Drumady Lough and on the unnamed tributary of the River Robe as part of baseline aquatic surveys to inform the EIAR for the Proposed Project in 2025, as outlined in the Aquatic Baseline Report which is included as Appendix 6-3 of this EIAR. Previous otter surveys were also undertaken as part of aquatic baseline surveys in July and October 2023, and the results of these surveys are used to supplement the findings of the 2025 surveys, where relevant. The survey locations are detailed in Table 6-4 (Section 6.2.3.4) below, and shown in Figure 2.1 of the Aquatic Baseline Report (Appendix 6-3). During the walkover surveys, the pond within the Site and the small unmapped stream along the proposed Turbine Delivery Route were also surveyed for signs of otter, and were found have negligible suitability for otter.

Surveys were undertaken in line with best practice TII (2008a) guidelines. Consideration was also given to TII (2006) *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes* and TII (2005) *Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes*. Notes on the age and location of signs (ITM coordinates) were made, in addition to the quantity and visible constituents of spraint (i.e. remains of fish, crustaceans, molluscs etc.).

6.2.3.3.3 Marsh Fritillary Surveys

All areas of suitable marsh fritillary habitat within the Site were mapped as part of the survey effort and were used to inform the layout of the Proposed Project.

Taking account of the findings of the desk study, which identified records for marsh fritillary in hectad M27, and following the identification of suitable habitat for this species (i.e. abundance of devil’s-bit

¹⁷ CIEEM (2013) *Technical Guidance Series – Competencies for Species Survey*, Online, Available at: <https://cieem.net/resource/competencies-for-species-survey-css/> [Accessed: 25/02/2026]

scabious) within the Site during the multi-disciplinary ecological walkover surveys, targeted larval web surveys for the species were undertaken. The survey methodology followed best practice guidance described in TII (2009) ‘*Guidelines for Assessment of Ecological Impacts of National Roads Schemes*’. This involved walked surveys to identify suitable areas of marsh fritillary habitat within the Site. Where suitable habitat did occur, detailed surveys to locate larval webs were undertaken. The surveys were undertaken within the optimal period i.e. August – September, on dry days, with no rain and no to little wind.

The NBDC methodology entitled ‘*Habitat Condition Assessment For Marsh Fritillary*’¹⁸ was also followed in order to assess the condition of each habitat parcel, classifying the habitats as *Good Condition*, *Suitable (Under-grazed)*, *Suitable (Over-grazed)* or *Unsuitable* based on the frequency of devil’s-bit scabious (*Succisa pratensis*), the larval foodplant, sward height and cover of scrub.

6.2.3.3.4 Bat Surveys

Dedicated bat surveys of the Site were undertaken throughout 2025 and the results of these surveys form the core dataset used to inform this EIAR chapter. Detailed descriptions of the survey methodologies undertaken at the Site throughout 2025 are provided within the full Bat Report included in Appendix 6-2 of this EIAR, together with full details of the survey times and the surveyors who carried out the bat survey and assessment work. An assessment of the Proposed Grid Connection and Turbine Delivery Route was also undertaken. The 2025 data were also supplemented by data from previous baseline bat surveys undertaken within the Site in 2023, where relevant. A summary of the findings of these earlier surveys, which were designed to characterise baseline bat activity within the Site and inform subsequent assessment, is provided in Section 4.2.1 of the Bat Report, included as Appendix 6-2.

Survey design and effort was created in accordance with the best practice guidelines, ‘*Bat Surveys: Good Practice Guidelines*’ prepared by the Bat Conservation Trust (Collins 2023) and were undertaken in strict accordance with those prescribed in NatureScot (2021) ‘*Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation*’. Consideration was also given to the Northern Ireland Environment Agency (NIEA) Natural Environment Division ‘*Guidance on Bat Surveys, Assessment & Mitigation for Onshore Wind Turbine Developments*’ (NIEA, 2021; amended 2024). This is in line with standard best practice industry guidelines.

The survey programme included bat habitat suitability walkover surveys to assess the suitability of habitats within the Site to support roosting, foraging and commuting bats, as well as targeted roost surveys, manual activity surveys and ground-level static surveys, summarised as follows:

- **Bat Habitat Suitability Appraisal:** Bat walkover surveys were undertaken across the Site to assess the suitability of habitats to support roosting, foraging and commuting bats. Habitat suitability was assessed in accordance with Collins (2023), with connectivity of suitable habitats with the wider landscape also considered.
- **Roost Surveys – Daytime Roost Inspections:** A search for roosts was undertaken within 200m plus the rotor radius (i.e. 268m) of the proposed turbine locations (NatureScot, 2021). The aim of these searches was to determine the presence of roosting bats and the need for further survey work or mitigation. Three structures within 268m of proposed Turbine 5 were identified as Potential Roost Features (PRFs) and a roost assessment was undertaken, which comprised a detailed inspection of the interiors and exteriors to look for evidence of bat use, including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises. Targeted ground-level inspections were undertaken of trees within the Proposed Project development footprint and along the TDR where junction

¹⁸ National Biodiversity Data Centre [online]. Available at: <https://biodiversityireland.ie/app/uploads/2021/11/Marsh-Fritillary-Habitat-Condition-Form.pdf> [Accessed 31/03/2026]

accommodation works are required. Trees were visually assessed for tree rot holes, hazard beams, cracks and splits, partially detached bark, knot holes, gaps between overlapping branches and any other PRFs.

- **Roost Surveys – Emergence Surveys:** Structures identified during daytime roost inspections as supporting PRFs were subject to presence/absence surveys in the form of dusk emergence surveys. The emergence surveys commenced at least 15 minutes before sunset and concluded 90 minutes after sunset and were carried out in favourable weather conditions. Where possible, bat species identification was made in the field, using full-spectrum bat detectors (Bat logger M). Other relevant information was also noted during the survey, e.g., numbers of bats present, behaviour, features used, etc. All bat echolocation was recorded for subsequent analysis to confirm species identifications.
- **Manual Activity Surveys:** Walked and driven transect surveys were conducted across the Site in spring, summer, and autumn 2025, using full-spectrum bat detectors (Batlogger M). All bat activity was recorded for subsequent analysis to confirm species identifications
- **Ground-level Static Surveys:** Full-spectrum static detectors (Song Meter SM4BAT) were deployed at seven locations for at least 10 nights in spring, 20 nights in summer, and 10 nights in autumn 2025 (Figure 3-1 in Appendix 6-2). Detector placement was based on the proposed turbine locations. Detectors were programmed to record from 30 minutes before sunset to 30 minutes after sunrise. Weather conditions were monitored throughout to ensure appropriate conditions were captured.

All recorded bat calls were analysed using Kaleidoscope Pro software and manually verified to species or genus level, where possible, and activity levels were quantified as bat passes per hour (bpph).

6.2.3.4 Fisheries and Aquatic Surveys

Dedicated aquatic baseline surveys were undertaken in the vicinity of the Site by Triturus Environmental Ltd in 2025, on the dates outlined in Table 6-2 above. Previous aquatic baseline surveys were also undertaken by Triturus in relation to the Site in July and October 2023, and the results of these surveys are used to supplement the findings of the 2025 surveys, where relevant. All freshwater watercourses and waterbodies which could be affected directly or indirectly by the Proposed Project were considered as part of the current assessment. The aquatic baseline surveys included watercourses and waterbodies in vicinity of the Site inclusive of rivers, lakes and ponds. A total of $n=8$ sites were selected for detailed aquatic assessment. These survey sites were located on the Meander River (EPA code: 34M05) which flows along the southern boundary of the Site, an unnamed tributary of the River Robe (no EPA code) which outfalls from Drumady Lough which is located adjacent to the eastern boundary of the Site, within the north and south basins of Drumady Lough itself, and at a small pond within the Site. These survey locations are detailed in Table 6-4 below. All aquatic survey locations are shown in Figure 2.1 of the Aquatic Baseline Report, which is included as Appendix 6-2 of this EIAR.

Table 6-4 Locations of 8 no. aquatic survey sites in the vicinity of the Proposed Project

Site no.	Watercourse	EPA code	Location	X (ITM)	Y (ITM)	Distance Downstream of the Site
A1	Meander River	34M05	Cappagh North	528928	777233	150m
A2	Meander River	34M05	Maltpool	528240	775653	1.8km
A3	Meander River	34M05	Oory	526087	775116	4.5km
B1	Unnamed stream	n/a	Clogher Beg	529745	776187	1.5km

Site no.	Watercourse	EPA code	Location	X (ITM)	Y (ITM)	Distance Downstream of the Site
B2	Unnamed stream	n/a	Garravlagh	530452	773056	5.0km
P1	Pond	n/a	Cunlaghfadda	529145	777734	Within the Site
L1	Drumady Lough (north basin)	n/a	Drumady	529572	777795	50m from eastern Site boundary
L2	Drumady Lough (south basin)	n/a	Drumady	529752	777224	450m

Survey effort focused on both instream and riparian habitats at each aquatic sampling location. Surveys undertaken at each of the survey sites included a fisheries assessment (electro-fishing and/or fisheries habitat appraisal), white-clawed crayfish survey, macrophyte and aquatic bryophyte survey and (where suitable) biological water quality sampling (Q-sampling) and macro-invertebrate sweep sampling.

In addition, to validate site surveys and to detect potentially cryptically-low populations, composite water samples were collected from the Meander River and the unnamed tributary of the River Robe and analysed for lamprey (*Lampetra* sp.), European eel (*Anguilla anguilla*), freshwater pearl mussel (*Margaritifera margaritifera*), white-clawed crayfish (*Austropotamobius pallipes*) and crayfish plague (*Aphanomyces astaci*).

Full details of the methodology followed for the aquatic surveys as well as details of the locations of survey sites and dates of surveys are provided in the Aquatic Baseline Report, Appendix 6-3.

6.2.3.5 Limitations

Seasonal factors that affect distribution patterns and habits of species were taken into account when conducting the surveys. The potential of the Site to support certain populations (in particular those of conservation importance that may not have been recorded during the field survey due to their seasonal absence or nocturnal/cryptic habits) was assessed.

The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate guidelines. The habitats and species recorded on site were readily identifiable and comprehensive assessments were made during the field visits. No limitations in respect of the surveys undertaken have been identified.

In line with the European Commission's *Guidance on the preparation of the Environmental Impact Assessment Report* (2017), it is considered that the description of the current state of the environment is sufficiently detailed and accurate to ensure that the effects, arising both during the development of the Proposed Project and in the future, can be adequately assessed.

6.2.4 Methodology for Assessment of Impacts and Effects

6.2.4.1 Identification of Target Receptors and Key Ecological Receptors

The methodology for assessment followed a precautionary screening approach with regard to the identification of KERs. Following a comprehensive desk study, initial site visits and stakeholder

consultation; “Target Receptors” likely to occur in the ZOI of the Proposed Project were identified. The Target Receptors included habitats and species that were protected under the following legislation:

- Annexes of the EU Habitats Directive.
- Qualifying Interests (QI) of SACs within the likely ZOI.
- Species protected under the Wildlife Act (as amended).
- Flora (Protection) Order 2022 S.I. No. 235.

6.2.4.2 Determining Importance of Ecological Receptors

The importance of the ecological features identified within the Site was determined with reference to a defined geographical context. This was undertaken following a methodology that is set out in Chapter 3 of the TII Ecological Impact Assessment Guidelines (TII, 2009). These guidelines set out the context for the determination of value on a geographic basis with a hierarchy assigned in relation to the importance of any particular receptor. These guidelines provide a basis for determination of whether any particular receptor is of importance on the following scales:

- International
- National
- County
- Local Importance (Higher Value)
- Local Importance (Lower Value)

The guidelines clearly set out the criteria by which each geographic level of importance can be assigned. Locally Important (lower value) receptors contain habitats and species that are widespread and of low ecological significance and of any importance only in the local area. Internationally Important sites are either designated for conservation as part of the Natura 2000 Network (SAC or SPA) or provide the best examples of habitats or internationally important populations of protected flora and fauna. Specific criteria for assigning each of the other levels of importance are set out in the TII Ecological Impact Assessment Guidelines and have been followed in this assessment. Where appropriate, the geographic frame of reference set out above was adapted to suit local circumstances. In addition, and where appropriate, the conservation status of habitats and species is considered when determining the significance of ecological receptors.

Any ecological receptors that are determined to be of National or International, County or Local importance (Higher Value) following the criteria set out in the TII Ecological Impact Assessment Guidelines are considered to be KERs for the purposes of ecological impact assessment if there is a pathway for effects thereon. Any receptors that are determined to be of Local Importance (Lower Value) are not considered to be KERs. This is not to say that they are of no biodiversity value, but that impacts on these habitat types in their local context are not likely to result in a significant effect on biodiversity. It should be noted that this relates to the impact on the habitat itself as distinct from considering the role these habitat types play in supporting KER fauna species.

6.2.4.3 Characterisation of Impacts and Effects

The ecological effects of impacts arising from the Proposed Project are characterised as per the CIEEM ‘Guidelines for Ecological Impact Assessment in the UK and Ireland’ (2018, updated 2024) (hereafter referred to as CIEEM 2018 Guidelines). The CIEEM 2018 Guidelines are the industry standard for the completion of Ecological Impact Assessment (EcIA) in the UK and Ireland. This chapter has also been prepared in accordance with the corresponding EPA Guidelines (EPA 2022) as detailed in Section 1.2.1 of Chapter 1. The headings under which the impacts are characterised follow those listed in the guidance document and are applied where relevant. A summary of the impact characteristics considered in the assessment is provided below:

- **Positive or Negative.** Assessment of whether the Proposed Project results in a positive or negative effect on the ecological receptor.
- **Extent.** Description of the spatial area over which the effect has the potential to occur.
- **Magnitude** Refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
- **Duration** is defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species.
- **Frequency and Timing.** This relates to the number of times that an impact occurs and its frequency. A small-scale impact can have a significant effect if it is repeated on numerous occasions over a long period.
- **Reversibility.** This is a consideration of whether an effect is reversible within a 'reasonable' timescale. What is considered to be a reasonable timescale can vary between receptors and is justified where appropriate in the impact assessment section of this report.

6.2.4.4 Determining the Significance of Effects

The ecological significance of the effects of the Proposed Project are determined following the precautionary principle and in accordance with the methodology set out in Section 5 of the CIEEM 2018 Guidelines.

For the purpose of EcIA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local (CIEEM, 2018).

When determining significance, consideration is given to whether:

- Any processes or key characteristics of KERs will be removed or changed.
- There will be an effect on the nature, extent, structure and function of important ecological features.
- There is an effect on the average population size and viability of ecologically important species.
- There is an effect on the conservation status of important ecological habitats and species.

Integrity

In the context of EcIA, 'integrity' refers to the coherence of the ecological structure and function, across the entirety of a site, that enables it to sustain all of the ecological resources for which it has been valued (TII, 2009). Impacts resulting in adverse changes to the nature, extent, structure and function of component habitats and effects on the average population size and viability of component species, would affect the integrity of a site, if it changes the condition of the ecosystem to unfavourable.

Conservation status

An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status. According to CIEEM (2018) guidelines the definition for conservation status in relation to habitats and species are as follows:

- Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area
- Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

As defined in the EU Habitats Directive 92/43/EEC, the conservation of a habitat is favourable when:

- Its natural range, and areas it covers within that range, are stable or increasing.
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.
- The conservation status of its typical species is favourable.

The conservation of a species is favourable when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future.
- There is and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

According to the TII 2009 Guidelines and CIEEM 2018 Guidelines, if it is determined that the integrity and/or conservation status of an ecological feature will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e. local, county, national, international).

6.2.4.5 **Incorporation of Mitigation**

Section 6.5 of this EIAR assesses the potential effects of the Proposed Project to ensure that all effects on sensitive ecological receptors are adequately addressed. Where significant effects on KERs are predicted, mitigation is incorporated into the project design or layout to address such effects, as is the case with the Proposed Project. The implemented mitigation measures avoid or reduce or offset potential significant residual effects, post mitigation.

6.3 Establishing the Ecological Baseline

6.3.1 Desk Study

The following sections describe the results of a survey of published material that was consulted as part of the desk study for the purposes of the ecological assessment. It provides a baseline of the ecology known to occur in the existing environment. Material reviewed includes the Site Synopses for designated sites within the Likely ZoI, as compiled by the NPWS, plant distribution atlases and other research publications.

Please note that the results of desktop studies in relation to bats and birds are detailed in the Bat Report, Appendix 6-2 and Chapter 7 Birds of this EIAR, respectively.

6.3.1.1 Designated Sites

The potential for the Proposed Project to impact on sites that are designated for nature conservation was considered in this Chapter of the EIAR.

SACs and SPAs are designated under the Habitats Directive and the Birds Directive, respectively and are collectively known as ‘European Sites’. The potential for significant effects and/or adverse effects on the integrity of European Sites is fully assessed in the AA Screening Report and NIS that accompanies the planning application for the Proposed Project. As per EPA 2022 Guidance, *“a biodiversity section of an EIAR, should not repeat the detailed assessment of potential effects on European sites contained in a Natura Impact Statement”* but should *“incorporate their key findings as available and appropriate”*. Section 6.5.5 of this EIAR provides a summary of the key assessment findings with regard to European Designated Sites.

Natural Heritage Areas (NHAs) are designated under Section 18 of the Wildlife (Amendment) Act 2000 and their management and protection is provided for by this legislation and planning policy. The potential for effects on these designated sites is fully considered in this Biodiversity Chapter. Proposed Natural Heritage Areas (pNHAs) were listed on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, the potential for effects on these sites is fully considered in this Biodiversity Chapter. NHAs and pNHAs are collectively known as ‘Nationally Designated Sites’.

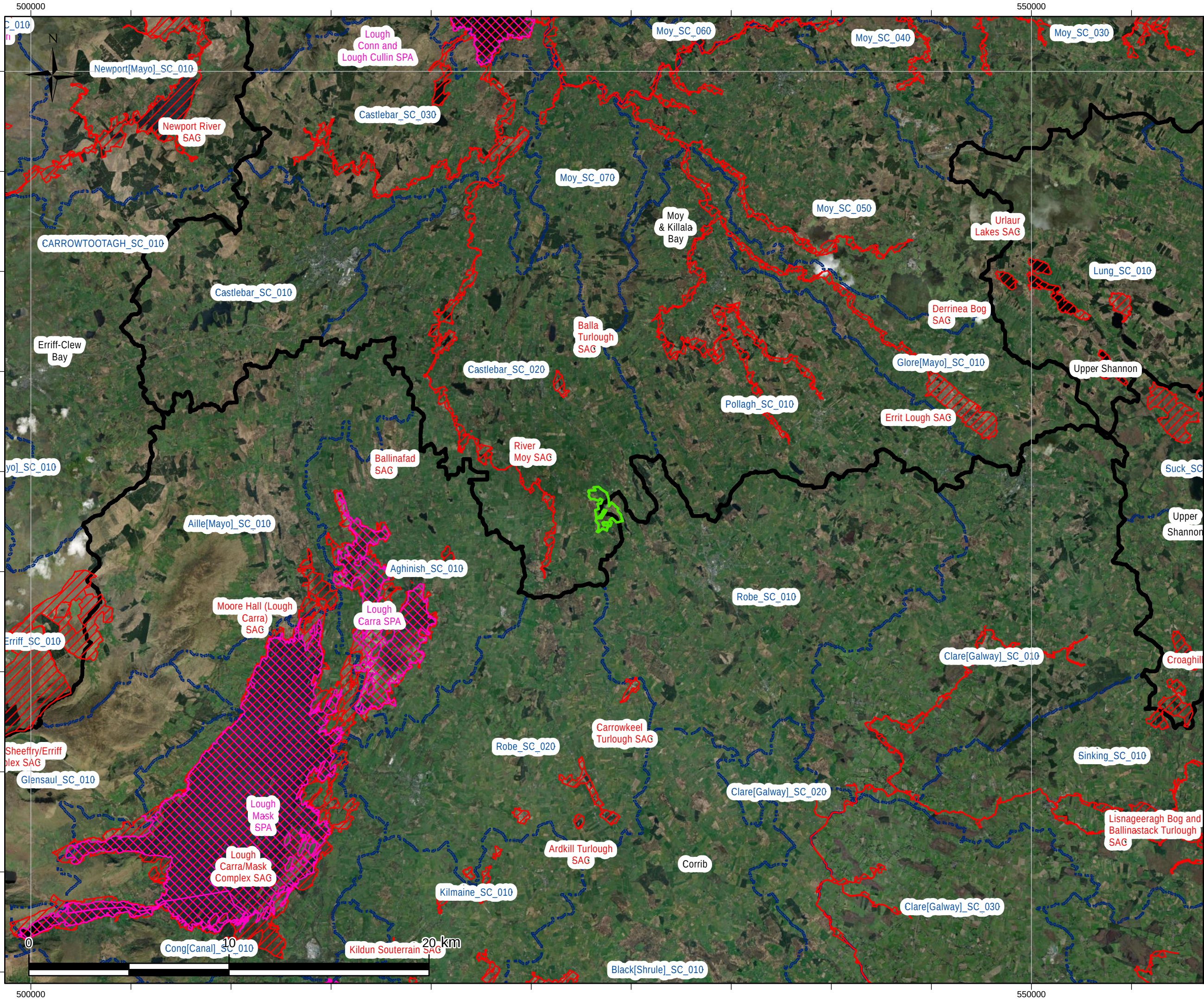
Ireland is one of 172 Contracting Parties to the Convention on Wetlands of International Importance which first convened in Ramsar, Iran in 1971, and since called the ‘Ramsar Convention’. This intergovernmental treaty embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance. The Convention’s mission is *“the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world”*. A total of 45 wetlands that are of significant value for nature have been identified as Ramsar sites in Ireland. The potential for effects on these sites is fully considered in this Biodiversity Chapter.

The following methodology was used to establish which sites that are designated for nature conservation have the potential to be impacted by the Proposed Project:

- Initially the most up to date GIS spatial datasets for European and Nationally designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie). The datasets were utilised to identify designated sites which could feasibly be affected by the Proposed Project.
- All European and Nationally designated sites within the likely ZoI of the Proposed Project were identified. To provide context for the assessment, European Sites

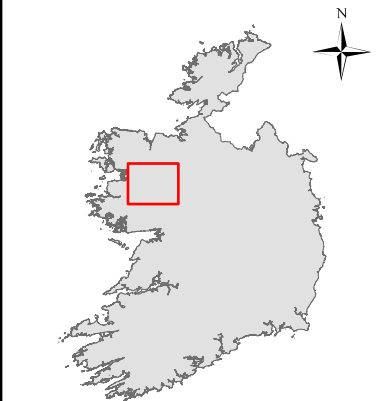
surrounding the Proposed Project are shown on Figures 6-1 and 6-2 and Nationally Designated Sites are shown in Figures 6-3 and 6-4.

- In addition to the European and Nationally Designated Sites considered in Table 6-5 below, SACs, SPAs, NHAs and pNHAs located further downstream were also considered. The Killala May/Moy Estuary SAC, SPA and pNHA and Moy Valley pNHA are located hydrologically downstream of the Site via the Meander River, which flows along the southern boundary of the Site. Additionally, the Lough Corrib SAC, SPA and pNHA, the Galway Bay Complex SAC and pNHA and the Inner Galway Bay SPA are located hydrologically downstream of the Site via the River Robe, which flows downstream of Drumady Lough to the east of the Site. However, due to the significant length of the hydrological flowpaths (>45km) and the presence of large intervening waterbodies, there is no potential for likely significant effects on these European and Nationally Designated Sites and they are not considered for further assessment.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the Site and any designated sites. The hydrological catchments are also shown in Figures 6-1 (European Sites) and 6-3 (Nationally Designated Sites), and groundwater bodies are shown in Figures 6-2 (European Sites) and 6-4 (Nationally Designated Sites).
- Table 6-5 provides details of all relevant European Sites, Nationally Designated Sites and Ramsar Sites as identified in the preceding steps and assesses which are within the likely ZoI. All European Sites are fully described and assessed in the AA Screening and NIS reports submitted as part of this planning application.
- The designation features of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report.
- Where potential pathways for significant effect are identified, the Site is included within the Likely ZoI and further assessment is required.



Map Legend

- EIAR Site Boundary
- Special Protection Areas (SPAs)
- Special Area of Conservation (SACs)
- Hydrological Catchments
- Hydrological SubCatchments



SITE LOCATION - NOT TO SCALE

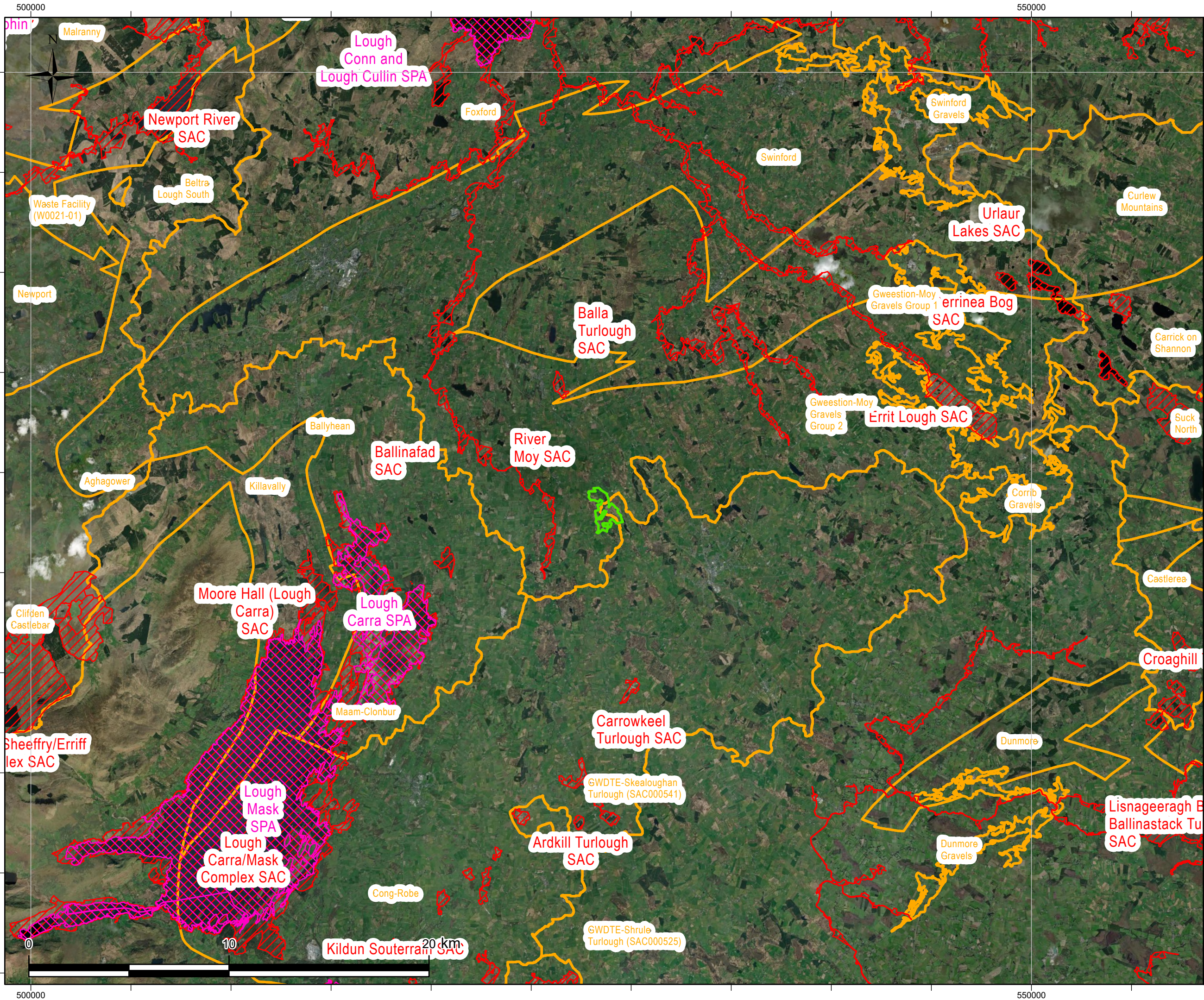
Drawing Title
European Designated Sites with Hydrological Catchments

Project Title
Proposed Cunlaghfadda Green Energy Project

Project No. 220825	Drawing No. 6-1	Scale 1:175,000
Drawn By MNR	Checked By KB	Date 09/04/2026

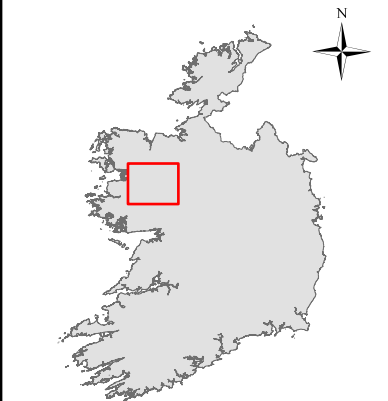
MKO

Email: info@mkofireland.ie Website: www.mkofireland.ie



Map Legend

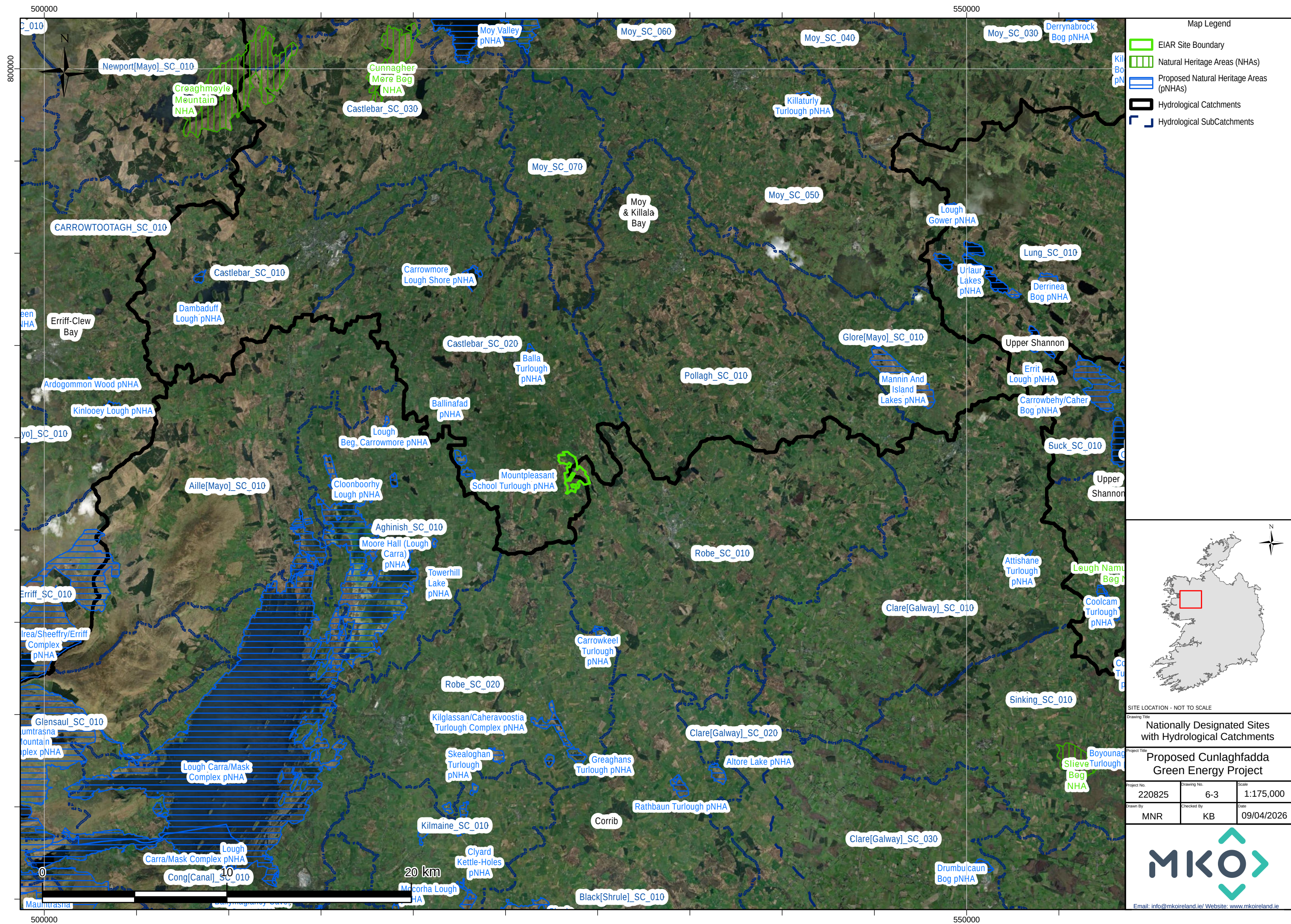
- EIAR Site Boundary
- Special Protection Areas (SPAs)
- Special Area of Conservation (SACs)
- Groundwater Catchments



SITE LOCATION - NOT TO SCALE

Drawing Title European Designated Sites with Groundwater Catchments		
Project Title Proposed Cunlaghfadda Green Energy Project		
Project No. 220825	Drawing No. 6-2	Scale 1:175,000
Drawn By MNR	Checked By KB	Date 09/04/2026

Email: info@mkofireland.ie / Website: www.mkofireland.ie



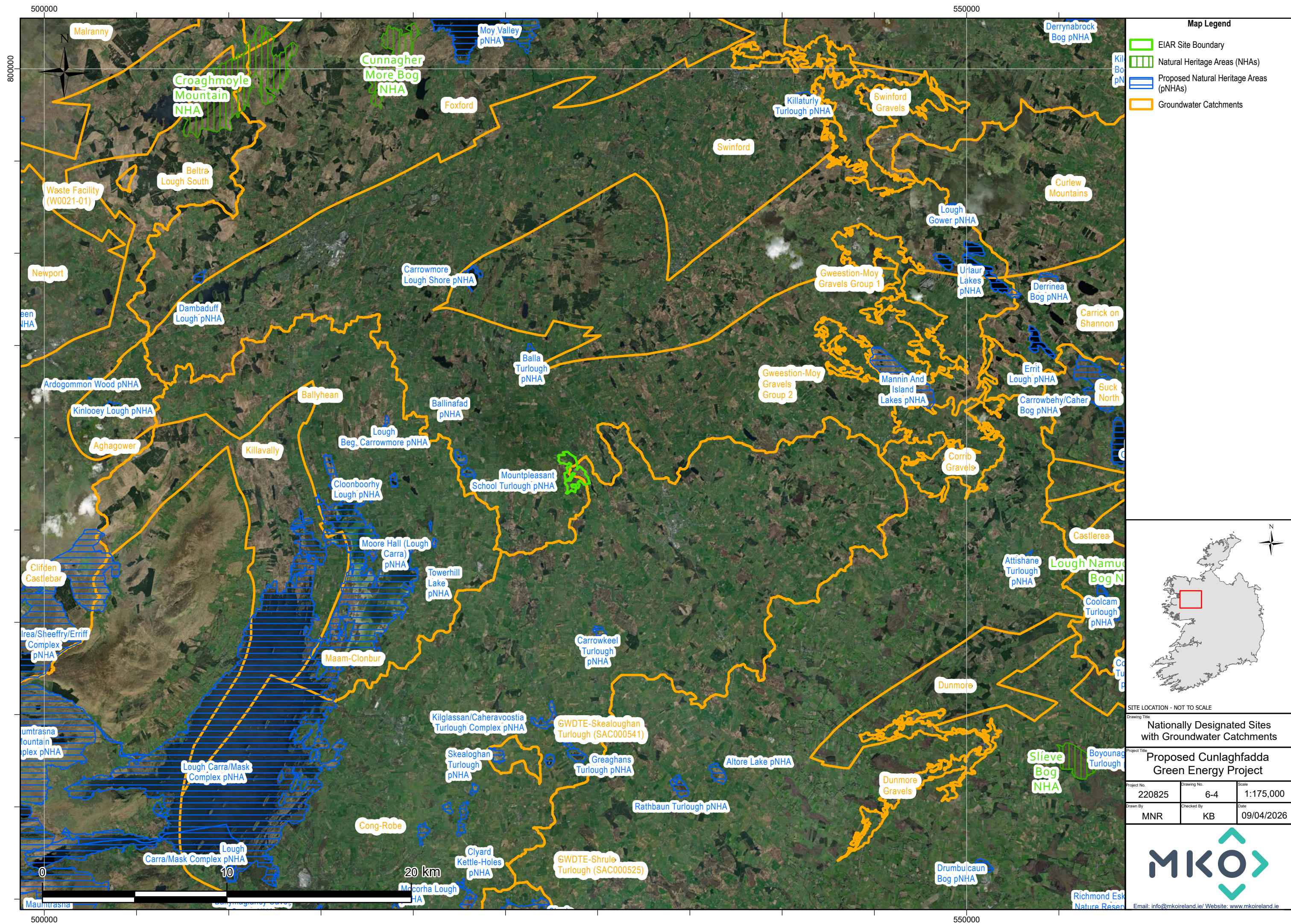


Table 6-5 Identification of European and Nationally Designated Sites within the Likely Zone of Influence

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
Special Areas of Conservation (SACs)		
River Moy SAC [002298]	1.7km Hydrological Distance: approx. 4.9km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. The Meander River flows in a southerly direction along the southern boundary of the Site. This river flows into the River Moy SAC approximately 4.9km downstream. There is potential hydrological connectivity between the Proposed Project and the SAC via drainage ditches within the Site which ultimately discharge to the Meander River which has connectivity with the SAC downstream. Both the Site and River Moy SAC are underlain by the Swinford groundwater body (GWB). As per Chapter 9 Water of this EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally, the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander River, which has hydrological connectivity downstream with the SAC. Therefore, in the absence of mitigation there is a potential pathway for indirect effect on the SAC during the construction, operational and decommissioning phases of the Proposed Project via deterioration of water quality arising from run-off of pollutants, including silts, hydrocarbons and cementitious materials, to surface waters (including drainage ditches and the Meander River to the south of the Site) potentially affecting the downstream SAC. Given the hydrological regime at the Site, i.e. relatively low groundwater recharge, the main pathway for effect on the SAC is considered to be via surface water pathways. However, taking a highly precautionary approach a potential pathway for indirect effects on the SAC due to deterioration of water quality via groundwater pathways, resulting from percolation of pollutants to groundwater during construction, operation and decommissioning of the Proposed Project was also identified. Additionally, due to the presence of Japanese knotweed (<i>Reynoutria japonica</i>) within the Site, an invasive plant species listed on the Third Schedule of the European Communities (Birds and Natural

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), taking a precautionary approach and in the absence of mitigation there is potential for the disturbance of this species during construction activities and spread of this species into the SAC via the onsite drains which have hydrological connectivity with the Meander River, which itself flows into the SAC downstream. Given the distance between the Site and the SAC (4.9km downstream), there is potential for otter utilising the Meander River, which flows along the southern boundary of the Site, to be associated with the River Moy SAC population. Potential for likely significant effects on otter as a result of <i>ex-situ</i> disturbance has therefore also been considered. While the Meander River flows along the southern boundary of the Site, it is located over 300m from the nearest proposed infrastructure (proposed Turbine 5), as the Proposed Project has been designed so that all major infrastructure, i.e., turbine bases and hardstands, avoids significant watercourses. Therefore due to the distance between the proposed infrastructure footprint and the nearest suitable habitat for otter, there is no potential for likely significant disturbance effects on otter as a result of the Proposed Project. A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on River Moy SAC. Therefore, this European Site is considered to be within the Likely Zone of Influence of the Proposed Project and further assessment is required.
Balla Turlough SAC [000463]	4.7km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. Both the Site and Balla Turlough SAC are underlain by the Swinford GWB and a Regionally Important Karstic Bedrock Aquifer. As mentioned above, the hydrological regime at the Site is characterised by high rates of surface water runoff and low rates of groundwater recharge, with water generally leaving the Site as surface water rather than as groundwater flows and entering local watercourses including the Meander River and the Robe River. There is no connectivity between these watercourses and the SAC. Nonetheless, given the distance between the Proposed Project and the SAC and the absence of watercourses between the Site and the SAC to which groundwater could discharge taking a highly

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		precautionary approach, there is considered to be low potential for hydrological connectivity between the Site and the SAC via the karstified bedrock aquifer underlying the area. Therefore, a potential pathway for indirect effect on the SAC via deterioration of groundwater quality arising from percolation of pollutants to groundwater during the construction, operational and decommissioning phases of the Proposed Project was identified. A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on Balla Turlough SAC. Therefore, this European Site is considered to be within the Likely Zone of Influence of the Proposed Project and further assessment is required.
Ballinafad SAC [002081]	6.6km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. The Site is located approximately 6.6km from the lesser horseshoe bat (<i>Rhinolophus hipposideros</i>) roost within the SAC. The core foraging range of this species is 2.5km (NPWS, 2018¹⁹), therefore, due to the distance between the Site and the SAC, there is no potential for likely significant effect on this QI species. No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Ballinafad SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Towerhill House SAC [002179]	7.2km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. The Site is located approximately 7.2km from the lesser horseshoe bat roost within the SAC. The core foraging range of this species is 2.5km (NPWS, 2018), therefore, due to the distance between the Site and the SAC, there is no potential for likely significant effect on this QI species. No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Towerhill

¹⁹ NPWS (2018) Conservation objectives supporting document – lesser horseshoe bat (*Rhinolophus hipposideros*) Version 1. Conservation Objectives Supporting Document Series. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		House SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Carrowkeel Turlough SAC [000475]	7.4km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. This SAC is located approximately 7.4km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the central section of the Site. As outlined in Chapter 9 Water of this EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the SAC. Taking the above into account and the distance between the Proposed Project and the SAC there is no potential for significant indirect effects on the SAC via hydrological pathways. No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Carrowkeel Turlough SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Lough Carra/Mask Complex SAC [001774]	8.9km Hydrological Distance: approx. 38.7km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. As per Chapter 9 of the EIAR submitted with this planning application, the central section of the Site drains via agricultural and peat drains to Drumady Lough to the east of the Site. A small unnamed watercourse outfalls from the south of Drumady Lough and discharges to the River Robe approximately 5.6km to the south of the Site. This SAC is located over 38km downstream of the Site via the unnamed stream which outfalls from Drumady Lough and the River Robe. Additionally, the unmapped watercourse which is located along the proposed Turbine Delivery Route also

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		discharges into the unnamed stream approximately 3.5km upstream of the River Robe, with the SAC over 35km downstream of the works location. Given the nature and scale of the Proposed Project and the length of the hydrological flowpath between the Site and this SAC, there is no potential for likely significant effects on the SAC as a result of the Proposed Project. No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Lough Carra/Mask Complex SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Moore Hall (Lough Carra) SAC [000527]	9.6km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. The Site is located approximately 9.6km from the lesser horseshoe bat roost within the SAC. The core foraging range of this species is 2.5km (NPWS, 2018), therefore, due to the distance between the Site and the SAC, there is no potential for likely significant effect on this QI species. No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Moore Hall (Lough Carra) SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Kilglassan/Caheravoostia Turlough Complex SAC [000504]	11.3km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. This SAC is located approximately 11.3km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the central section of the Site. As outlined in Chapter 9 Water of this EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the SAC. Taking the above into account and the distance between the Proposed Project and the SAC there is no potential for significant indirect effects on the SAC via hydrological pathways. No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Kilglassan/Cahervostia Turlough Complex SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Greaghans Turlough SAC [000503]	13.8km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. This SAC is located approximately 13.8km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the central section of the Site. As outlined in Chapter 9 Water of this EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the SAC. Taking the above into account and the distance between the Proposed Project and the SAC there is no potential for significant indirect effects on the SAC via hydrological pathways. No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Greaghans Turlough SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
Ardkill Turlough SAC [000461]	14.1km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. This SAC is located approximately 14.1km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the central section of the Site. As outlined in Chapter 9 Water of this EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the SAC. Taking the above into account and the distance between the Proposed Project and the SAC there is no potential for significant indirect effects on the SAC via hydrological pathways. No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Ardkill Turlough SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Skealoghan Turlough SAC [000541]	14.3km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. There is no potential for indirect effects as the Site is underlain by a separate hydrological groundwater catchment to this SAC. No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Skealoghan Turlough SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Special Protection Areas (SPAs)		

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
Lough Carra SPA [004051]	9.0km	There is no potential for direct effect as the Proposed Project is located completely outside of and >9km this European Site. There is no direct surface water connectivity between the Site and this SPA as the River Robe, which is located downstream of the Site, discharges into Lough Mask, located downstream of Lough Carra. Additionally, the SPA is located underlain by a separate groundwater body to the Site, therefore, there is no potential for likely significant effects on the SPA via surface or groundwater pathways. The potential for indirect effects on SCI species where they occur outside the SPA is also considered. While the Site is located within the core foraging range of common gull (25km, Thaxter <i>et al.</i>, 2012), over the four years of detailed ornithological surveys (October 2021 to September 2025) common gull were only observed within the Site on two occasions (refer to Chapter 7 Birds for detailed ornithological survey results). As such, the Site is not considered to be of ecological significance for the SCI species, and there is no potential for likely significant <i>ex-situ</i> effects. No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. This site is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Lough Mask SPA [004062]	14.5km Hydrological Distance: approx. 39.3km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. As per Chapter 9 Water, the central section of the Site drains via agricultural and peat drains to Drumady Lough to the east of the Site. A small unnamed watercourse outfalls from the south of Drumady Lough and discharges to the River Robe approximately 5.6km to the south of the Site. This SPA is located over 39km downstream of the Site via the unnamed stream which outfalls from Drumady Lough and the River Robe. Additionally, the unmapped watercourse which is located along the proposed Turbine Delivery Route also discharges into the unnamed stream approximately 3.5km upstream of the River Robe, with the SPA located approximately 37km downstream of the works at this location. Given the length of the hydrological flowpath between the Site and this SPA and the nature and scale of the Proposed Project there is no potential for likely significant effects on the SPA due to deterioration of water quality.

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		The potential for indirect effects on SCI species where they occur outside the SPA is also considered. Greenland white-fronted goose, black headed gull, common gull, lesser black-backed gull and tufted duck were all recorded either within the Site, within 500m of the Site or flying over the Site during the dedicated bird surveys undertaken (refer to Chapter 7 Birds for detailed ornithological survey results). These species are listed as SCIs for the SPA and given the distance between the Site and the SPA there is potential for individuals recorded using the Site to be associated with the SPA populations as it is within the foraging range of some of these species. The construction of the Proposed Project will result in a permanent loss of agricultural grasslands within the construction footprint which also provides suitable foraging habitat for some of these species. Although the overall footprint is small relative to the extent of available habitat within the Site and wider landscape, this has the potential to represent a loss of <i>ex-situ</i> habitat for SCI species. Additionally, as SCI bird species were recorded utilising the habitats within the Site, there is potential significant for <i>ex-situ</i> disturbance/displacement effects during the construction and operational phases of the Proposed Project. In addition to the above, there were a number of observations of lesser black-backed gull flying through the Site at potential collision height during vantage point surveys. Therefore there is also potential for collision risk/mortality during operation of the Proposed Project. Therefore on a precautionary basis, a potential pathway for likely significant effects on the SPA due to <i>ex-situ</i> disturbance/displacement, loss of <i>ex-situ</i> supporting habitat and collision risk/ mortality has been identified. A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on Lough Mask SPA. Therefore, this European Site is considered to be within the Likely Zone of Influence of the Proposed Project and further assessment is required.
Lough Conn and Lough Cullin SPA [004228]	21.8km Hydrological Distance: approx. 40km	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. The Meander River flows in a southerly direction along the southern boundary of the Site. The SPA is located approximately 40km downstream of the Site via the Meander River. Given the length of the hydrological flowpath between the Site and this SPA

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		and the nature and scale of the Proposed Project there is no potential for likely significant effects on the SPA as a result of water quality deterioration arising from Proposed Project. The potential for indirect effects on SCI species where they occur outside the SPA is also considered. While the Site is located within the core foraging range of common gull (25km, Thaxter <i>et al.</i>, 2012), over the four years of detailed ornithological surveys (October 2021 to September 2025) common gull were only observed within the Site on two occasions. Additionally, tufted duck and Greenland white-fronted goose were only observed during hinterland waterbird distribution and abundance surveys outside the Site, and common scoter were not recorded during any surveys undertaken. As such, the Site is not considered to be of ecological significance for the SCI species, and there is no potential for likely significant <i>ex-situ</i> effects. No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Lough Conn and Lough Cullin SPA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Natural Heritage Areas (NHAs)		
There are no Natural Heritage Areas (NHAs) located within the likely Zone of Influence of the Proposed Project. The nearest NHA to the Site is the Cunnagher More Bog NHA, located over 21km to the north of the Site. No connectivity or potential pathways for significant effects on this or any other NHAs were identified.		
Proposed Natural Heritage Areas (pNHA)		
Mountpleasant School Turlough pNHA [001472]	4.6km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >4km from this pNHA. This pNHA is located approximately 4.6km to the west of the Site and is underlain by the same GWB, the Swinford GWB, as the northern, southern and western sections of the Site. As outlined in Chapter 9 Water of this EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the pNHA. Taking the above into account, in addition to the presence of the Meander River in the intervening lands which acts as a hydraulic barrier between the Site and this pNHA, there is no potential for significant indirect effects on the pNHA via hydrological pathways. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Mountpleasant School Turlough pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Balla Turlough pNHA [000463] <i>This site is also an SAC</i>	4.7km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >4km from this pNHA. Both the Site and Balla Turlough pNHA are underlain by the Swinford GWB and a Regionally Important Karstic Bedrock Aquifer. As mentioned above, the hydrological regime at the Site is characterised by high rates of surface water runoff and low rates of groundwater recharge, with water generally leaving the Site as surface water rather than as groundwater flows and entering local watercourses including the Meander River and the Robe River. There is no connectivity between these watercourses and the pNHA. Nonetheless, given the distance between the Proposed Project and the pNHA and the absence of watercourses between the Site and the pNHA to which groundwater could discharge taking a highly precautionary approach, there is considered to be low potential for hydrological connectivity between the Site and the pNHA via the karstified bedrock aquifer underlying the area. Therefore, a potential pathway for indirect effect on the pNHA via deterioration of groundwater quality arising from percolation of pollutants to groundwater during the construction, operational and decommissioning phases of the Proposed Project was identified. A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on Balla Turlough pNHA. Therefore, this pNHA is considered to be within the Likely Zone of Influence of the Proposed Project and further assessment is required.

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
Slishmeen Turlough pNHA [001559]	4.9km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >4km from this pNHA. This pNHA is located approximately 4.9km to the west of the Site and is underlain by the same GWB, the Swinford GWB, as the northern, southern and western sections of the Site. As outlined in Chapter 9 Water of this EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the pNHA. Taking the above into account, in addition to the presence of the Meander River in the intervening lands which acts as a hydraulic barrier between the Site and this pNHA, there is no potential for significant indirect effects on the pNHA via hydrological pathways. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Slishmeen Turlough pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Ballinafad pNHA [002081] <i>This site is also an SAC</i>	6.6km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >6km from this pNHA. This pNHA is recognised for a roost of lesser horseshoe bats (<i>Rhinolophus hipposideros</i>). The core foraging range of this species is 2.5km (NPWS, 2018²⁰), therefore, due to the distance between the Site and this pNHA, there is no potential for likely significant effect on this species. No pathway for likely significant effect on this pNHA was identified, when considered in the

²⁰ ²⁰ NPWS (2018) Conservation objectives supporting document – lesser horseshoe bat (*Rhinolophus hipposideros*) Version 1. Conservation Objectives Supporting Document Series. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		absence of any mitigation, individually or cumulatively with other plans or projects. Ballinacfad pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Carrowkeel Turlough pNHA [000475] <i>This site is also an SAC</i>	7.3km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >7km from this pNHA. This pNHA is located approximately 7.3km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the central section of the Site. As outlined in Chapter 9 Water of this EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the pNHA. Taking the above into account and the distance between the Proposed Project and the pNHA there is no potential for significant indirect effects on the pNHA via hydrological pathways. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Carrowkeel Turlough pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Lough Manan pNHA [001533]	7.4km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >7km from this pNHA. There is no potential for indirect effects as the Site is located in separate surface water and groundwater catchments to this pNHA. Therefore there is no hydrological connectivity between the Site and this pNHA. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Lough

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		Manan pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Towerhill Lake pNHA [000550] <i>This site overlaps partially with Towerhill House SAC [002179]</i>	7.4km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >7km from this pNHA. There is no potential for indirect effects as the Site is located in separate surface water and groundwater catchments to this pNHA. Therefore there is no hydrological connectivity between the Site and this pNHA. The SAC with which this pNHA partially overlaps is recognised for a roost of lesser horseshoe bats. The core foraging range of this species is 2.5km (NPWS, 2018), therefore, due to the distance between the Site and the pNHA, there is no potential for likely significant effect on this species. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Towerhill Lake pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Cloonboorhy Lough pNHA [001486]	8.8km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >8km from this pNHA. There is no potential for indirect effects as the Site is located in separate surface water and groundwater catchments to this pNHA. Therefore there is no hydrological connectivity between the Site and this pNHA. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Cloonboorhy Lough pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Lough Carra/Mask Complex pNHA [001774] <i>This site is also an SAC and overlaps with two SPAs (Lough Carra SPA and Lough Mask SPA)</i>	8.9km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >8km from this pNHA. As per Chapter 9 of this EIAR, the central section of the Site drains via agricultural and peat drains to Drumady Lough to the east of the Site. A small unnamed watercourse outfalls from the south of Drumady Lough and discharges to the River Robe approximately 5.6km to the south of the Site. This

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		pNHA is located over 38km downstream of the Site via the unnamed stream which outfalls from Drumady Lough and the River Robe. Additionally, the unmapped watercourse which is located along the proposed Turbine Delivery Route also discharges into the unnamed stream approximately 3.5km upstream of the River Robe, with the pNHA located approximately 36km downstream of the works location. Given the nature and scale of the Proposed Project and the length of the hydrological flowpath between the Site and this pNHA, there is no potential for likely significant effects on the pNHA as a result of the Proposed Project. However, the Site provides potential supporting habitat for a number of the SCI species associated with the SPAs that overlap with this pNHA. The Site is located within the core foraging range of several of the bird species associated with this pNHA therefore, there is potential for these species to be commuting and foraging through the Site. As a result, there is potential for <i>ex situ</i> disturbance of bird species and for habitat loss during construction as well as displacement and collision risk of this species during the operational phase of the Proposed Project. A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on Lough Carra/Mask Complex pNHA. Therefore, this pNHA is considered to be within the Likely Zone of Influence of the Proposed Project and further assessment is required.
Lough Beg, Carrowmore pNHA [001528]	9.4km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >9km from this pNHA. There is no potential for indirect effects as the Site is located in separate surface water and groundwater catchments to this pNHA. Therefore there is no hydrological connectivity between the Site and this pNHA. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Lough Beg, Carrowmore pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Moore Hall (Lough Carra) pNHA [000527]	9.6km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >9km from this pNHA.

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
<i>This site is also an SAC</i>		This pNHA is recognised for a roost of lesser horseshoe bats. The core foraging range of this species is 2.5km (NPWS, 2018), therefore, due to the distance between the Site and the pNHA, there is no potential for likely significant effect on this species. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Moore Hall (Lough Carra) pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Carrowmore Lough Shore pNHA [001492]	10.0km	There is no potential for direct effects as the Proposed Project is located entirely outside of and 10km from this pNHA. There is no potential for indirect effects as the Site is underlain by a separate hydrological groundwater catchment to this pNHA. While this pNHA is located within the same surface water sub-catchment at the Site, the Castlebar_SC_020 sub-catchment, there is no downstream hydrological connectivity between the Site and this pNHA. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Carrowmore Lough Shore pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Kilglassan/Caheravoostia Turlough Complex pNHA [000504] <i>This site is also an SAC</i>	11.2km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >11km from this pNHA. This pNHA is located approximately 11.2km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the eastern section of the Site. As outlined in Chapter 9 Water of this EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		connectivity between these watercourses and the pNHA. Taking the above into account and the distance between the Proposed Project and the pNHA there is no potential for significant indirect effects on the pNHA via hydrological pathways. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Kilglassan/Caheravoostia Turlough Complex pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Greaghans Turlough pNHA [000503] <i>This site is also an SAC</i>	13.7km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >13km from this pNHA. This pNHA is located approximately 13.7km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the eastern section of the Site. As outlined in Chapter 9 Water of this EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the pNHA. Taking the above into account and the distance between the Proposed Project and the pNHA there is no potential for significant indirect effects on the pNHA via hydrological pathways. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Greaghans Turlough pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Ardkill Turlough pNHA [000461] <i>This site is also an SAC</i>	14.2km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >14km from this pNHA.

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		This pNHA is located approximately 14.2km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the eastern section of the Site. As outlined in Chapter 9 Water of this EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the pNHA. Taking the above into account and the distance between the Proposed Project and the pNHA there is no potential for significant indirect effects on the pNHA via hydrological pathways. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Ardkill Turlough pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Skealaghan Turlough pNHA [000541] <i>This site is also an SAC</i>	14.3km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >14km from this pNHA. There is no potential for indirect effects as the Site is underlain by a separate hydrological groundwater catchments to this pNHA. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Skealaghan Turlough pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Lough Conn and Lough Cullin pNHA [004228] <i>This site is also an SPA and overlaps with the River Moy SAC</i>	21.7km	There is no potential for direct effects as the Proposed Project is located entirely outside of and >21km from this pNHA. The Meander River flows in a southerly direction along the southern boundary of the Site. The pNHA is located approximately 40km downstream of the

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
		Site via the Meander River. Given the length of the hydrological flowpath between the Site and this pNHA and the nature and scale of the Proposed Project there is no potential for likely significant effects on the pNHA as a result of water quality deterioration arising from Proposed Project. The potential for indirect effects on SCI species associated with the SPA that overlaps this pNHA where they occur outside the pNHA is also considered. While the Site is located within the core foraging range of common gull (25km, Thaxter <i>et al.</i>, 2012), over the four years of detailed ornithological surveys (October 2021 to September 2025; see Chapter 7 ‘Birds’ of this EIAR for full details) common gull were only observed within the Site on two occasions. Additionally, tufted duck and Greenland white-fronted goose were only observed during hinterland waterbird distribution and abundance surveys outside the Site, and common scoter were not recorded during any surveys undertaken. As such, the Site is not considered to be of ecological significance for the SCI species, and there is no potential for likely significant <i>ex-situ</i> effects. No pathway for likely significant effect on this pNHA was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Lough Conn and Lough Cullin pNHA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Ramsar Sites		
There are no Ramsar Sites located within the likely Zone of Influence of the Proposed Project. The nearest Ramsar Site to the Proposed Project is the Lough Corrib SAC, located over 15km to the south of the Site, at a hydrological distance of over 45km. No connectivity or potential pathways for significant effects on this or any other Ramsar Sites were identified.		

Designated Sites identified as being within the Likely Zone of Influence

The following European Sites are identified as being within the Likely Zone of Influence and are assessed further in the NIS which has also been submitted with the planning application for the Proposed Project:

- River Moy SAC [002298]
- Balla Turlough SAC [000463]
- Lough Mask SPA [004062]

The following Nationally Designated Sites have been identified as being within the Likely Zone of Influence of the Proposed Project and having a pathway for significant effects and as such are assessed further within this Biodiversity Chapter:

- Balla Turlough pNHA [000463]
- Lough Carra/Mask Complex pNHA [001774]

6.3.1.2 NPWS Article 17 Reporting

The most recent NPWS data on the recorded distribution of EU Habitats Directive Annex I listed habitats was reviewed in relation to the Site. This included the latest available NPWS Article 17 reporting (NPWS, 2025), as well as the most recent GIS data from the 2019 Article 17 dataset as part of ‘*The Status of EU Protected Habitats and Species in Ireland*’ (NPWS, 2019)²¹.

The Semi-Natural Grassland Survey 2007-2012, Grasslands Monitoring Survey 2015-2017, Floodplains and Callows Grasslands in Ireland 2023, National Survey of Native Woodlands 2003-2008 and Ancient and Long-Established Woodland datasets were also reviewed in relation to the Site.

No areas of semi-natural grassland, native woodland, or ancient and long-established woodland are mapped as part of these datasets within or adjacent to the Site. The closest native woodland according to the National Survey of Native Woodlands 2003-2008 dataset is located at Hollowpark approx. 5.9km northwest of the Site. This area is also classified as a long-established woodland for which no evidence of antiquity could be found in older documentation. The nearest mapped semi-natural grasslands are non-Annex I Dry meadows and grassy verges (GS2) and Wet grassland (GS4), and these are located approx. 4.2km to the north of the Site near Balla, Co. Mayo.

There are no mapped areas of Annex I habitat within or adjacent to the Site within the Article 17 dataset. The nearest mapped terrestrial Annex I habitat is a small area of Active blanket bog [7130] approximately 780m to the east of the Site, approximately 1.2km from the nearest proposed infrastructure (proposed Turbine 5), and to the east of Drumady Lough.

NPWS Article 17 data on the recorded distribution and ranges of EU Habitats Directive Annex II listed species were also assessed.

The Annex II species marsh fritillary (*Euphydryas aurinia*) has been recorded within the hectad M27 in which the Site is located, with the nearest record approximately 3.9km to the southwest of the Site.

Atlantic salmon (*Salmo salar*) and brook lamprey (*Lampetra planeri*) are two Annex II listed fish species that have been mapped within hectad M27 in which the Proposed Project is located. These species are both listed as QIs of the River Moy SAC. Additionally, white-clawed crayfish (*Austropotamobius pallipes*) has been recorded approximately 5.5km downstream within the River Robe. There are also mapped records of Annex II otter (*Lutra lutra*) in the River Robe approximately 10km downstream of site.

Seven of the nine Irish bat species, all listed under Annex IV of the Habitats Directive, have been recorded within the hectad overlapping the Site, including lesser horseshoe bat (*Rhinolophus hipposideros*) which is also listed under Annex II of the Habitats Directive.

The Annex V species Irish hare (*Lepus timidus*) has also been recorded immediately adjacent to the Site, approximately 90m to the north while the common frog (*Rana temporaria*) and pine marten (*Martes martes*) both have records within 2.5km of the Site. White cushion moss (*Leucobryum glaucum*) is also an Annex V listed bryophyte which has been mapped approximately 1.5km northeast of the Site.

6.3.1.3 Vascular plants

A search was made in the New Atlas of the British and Irish Flora (Preston *et al*, 2002) to investigate whether any rare or unusual plant species listed under Annex II of the EU Habitats Directive, in The Ireland Red List No. 10 - Vascular Plants (Wyse Jackson *et al*, 2016) or the Flora (Protection) Order

²¹ NPWS [online]. Available at: <https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17> [Accessed 31/03/2026]

2022 had been recorded in the relevant hectad in which the Site is situated (M27). Species of conservation concern are listed in Table 6-6.

Table 6-6 Species listed designated under the Flora Protection Order or the Irish Red Data Book in hectad M27

Common Name	Scientific Name	Status
Upright brome	<i>Bromopsis erecta</i>	NT
Field gentian	<i>Gentianella campestris</i>	NT
Least bur-reed	<i>Sparganium natans</i>	NT

FPO – Flora Protection Order 2022; Red List Status –NT – Near Threatened

The NPWS Flora (Protection) Order 2022 online map viewer⁹ was also consulted on 25th of February 2026 for records of FPO species within or adjacent to the Site boundary. No FPO species were identified within the hectad M27.

6.3.1.4 Bryophytes

A search of the NPWS online database for bryophytes⁸ (non-vascular land plants comprising of mosses, hornworts and liverworts) was also undertaken on the 25th of February 2026. The desktop search indicated that no protected bryophytes have been recorded within or adjacent to the Site.

6.3.1.5 National Biodiversity Data Centre (NBDC) Records

A search of the NBDC website was conducted in advance of undertaking field surveys between 2023 and 2025, and an updated search was carried out on the 6th of February 2026. This helped to inform survey effort and provide a baseline of likely species composition in the area.

NBDC and Bird Atlas records for birds are provided in Chapter 7 and are not repeated here.

6.3.1.5.1 Fauna

Records of protected fauna recorded from hectad M27 are provided in in Table 6-7.

Table 6-7 NBDC records for protected species and species of conservation interest (excl. birds) in hectad M27

Common Name	Scientific Name	Red List Status	Protection Status
Badger	<i>Meles meles</i>	LC	WA
Brown long-eared bat	<i>Plecotus auritus</i>	LC	Annex IV, WA
Common frog	<i>Rana temporaria</i>	LC	Annex V, WA
Common newt	<i>Lissotriton vulgaris</i>	LC	WA
Common pipistrelle	<i>Pipistrellus pipistrellus sensu stricto</i>	LC	Annex IV, WA
Daubenton's bat	<i>Myotis daubentonii</i>	LC	Annex IV, WA
Hedgehog	<i>Erinaceus europaeus</i>	LC	WA

Common Name	Scientific Name	Red List Status	Protection Status
Irish hare	<i>Lepus timidus subsp. hibernicus</i>	LC	Annex V, WA
Irish stoat	<i>Mustela erminea subsp. hibernica</i>	LC	WA
Leisler's bat	<i>Nyctalus leisleri</i>	LC	Annex IV, WA
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	LC	Annex II, IV, WA
Marsh fritillary	<i>Euphydryas aurinia</i>	VU	Annex II
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	LC	Annex IV, WA
Natterer's bat	<i>Myotis nattereri</i>	LC	Annex IV, WA
Otter	<i>Lutra lutra</i>	LC	Annex II, IV, WA
Pine marten	<i>Martes martes</i>	LC	Annex V, WA
Pipistrelle	<i>Pipistrellus pipistrellus sensu lato</i>	LC	Annex IV, WA
Pygmy shrew	<i>Sorex minutus</i>	LC	WA
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	LC	Annex IV, WA
White-clawed crayfish	<i>Austropotamobius pallipes</i>	-	Annex II, V, WA

Annex II, Annex IV, Annex V – Of EU Habitats Directive; WA – Wildlife Acts (as amended); Red List Status – LC – Least Concern, VU – Vulnerable (per Marnell et al., 2019²²; King et al., 2011²³; Regan et al., 2010²⁴)

6.3.1.5.2 Invasive Species

The NBDC database also contains records of invasive species identified within the relevant hectad. Just one species, Japanese knotweed (*Reynoutria japonica*) subject to restrictions under Regulations 49 and 50 and included in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) was found to have records in hectad M27.

6.3.1.6 NPWS Protected Species Records

An information request was sent to the NPWS scientific data unit requesting records from the Rare and Protected Species Database on the 5th of February 2026. A response was received on the 14th of April

²² Marnell, F., Looney, D. & Lawton, C. (2019) Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.

²³ King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011) Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

²⁴ Regan, E.C., Nelson, B., Aldwell, B., Bertrand, C., Bond, K., Harding, J., Nash, D., Nixon, D., & Wilson, C.J. (2010) Ireland Red List No. 4 – Butterflies. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Ireland.

2026. Table 6-8 lists rare and protected species records within hectad M27, in which the Site is located, as obtained from NPWS.

Table 6-8 NPWS records for rare and protected species

Common name	Scientific name	Designation
Common frog	<i>Rana temporaria</i>	Annex V, WA, LC
Eurasian badger	<i>Meles meles</i>	WA, LC
Eurasian otter	<i>Lutra lutra</i>	Annex II, IV, WA, LC
Irish hare	<i>Lepus timidus</i> subsp. <i>hibernicus</i>	Annex V, WA, LC
Irish stoat	<i>Mustela erminea</i> subsp. <i>hibernica</i>	WA, LC
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	Annex II, IV, WA, LC
Pine marten	<i>Martes martes</i>	Annex V, WA, LC
West European hedgehog	<i>Erinaceus europaeus</i>	WA, LC
White-clawed crayfish	<i>Austropotamobius pallipes</i>	Annex II, V, WA

Annex II, Annex IV, Annex V – Of EU Habitats Directive; WA – Wildlife Acts (as amended); Red List Status – LC – Least Concern, VU – Vulnerable, RE – Regionally Extinct.

6.3.1.7 Inland Fisheries Ireland Data

The ‘Water Framework Directive Rivers Fish Ecological Status 2008 to recent’ dataset from the Inland Fisheries Ireland open data portal was reviewed on 25th of February 2026 for reports covering any of the waterbodies downstream of the Site. There are no records of Fish Ecological Status within the Meander River downstream of the Site.

However, in 2019 several sites downstream of the Site within the River Robe were surveyed using ten-minute electrofishing and single pass boat electrofishing. Approximately 5.2km downstream of the Site, the only fish species recorded was brown trout (*Salmo trutta*), giving the river a Fish Ecological Status of ‘Poor’ (Site code: 30_3378_28A).

Approximately 10km downstream of the Site, a further two locations were also surveyed 400m downstream from one another. Brown trout (*Salmo trutta*), minnow (*Phoxinus phoxinus*) and pike (*Esox lucius*) were recorded at both of these sites, while perch (*Perca fluviatilis*) and three spined stickleback (*Gasterosteus aculeatus*) were additionally recorded at the more upstream location, giving both locations a Fish Ecological Status of ‘Moderate’ (Site codes: 30_3558_166A, 30_3558_152A).

6.3.1.8 Freshwater Pearl Mussel (*Margaritifera margaritifera*)

The NPWS *Margaritifera* Sensitive Area map (Version 10, 2020) was consulted during the desk study. The entire area of the Site is located outside of any *Margaritifera* catchments or sensitive areas. There are no records of freshwater pearl mussel in any watercourses downstream of the Site.

6.3.1.9 Hydrological Desk Study

The following sections have been summarised from the hydrological and hydrogeological assessment carried out for Chapter 9 Water of this EIAR and provides a baseline of the local hydrological conditions, where pertinent in the assessment of potential effects on biodiversity, flora and fauna.

6.3.1.9.1 Regional and Local Hydrology

Regionally, the Site lies at the boundary between 2 no. WFD surface water catchments. The north and south of the Site are mapped in the Moy and Killala Bay Catchment within Hydrometric Area 34. This catchment includes the area drained by the River Moy and all streams entering the tidal water in Killala Bay, between Benwee Head and Lenadoon Point. Meanwhile, the centre of the Site is located in the Corrib Catchment within Hydrometric Area 30. This catchment includes the areas drained by the River Corrib and all stream entering the tidal water between Renmore Point and Nimmo's Pier, Galway.

Within the Corrib Catchment, the Site is mapped in the Robe River sub-catchment (Robe_SC_010) and the Robe_030 WFD river sub-basin. Within this river sub-basin there are no EPA mapped watercourses within the Site. The nearest EPA mapped watercourse to this area of the Site is a small 1st order stream which outfalls from the south of Drumady Lough. Drumady Lough itself is located outside of the Site boundaries, immediately to the east and 240m from the closest turbine (T4). The stream which outfalls from the lake, flows to the south and discharges into the River Rober (EPA Code: 30R01) ~5.6km to the south of the Site. The River Robe flows to the southwest past Hollymount and Ballinrobe before it discharges into Lough Mask ~18.5km to the southwest of the Site.

Within the Moy and Killala Bay Catchment, the Site is mapped in the Castlebar River sub-catchment (Castlebar_SC_020) and 2 no. WFD river sub-basins. The south of the Site is mapped in the Meander_010 WFD river sub-basin whilst the north is mapped in the Tullymore (Mayo)_010 WFD river sub-basin. Within the Meander_010 WFD river sub-basin Lough Nambrackkeagh is situated directly to the south of the Site. The Meander River (EPA Code: 34M05) outflows from Lough Nambrackkeagh, initially flowing to the south before veering to the northwest and discharging into the Manulla River (EPA Code: 34M01) ~5.5km to the northwest of the Site. The Manulla River continues north and drains into the Castlebar River (EPA Code: 34C01) ~16.6km northwest of the Site. From this point the Castlebar River feeds into the Toormore and Clydagh Rivers respectively, meandering further north (~10km) to discharge into Lough Cullin.

The northern portion of the Site resides within the Tullymore (Mayo)_010 WFD river sub basin. The Meander River flows along the southern boundary of the Site, approximately 372m southwest of Turbine 5. The Tullymore Stream is located ~5km northwest of the Site and flows to the north into the Little Strade River. Inspection of local base maps reveal the presence of some hydrological features which drain this section of the Site and flow to the north and discharge into Lough Fark, located ~700m to the north of the Site.

It is noted that the Turbine Delivery Route works will require the extension of a culvert along an existing stream adjacent to the L1506. These works are proposed within the Robe River sub-catchment (Robe_SC_010) and the Robe_030 WFD river sub-basin. This stream does not form part of the EPA blue-line database but was recorded during site walkover surveys of the Turbine Delivery Route. This unmapped stream discharges into the Temp Stream (EPA Code: 30A92) which discharges into the River Robe ~3km to the south of the proposed works location.

A regional hydrology map showing the WFD catchments and sub-catchments is included as Figure 9-1 [see Chapter 9 of this EIAR]. A local hydrology map for the Site, shown as Figure 9-2 [see Chapter 9 of this EIAR], presents the WFD river sub-basins.

6.3.1.9.2 Site Drainage

As stated above, the central section of the Site drains towards Drumady Lough situated immediately to the southeast. A mixture of peat and agricultural drainage systems direct drainage towards this lake. The southern section of the Site drains towards the Meander River. This area is predominantly comprised of a peat drainage network that directs surface run off towards Lough Nambrackkeagh. The north of the Site is also drained by a network of manmade drainage features which direct water to the

north towards Lough Fark. An existing drainage map for the Site is shown as Figure 9-6 [see Chapter 9 of this EIAR].

In places the natural drainage is further facilitated by a network of manmade drains. The nature of these manmade drains depends on the local land use and comprise of agricultural field drains or forestry drains. Drains are also present in the peat areas where turbary cutting has been taking place.

The forestry plantations within the Site are generally drained by a network of mound drains which typically run perpendicular to the topographic contours of the Site and feed into collector drains, which discharge to interceptor drains down-gradient of the plantation. Mound drains and ploughed ribbon drains are generally spaced approximately every 15m and 2m respectively. Interceptor drains are generally located up-gradient (cut-off drains) and down-gradient of forestry plantations.

6.3.1.9.3 EPA Biological Water Quality Monitoring

Biological Q-rating data for EPA monitoring points on the Meander and Robe rivers from 2022 to 2024 are shown in Table 6-9 below. The Q-Rating is a water quality rating system based on both the habitat and the invertebrate community assessment and is divided into status categories ranging from 0-1 (Poor) to 4-5 (Good/High).

Within the Corrib Catchment, the closest EPA monitoring station downstream of the Site is located on the River Robe at a bridge northeast of Hollybrook House. The River Robe achieved a Good Q-status at this station in 2024. Further downstream at Hollymount Bridge the River Robe was assigned a Moderate Q-status in 2024. The Q-status improved further downstream at Atkins Bridge to High Q-status.

Within the Moy and Killala Bay Catchment, the closest EPA monitoring station downstream of the Site for which recent data is available is located on the Meander River at a bridge northwest of Rathnacreeva. The Meander River achieved a High Q-status at this location in 2022. Further downstream the Manulla and Castlebar rivers achieved Good Q-status in recent monitoring rounds. Meanwhile, the Little Strade River downstream of the Site via the Tullymore (Mayo)_010 WFD river sub-basin achieved High Q-status in 2022 at a bridge northwest of Sraheens.

Table 6-9 EPA Water Quality Monitoring Q-Rating Values

Watercourse	Location and Station ID	Year	Easting	Northing	EPA Q-Rating Status
Corrib Catchment					
River Robe	Br E of Hollybrook House (RS30R010310)	2024	128313	272068	4 (Good)
River Robe	Hollymount Bridge (RS30R010400)	2024	125978	268613	3-4 (Moderate)
River Robe	Akit Bridge (RS30R010600)	2024	119458	264943	4-5 (High)
Moy and Killala Bay Catchment					
Meander River	Br N.N.W. of Rathnacreeva (RS34M050400)	2022	123482	280086	4-5 (High)
Manulla River	Bridge at Ballycarra (RS34M010200)	2022	119965	284278	4 (Good)
Manulla River	Manulla Bridge (RS34M010300)	2022	121300	288600	4 (Good)
Manulla River	Bridge u/s Castlebar River (RS34M010500)	2022	121937	293360	4 (Good)

Watercourse	Location and Station ID	Year	Easting	Northing	EPA Q-Rating Status
Castlebar River	Br 1 km W. of Ballyvary (RS34C010400)	2022	123360	294478	4 (Good)
Little (Strade) River	Bridge NW Sraheens (RS34L020300)	2022	127630	291066	4-5 (High)

6.3.1.9.4 Hydrogeology

Regional Hydrogeology

The Site is mapped to be underlain by 2 no. Groundwater Bodies (GWBs). The north and south of the Site are underlain by the Swinford GWB (IE_WE_G_0033) whilst the central section of the Site is underlain by the Cong Robe GWB (IE_WE_G_0019). The boundaries of these GWBs in the area of the Site is the same as the boundaries of the regional surface water catchments.

The GSI's Initial Characterisation Report for the Cong-Robe GWB (GSI, 2004) states that this GWB occupies the area between Claremorris and Cong. Within the GWB, a surface water catchment has been shown to be bypassed by groundwater flowing beneath surface water channels and across surface water catchment divides. Tracer tests have shown that flow lines exist that do not relate to the expected flow lines inferred from water table maps. A large number of karst features are present, particularly in the southwestern part of the GWB. In general, the degree of interconnection in karstic systems is high and they support regional scale flow systems. The main discharges are to the rivers, large springs, Lough Mask and Lough Corrib. In winter, groundwater discharges to the many turloughs and transmitted via the artificial channels that were installed to alleviate flooding. There is a high degree of interaction between surface water and groundwater. There are a number of terrestrial ecosystems which have varying dependence on groundwater (GSI, 2004).

The GSI's Initial Characterisation Report for the Swinford GWB (GSI, 2004) states that this GWB occupies an area stretching from Knock to Castlebar to Swinford. The aquifer is a Regionally important karstified aquifer (Rkc). Several karst features are recorded, and these include turloughs, caves and swallow holes but this is thought to only represent a fraction of the existing karst features. The main discharges are to the small springs, streams, rivers and lakes. The stream density is relatively high, probably due to the subsoils overlying the GWB (GSI, 2004).

Site Hydrogeology

The Site is typically overlain by peat and mineral soils with small occurrences of made ground. Where present the peat depth is relatively shallow, with an average depth of 1.2m and 91% of peat probes encountering peat depths less than 1. A small number of localised readings recorded peat depths between 3.5 and 6.1m.

Shallow groundwater was encountered in 15 of the 28no. trial pits excavated at the Site at depths of 0.6 to 3.2mbgl. 10 of these were described on the logs as medium ingresses of groundwater, with 2 no. fast inflows recorded and 3 no. slow/minor seepages of groundwater.

The site investigations indicate that the Site is underlain predominantly by peat and low permeability till deposits. These deposits protect the underlying regional bedrock groundwater system, preventing significant rates of groundwater recharge within the Site. This is supported by observations made during the site walkover surveys whereby a high density of surface water drainage features were recorded on site. Furthermore, no karst features were recorded during walkover surveys, and no significant karst was encountered in the borehole at the proposed borrow pit location.

Therefore, the hydrogeological regime at the Site is characterised by high rates of surface water runoff and low rates of groundwater recharge.

6.3.1.9.5 Groundwater Vulnerability

The GSI mapped vulnerability rating of the bedrock aquifer at the majority of the Site ranges between “Moderate” to “High” with a small portion mapped as “Low”. This reflects the variable soils/subsoils across the Site with the area of peat having low to moderate groundwater vulnerability. The areas of mineral soils have moderate to high groundwater vulnerability.

Meanwhile, a small area of ‘Extreme’ vulnerability is mapped at the location of the proposed borrow pit. This corresponds with the GSI mapped occurrence of a small area of karstified bedrock outcrop or subcrop in this area. It is important to note that site investigations have revealed the depth to rock as being 10.6mbgl in this area, with the limestone bedrock overlain by a substation thickness of gravels, clays and sands.

The site investigations and walkover surveys indicate that there are low groundwater recharge rates at the Site, with the local soils/subsoils providing protection to the underlying regional groundwater system. Therefore, surface water bodies such as drains and streams/rivers are more vulnerable (to contamination from human activities) than groundwater across much of the Site, although localised areas may have higher rates of groundwater recharge.

6.3.2 Conclusions of the Desk Study

The desk study has provided information about the existing environment in hectad M27, within which the Proposed Project is located. The Site is located in the Corrib and Moy and Killala Bay WFD catchments and is underlain by the Cong-Robe and Swinford groundwater bodies. The EPA mapped Meander River flows along the southern boundary of the Site, and the River Robe flows downstream of Drumady Lough, which is located adjacent to the eastern boundary of the Site. Potential pathways for indirect effects on the River Moy SAC which is located downstream within the Zone of Influence of the Site via the Meander River, due to deterioration of water quality was identified. Balla Turlough SAC/pNHA was also identified as being within the Zone of Influence of the Proposed Project as there is potential groundwater connectivity between the Site and this SAC/pNHA. The Site was also identified as providing suitable habitat for SCI species associated with Lough Mask SPA and Lough Carra/Mask Complex pNHA. The potential for significant effects on bird species is assessed in detail within Chapter 7 Birds and is not addressed further in this Chapter.

The desk study identified that a variety of protected faunal species are known to occur within the wider study area, including bats, otter, badger and marsh fritillary. Given the records of marsh fritillary near the Site as well as the presence of peatland habitats, there is potential for this species to occur within the Site. The mammal species recorded during the desk study informed the survey methodologies undertaken during the site visits. The mammal species recorded within the relevant hectad have widespread ranges and distributions in Ireland and are likely to be recorded frequently throughout Ireland (Marnell *et al*, 2009²⁵).

The desk study revealed that there are no mapped Annex I Article 17 habitats present within or in close proximity to the Proposed Project, similarly no known records of rare or protected flora have been recorded within the Site but may be present within the hectad.

The desk study provided useful information to inform the ecological surveys undertaken on site as well as the identification of pathways for potential impact on sensitive ecological receptors.

²⁵Marnell, F., Kingston, N. & Looney, D. (2009) Ireland Red List No. 3: Terrestrial Mammals, National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

6.4

Baseline Ecological Survey Results

6.4.1

Description of Habitats and Flora within the Site

The habitat mapping and descriptions presented in this section are informed by multidisciplinary and detailed vegetation surveys of the Site undertaken by MKO in 2023, 2024, 2025 and 2026. Detailed botanical data from relevés recorded within the Proposed Project footprint and across the Site in areas of species-rich habitats of high biodiversity value, and within all habitats identified as having potential to conform to habitats listed under Annex I of the EU Habitats Directive are provided in Appendix 6-1 of this EIAR. A habitat map of the Site is provided in Figure 6-5a-b The Proposed Project footprint is shown overlaying the habitat map in Figures 6-6a-b.

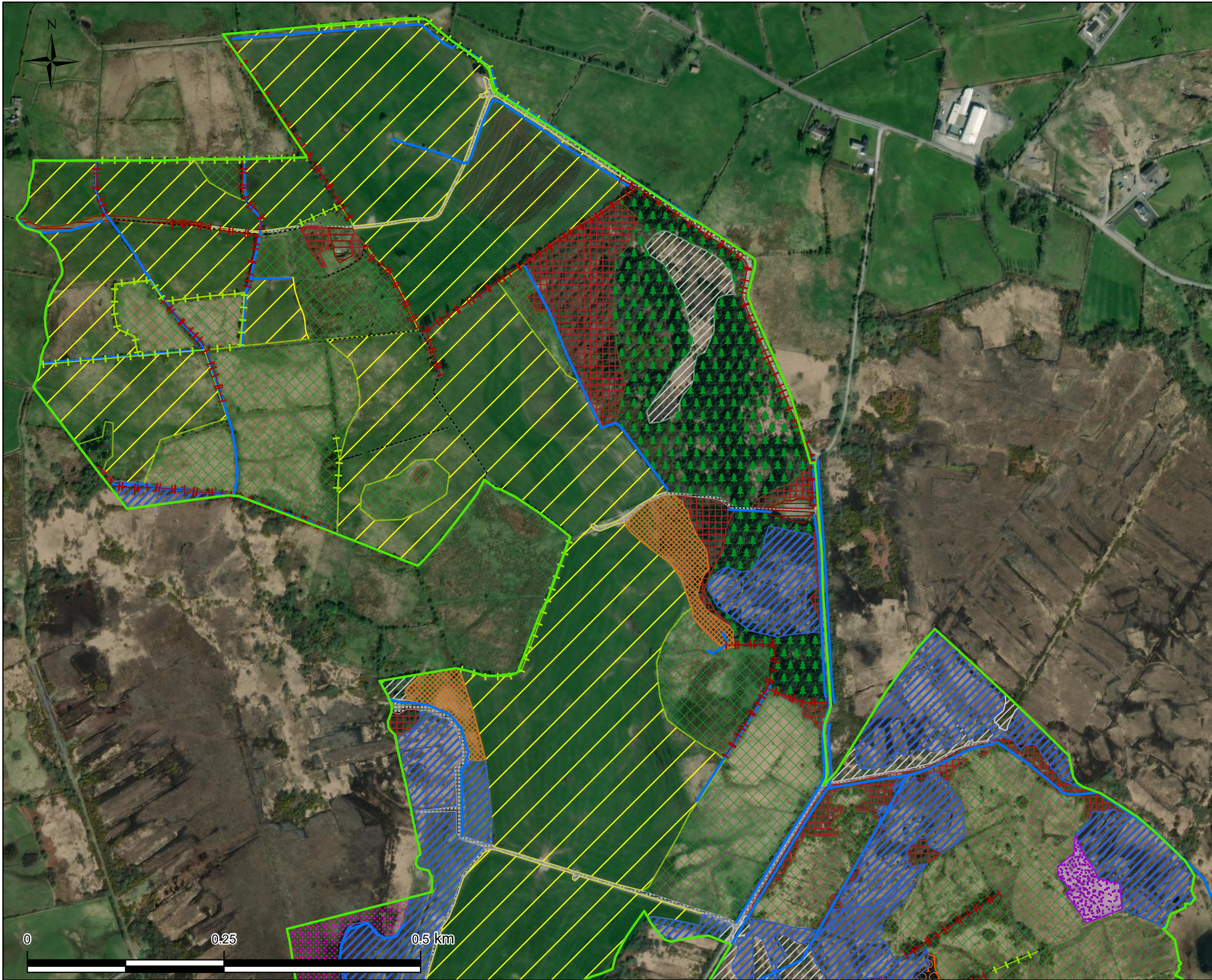
The Site comprises primarily areas of cutover bog and agricultural grassland habitats. Cutover bog habitats dominate the southern sections of the Site, and largely encompass areas of dry, revegetating peatlands with some areas of bare peat also present where turbary activities are ongoing. Areas of species-rich cutover bog and transition mire were identified within some parts of the cutover bog, and are described in detail in the following sections. A small marginal area of remnant uncut raised bog is also present within the west of the Site and extends beyond the Site boundary.

Much of the north of the Site is characterised by improved agricultural grasslands, with small sections of conifer plantation and scrub also present in the northeast. In the southeast of the Site wet grasslands dominate, and vary from species-poor agricultural wet grasslands to species-rich. These habitats are traversed and bordered by a network of stone walls, treelines and hedgerows, with existing roads and tracks present through the centre of the Site.

A total of 23 habitats and mosaic habitats were recorded within the Site and associated works areas including:

- Raised bog (PB1)
- Cutover bog (PB4)
- Transition mire and quaking bog on Cutover bog (PB4/PF3)
- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
- Dry meadows and grassy verges / Scrub mosaic (GS4/WS1)
- Wet grassland (GS4)
- Mixed broadleaved/conifer woodland (WD2)
- Mixed conifer woodland (WD3)
- Conifer plantation (WD4)
- Hedgerows (WL1)
- Treelines (WL2)
- Scrub (WS1)
- Scrub on Cutover bog (PB4/WS1)
- Depositing/lowland river (FW2)
- Drainage ditches (FW4)
- Pond (Other)
- Tilled land (BC3)
- Stone walls and other stonework (BL1)
- Buildings and artificial surfaces (BL3)
- Spoil and bare ground (ED2)
- Recolonising bare ground (ED3)
- Eroding/upland river (FW1) – Turbine Delivery Route only

The habitats present across the Site are described in the following subsections. Subsequent subsections provide additional location-specific detail for habitats occurring within the Proposed Project footprint, including the Proposed Grid Connection and Turbine Delivery Route.



Map Legend

ElAR Site Boundary

Fossitt Habitats

- Stone Walls and Other Stonework (BL1)
- Drainage Ditches (FW4)
- Hedgerows (WL1)
- Treelines (WL2)
- Spoil and bare ground (ED2)
- Recolonising Bare Ground (ED3)
- Improved Agricultural Grassland (GA1)
- Dry Meadows and Grassy Verges (GS2)
- Wet Grassland (GS4)
- Raised Bog (PB1)
- Cutover Bog (PB4)
- Scrub (WS1)
- Scrub on Cutover bog (PB4/WS1)
- (Mixed) Conifer Woodland (WD3)
- Conifer Plantation (WD4)
- Transition mire and quaking bog on Cutover bog (PB4/PF3)
- Mixed Broadleaved/Conifer Woodland (WD2)

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

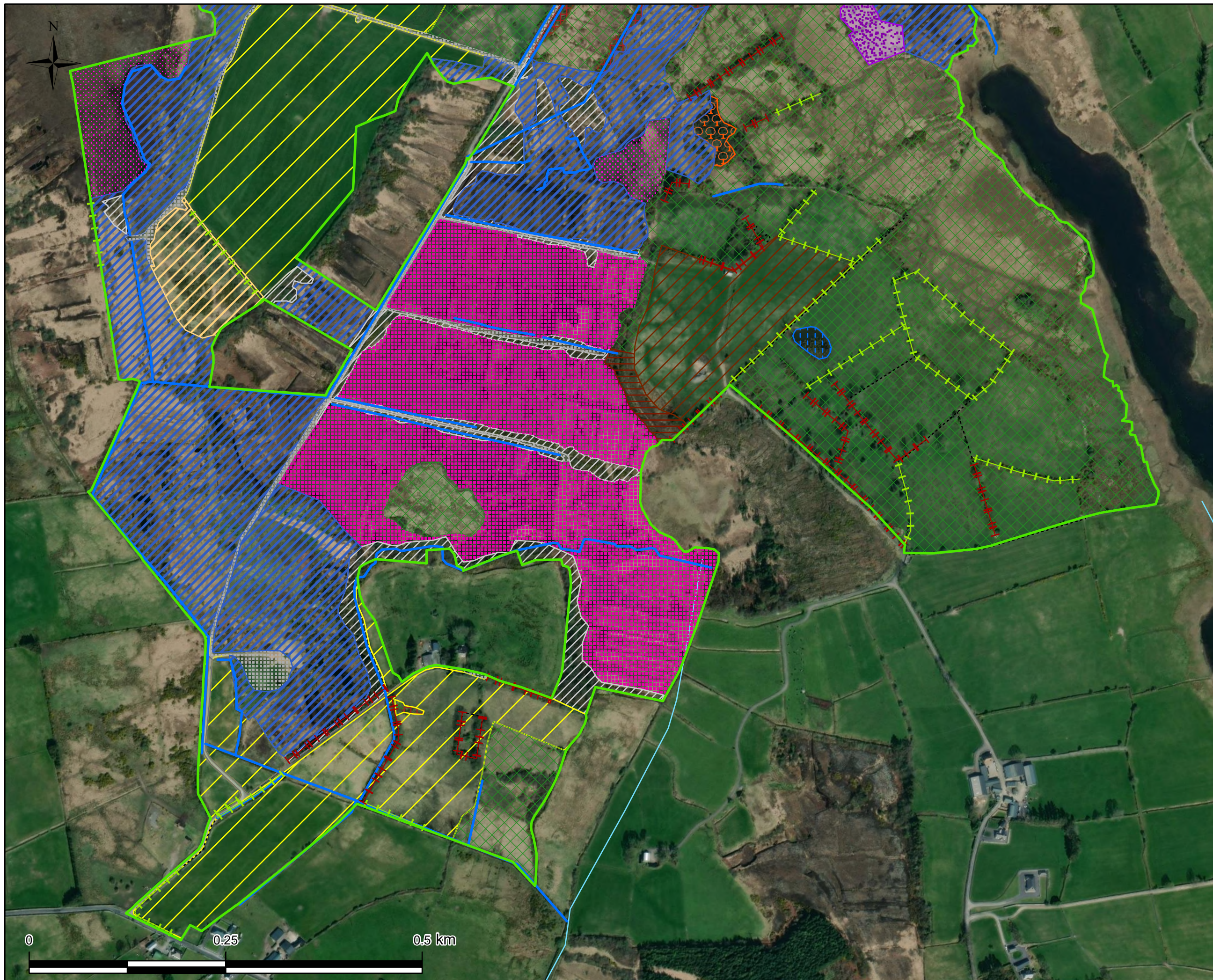
SITE LOCATION - NOT TO SCALE

Habitat Map North

Project Title
Proposed Cunlaghfadda Green Energy Project

Project No. 220825	Drawing No. 6-5a	Scale 1:4,500
Drawn By MNR	Checked By KB	Date 05/05/2026

Email: info@mkofireland.ie / Website: www.mkofireland.ie



Map Legend

- EIAR Site Boundary
- WFD River Waterbodies

Fossitt Habitats

- Stone Walls and Other Stonework (BL1)
- Drainage Ditches (FW4)
- Hedgerows (WL1)
- Treelines (WL2)
- Buildings and artificial surfaces (BL3)
- Spoil and bare ground (ED2)
- Recolonising Bare Ground (ED3)
- Improved Agricultural Grassland (GA1)
- Dry Meadows and Grassy Verges/Scrub Mosaic (GS2/WS1)
- Wet Grassland (GS4)
- Raised Bog (PB1)
- Cutover Bog (PB4)
- Scrub (WS1)
- Scrub on Cutover bog (PB4/WS1)
- Tilled Land (BC3)
- Pond (Other)
- Transition mire and quaking bog on Cutover bog (PB4/PF3)
- Mixed Broadleaved/Conifer Woodland (WD2)
- Cutover bog with small remnants of uncut raised bog (PB4/PB1)

Spatial Reference
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Datum: IRENET95
Projection: Transverse Mercator

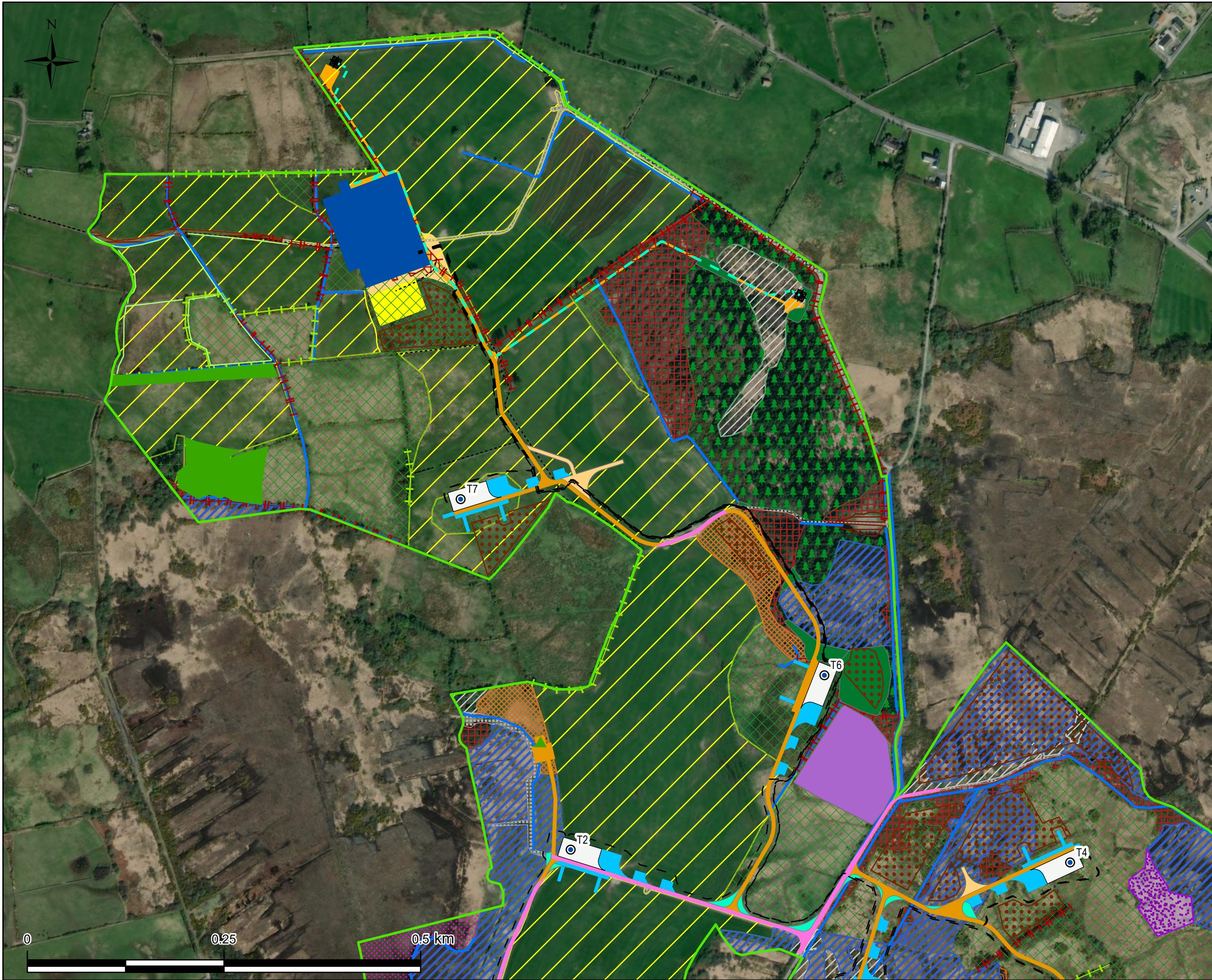
SITE LOCATION - NOT TO SCALE

Drawing Title
Habitat Map South

Project Title
Proposed Cunlaghfadda Green Energy Project

Project No. 220825	Drawing No. 6-5b	Scale 1:4,500
Drawn By MNR	Checked By KB	Date 05/05/2026

Email: info@mkofireland.ie / Website: www.mkofireland.ie



Map Legend

- EIAR Site Boundary
- Proposed Felling
- Proposed Construction Compound

Fossitt Habitats

- Stone Walls and Other Stonework (BL1)
- Drainage Ditches (FW4)
- Hedgerows (WL1)
- Treelines (WL2)
- Spoil and bare ground (ED2)
- Recolonising Bare Ground (ED3)
- Improved Agricultural Grassland (GA1)
- Dry Meadows and Grassy Verges (GS2)
- Wet Grassland (GS4)
- Raised Bog (PB1)
- Cutover Bog (PB4)
- Scrub (WS1)
- Scrub on Cutover bog (PB4/WS1)
- (Mixed) Conifer Woodland (WD3)
- Conifer Plantation (WD4)
- Transition mire and quaking bog on Cutover bog (PB4/PF3)
- Mixed Broadleaved/Conifer Woodland (WD2)

Proposed Wind Farm

- Proposed Turbines
- Proposed Turbine Hardstands
- Temporary Hardstand Areas
- Peat and Spoil Management Areas
- Proposed Internal Cables
- Proposed Met Mast

Proposed Grid Connection

- Proposed 110kV Substation
- Proposed 100kV Grid Connection Cable Route
- Proposed End Masts

Proposed Habitat Enhancement

- Proposed Woodland Planting
- Proposed Linear Planting and Enhancement
- Proposed Marsh Fritillary Enhancement Areas

Proposed Site Roads

- Proposed Upgrade to Existing Access Tracks
- Proposed New Access Tracks
- Temporary Construction Tracks
- Temporary Site Entrance
- Temporary Widening

Drawing Title

Habitat Map with
Proposed Project Layout
North

Project Title

Proposed Cunlaghfadda
Green Energy Project

Project No.

220825

Drawing No.

6-6a

Scale

1:4,500

Drawn By

MNR

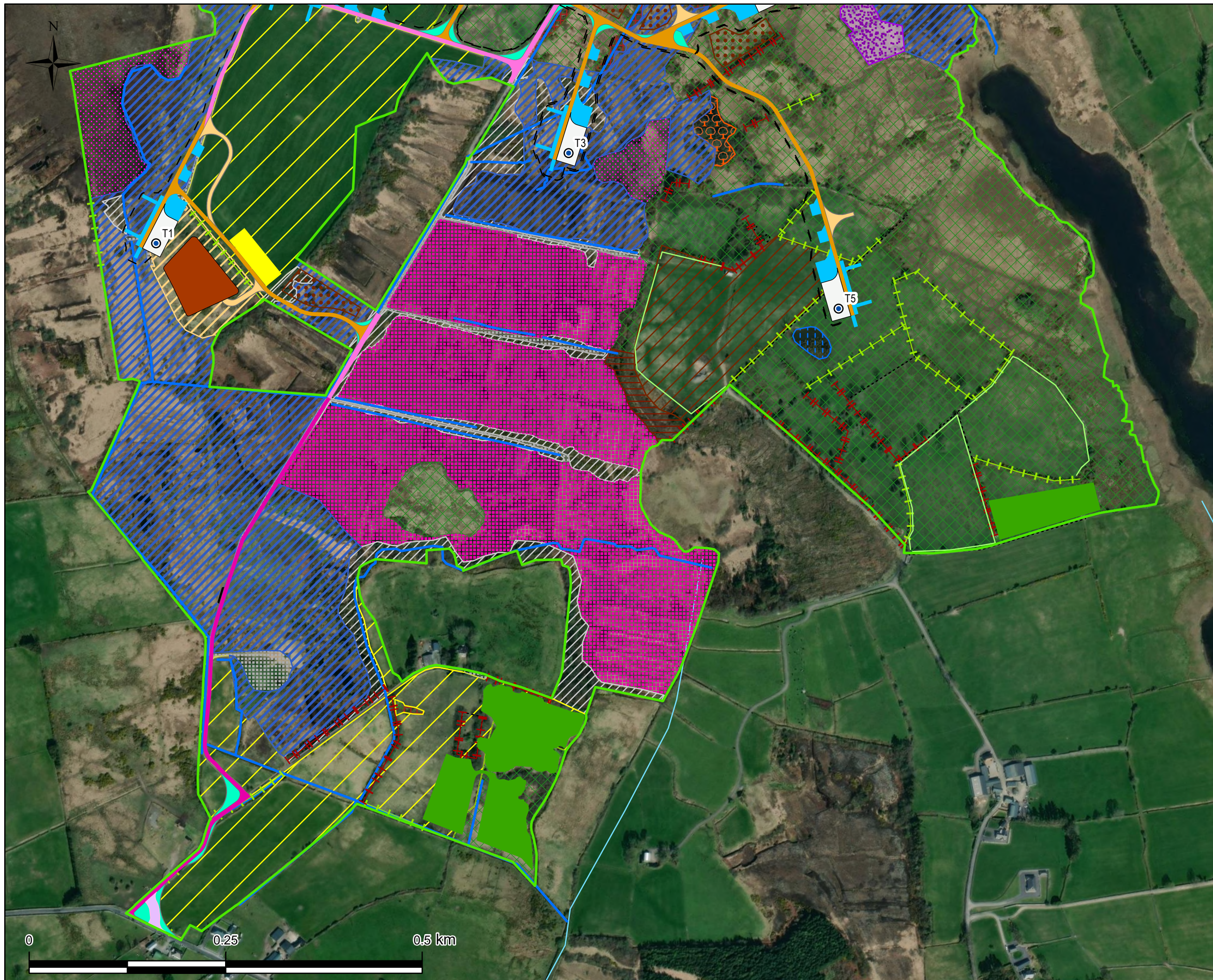
Checked By

KB

Date

05/05/2026


Email: info@mkofireland.ie / Website: www.mkofireland.ie



Map Legend

- ElAR Site Boundary
- WFD River Waterbodies
- Proposed Construction Compound

Fossitt Habitats

- Stone Walls and Other Stonework (BL1)
- Drainage Ditches (FW4)
- Hedgerows (WL1)
- Treelines (WL2)
- Buildings and artificial surfaces (BL3)
- Spoil and bare ground (ED2)
- Recolonising Bare Ground (ED3)
- Improved Agricultural Grassland (GA1)
- Dry Meadows and Grassy Verges/Scrub Mosaic (GS2/WS1)
- Wet Grassland (GS4)
- Raised Bog (PB1)
- Cutover Bog (PB4)
- Scrub (WS1)
- Scrub on Cutover bog (PB4/WS1)
- Tilled Land (BC3)
- Pond (Other)
- Transition mire and quaking bog on Cutover bog (PB4/PF3)
- Mixed Broadleaved/Conifer Woodland (WD2)
- Cutover bog with small remnants of uncut raised bog (PB4/PB1)

Proposed Wind Farm

- Proposed Turbines
- Proposed Turbine Hardstands
- Temporary Hardstand Areas
- Proposed Borrow Pit
- Peat and Spoil Management Areas
- Proposed Internal Cables

Proposed Habitat Enhancement

- Proposed Woodland Planting
- Proposed Linear Planting and Enhancement

Proposed Site Roads

- Proposed Upgrade to Existing Access Tracks
- Proposed New Access Tracks
- Proposed Upgrade to Public Road
- Temporary Construction Tracks
- Temporary Site Entrance
- Temporary Widening
- Passing Bay

Drawing Title

Habitat Map with
Proposed Project Layout
South

Project Title

Proposed Cunnaghfadda
Green Energy Project

Project No.

220825

Drawing No.

6-6b

Scale

1:4,500

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05/05/2026

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6.4.1.1 Peatland Habitats

Peatland habitat predominantly comprised of cutover bog which has been subject to recent and historical turbary activities cover a large part of the Site. However an area of uncut raised bog was also recorded to the west of the Site with a small marginal area at its southern extent occurring within the Site. The peatland habitats within the Site are described in detail in the section below.

6.4.1.1.1 Raised bog (PB1)

In the west of the Site, there is an area of uncut bog classified as Raised bog (PB1). This area of uncut raised bog extends beyond the Site with only a small section of its southern extent located within the Site boundary. The marginal area located within the Site is bordered by a steep facebank approximately 2m in height and man-made drains and is degraded in nature. It is subject to ongoing turbary activity in this section, with areas of cutover bog to the east of the uncut bog being used for the stacking of turf. This area of raised bog is located outside of the Proposed Project footprint, approximately 50m from the permanent hardstand associated with proposed Turbine 1. Temporary (construction phase) hardstand areas are located in closer proximity at approximately 18m distance, and proposed internal cabling is located at approximately 16m distance.

The potential for this area of remnant raised bog to conform to the Annex I habitats Active raised bog [7110] (ARB) and Degraded raised bog still capable of natural regeneration [7120] (DRB) was considered. According to the latest Article 17 report (NPWS, 2025), “ARB is characterised by the presence of an acrotelm, which is defined as the living, actively growing upper layer of a raised bog, the surface of which is composed mainly of living bog bosses (*Sphagnum* spp.)”. In addition, as outlined in Smith and Crowley (2020), previous raised bog research in Ireland indicated that ARB, at least in the midlands, generally supports cover of *Sphagnum* greater than 40% (Fernandez Valverde *et al.* 2005, 2012).

The marginal areas of this remnant raised bog, located within the Site, were subject to detailed botanical assessment, the results of which are outlined in Appendix 6-1. A relevé undertaken approximately 10m from the facebank and 95m from the location of proposed Turbine 1 found ling heather (*Calluna vulgaris*) to be dominant, with a *Sphagnum* cover of approximately 40% (comprising *Sphagnum rubellum*, *S. tenellum*, *S. capillifolium* and *S. papillosum*) and soft to firm ground conditions with wetter areas also supporting species such as *S. cuspidatum*, however no pools were present and small areas of eroding bare peat were present in the vicinity (Plate 6-1). It is also bordered by a deep drain and facebank along its southern margin (Plate 6-2). This area was found to best align with the Marginal raised bog ecotope, per Fernandez *et al.* (2014).

Additional relevés were undertaken towards the central areas of this raised bog (Plate 6-3) both within and outside of the Site, which were characterised by a high cover of *Sphagnum* species (>40%) and a high water table. Vegetation communities in these areas generally comprised ling heather (*Calluna vulgaris*), cross-leaved heath (*Erica tetralix*), hare’s-tail cottongrass (*Eriophorum vaginatum*), common cottongrass (*Eriophorum angustifolium*), deergrass (*Trichophorum germanicum*), bog asphodel (*Narthecium ossifragum*), bog myrtle (*Myrica gale*), bog rosemary (*Andromeda polifolia*), common lousewort (*Pedicularis sylvatica*), round-leaved sundew (*Drosera rotundifolia*) and carnation sedge (*Carex panicea*), with areas of white-beak sedge (*Rhynchospora alba*) and bogbean (*Menyanthes trifoliata*) also present towards the centre where ground conditions were softer and wetter. Bryophyte cover was high in these sections, with *Sphagnum* exceeding 40% (*S. rubellum*, *S. medium*, *S. papillosum*, *S. tenellum*, *S. subnitens*, *S. cuspidatum*, *S. capillifolium*) and others including *Odontoschisma sphagni* and *Hypnum jutlandicum*. These areas were found to best align with the Sub-central raised bog ecotope, per Fernandez *et al.* (2014), with areas also having characteristics of Sub-marginal ecotopes, therefore representing a hydrological and ecological mosaic influenced by surrounding turbary activities which remain ongoing in some areas. Considering these vegetation communities and the high *Sphagnum* cover and water table, this area of remnant raised bog is

considered to have potential to correspond to Annex I ARB [7110] in the central section, with drier areas best corresponding to the Annex I habitat DRB [7120].

A small area (approx. 0.6ha) of uncut, remnant raised bog was identified to the east of the proposed Turbine 3 (Plate 6-4). This area is bordered by a facebank which is approximately 1.5m in height, and a deep drain. A 4mx4m relevé was taken approximately 10m from the facebank and 50m from the location of proposed Turbine 1, the results of which are presented in Appendix 6-1. This area of raised bog was dry in nature, with approximately 25% *Sphagnum* cover and firm ground conditions. No pools or tussocks were present and the area was surrounded by degraded cutover bog. The western raised bog indicator *Racomitrium lanuginosum* was recorded within this area. This area was found to best align with the *Marginal* raised bog ecotope, per Fernandez *et al.* (2014). This area is unlikely to conform to any Annex I raised bog habitats due to its vegetation communities and low *Sphagnum* cover, isolated and highly degraded nature, very small size, and the presence of high facebanks with a lack of drains which could be blocked to facilitate rehabilitation to peat-forming status.

In addition to these areas, a number of small sections of remnant raised bog were identified in the south of the Site, to the east of the existing site access track. These areas are surrounded by cutover bog and drainage ditches, occurring as small uncut remnants throughout the cutover bog. As such, these areas are mapped as cutover bog with small areas of uncut raised bog (PB4/PB1) within the habitat map. A number of relevés were undertaken within these areas, and are outlined within Appendix 6-1. In all areas, the remnant raised bog habitats were found to best align with the *Marginal* raised bog ecotope, per Fernandez *et al.* (2014) due to the presence of soft to firm ground conditions and a lack of obvious hummocks or pools. *Sphagnum* cover exceeded 40% in all relevés, increasing to over 60% in wetter areas with notable species such as *S. cuspidatum*, *S. austinii* and *S. beothuk* recorded. The western indicator *Racomitrium lanuginosum* was regularly observed, and the Annex V moss *Leucobryum glaucum* was also recorded on occasion. While these remnants are highly fragmented and small in size, considering the vegetation communities present, the high cover and diversity of *Sphagnum* species, relatively soft ground conditions and lack of a high facebank, these areas have the potential to conform to highly degraded areas of Annex I DRB (Plate 6-5).

It should be noted that all uncut raised bog remnants, including the marginal area of the larger complex which occurs within the Site, are located entirely outside of the Proposed Project infrastructure footprint.

All areas of remnant raised bog within the Site are shown in Figure 6-7 below.



Plate 6-1 Margins of the raised bog to the north of proposed Turbine 1, looking south towards the facebank



Plate 6-2 Deep existing drainage ditch and facebank along the margins of the raised bog to the north of proposed Turbine 1



Plate 6-3 Area of Raised bog (PB1) located to the west of the Site. This photo was taken in the centre of the area of remnant raised bog which is located outside of the Site



Plate 6-4 Area of remnant raised bog surrounded by cutover bog, located to the east of proposed Turbine 3.



Plate 6-5 A small area of remnant raised bog surrounded by cutover bog in the south of the Site.

6.4.1.1.2 Cutover bog (PB4)

The majority of the peatland within the Site has been subject to both historical and recent turbary activities and is classified as Cutover bog (PB4). This habitat covers a large area of the Site, primarily in the southern and eastern sections. This habitat was predominantly made up of revegetating, dry cutover bog, with areas of eroding bare peat where turbary activities are ongoing. Plant species recorded within these revegetating areas included purple moor grass (*Molinia caerulea*), bog myrtle (*Myrica gale*), bog asphodel (*Narthecium ossifragum*), cross-leaved heath (*Erica tetralix*), ling heather (*Calluna vulgaris*), common cottongrass (*Eriophorum angustifolium*), bog myrtle (*Myrica gale*), devil's-bit scabious (*Succisa pratensis*), tormentil (*Potentilla erecta*), perforate St. John's-wort (*Hypericum perforatum*), deergrass (*Trichophorum germanicum*), round-leaved sundews (*Drosera rotundifolia*), toad rush (*Juncus bufonius*) and willow seedlings (*Salix* spp.) (Plate 6-6). Where ground conditions were wetter, species such as lesser spearwort (*Ranunculus flammula*), white beak sedge (*Rhynchospora alba*) and bogbean (*Menyanthes trifoliata*) were also recorded. *Sphagnum* cover was variable, with species including *Sphagnum capillifolium*, *S. rubellum*, *S. subnitens*, *S. palustre* and *S. papillosum* recorded in wetter areas, as well as other common peatland mosses such as *Hypnum jutlandicum*. Sitka spruce (*Picea sitchensis*) saplings were also frequent in the section of cutover bog in the centre of the Site, encroaching from the adjacent conifer plantation (Plate 6-7).

The cutover bog habitats on the Site do not correspond to either Active raised bog [7110] (ARB) or Degraded raised bog still capable of natural regeneration [7120] (DRB). The NPWS Article 17 Reporting for 2019 states:

“In an Irish context, ARB (which is currently defined as occurring only on the high bog) encompasses active peat --forming ecotopes (central and sub--central) as defined by Kelly (1993) and Kelly & Schouten (2002), and actively peat --forming flushes.”

The 2025 Article 17 Report (NPWS, 2025) recognises the publication of the classification and appraisal system for cutover raised bog habitats (Smith and Crowley, 2020). Regarding this system it is stated,

*“This is the first time that ARB has been recognised as occurring on cutover in the Irish context. In general, however, regenerating ombrotrophic vegetation on cutover characterised by a high *Sphagnum* cover (i.e. greater than 40- 50% cover), lacks the diversity of *Sphagnum* species, microtopographical features and good quality indicators associated with ARB. These cutover areas have the capacity to develop into embryonic ARB but longer time periods (>30 years) are likely to be required for high quality ARB to develop.”*

With regard to the definition of Degraded Raised Bog (DRB), the 2025 Article 17 Report states,

“Currently cutover areas are not considered to support DRB. However, the potential of cutovers to support peat-forming vegetation is recognised. Potential peat-forming habitat (PPFH) on cutover is defined using similar methods to that for DRB on the high bog. PPFH is not included under the definition of DRB as it is believed that these areas will require periods longer than 30 years to develop into ARB.”

The cutover bog habitats within the Site were not found to correspond to either ARB or DRB. The vast majority of the cutover bog was found to be relatively dry in nature and have either no or low *Sphagnum* cover and did not meet the criteria to be considered ARB as per Smith and Crowley (2020).

In the centre of the Site, one area of species-rich, relatively wet cutover bog with high *Sphagnum* cover, i.e. >40%, was identified (Plate 6-8). This area is located outside of the Proposed Project footprint, to the northeast of proposed Turbine 3. Given the high *Sphagnum* cover in this area, an assessment was carried out in a 100m² plot of the habitat, in line with Smith and Crowley (2020) to determine the potential for this area to conform to ARB. The criteria required to meet Annex I status ARB are outlined in the methodology Section 6.2.3.2 above.

Of the five criteria, this area of cutover bog met only three – the total *Sphagnum* cover exceeded 40%, no calcareous fen species were recorded, and atypical ombrotrophic raised bog species were not recorded. However, of the eight constant species required, six were present (bog asphodel (*Narthecium ossifragum*), common cottongrass (*Eriophorum angustifolium*), round-leaved sundew (*Drosera rotundifolia*), white beak-sedge (*Rhynchospora alba*), *Sphagnum capillifolium*, *S. papillosum*), and there were an additional three indicator species recorded (reindeer lichen (*Cladonia portentosa*), *Aulacomnium palustre*, *S. subnitens*), therefore the threshold of 12 total indicator species was not met. Therefore, this area was not found to conform to Annex I ARB status. Additional species recorded in this habitat include cross-leaved heath (*Erica tetralix*), ling heather (*Calluna vulgaris*), tormentil (*Potentilla erecta*), heath milkwort (*Polygala serpyllifolia*), deergrass (*Trichophorum germanicum*), common lousewort (*Pedicularis sylvatica*), carnation sedge (*Carex panicea*), devil’s-bit scabious (*Succisa pratensis*), toad rush (*Juncus bufonius*), *S. rubellum* and *Hypnum jutlandicum*. This area of species-rich cutover bog is shown in Figure 6-7 below.

Additionally, some areas of cutover bog within the Site have recolonised with secondary heath communities (Plate 6-9). These habitats generally contained ling heather (*Calluna vulgaris*), cross-leaved heath (*Erica tetralix*), bog myrtle (*Myrica gale*), common cottongrass (*Eriophorum angustifolium*), tormentil (*Potentilla erecta*), marsh cinquefoil (*Comarum palustre*), bog asphodel (*Narthecium ossifragum*), lesser spearwort (*Ranunculus flammula*), common yellow sedge (*Carex demissa*), marsh pennywort (*Hydrocotyle vulgaris*), purple moor grass (*Molinia caerulea*), carnation sedge (*Carex panicea*), jointed rush (*Juncus articulatus*) and the bryophytes pointed spear moss (*Calliergonella cuspidata*) and yellow starry feather-moss (*Campylium stellatum*). Where ground conditions were drier, species composition became more dominated by ling heather (*Calluna vulgaris*) and purple moor grass (*Molinia caerulea*).

Revegetating cutover bog habitats within the Site do not conform to Annex I or non-Annex I heath habitats as defined by the Irish Wildlife Manual (Perrin *et.al.* 2014). As stated by Smith and Crowley (2020):

“Cutover bog habitats should only rarely be considered examples of dry siliceous heath (HH1) or wet heath (HH3). These habitats are defined by peat depths of less than 0.5 m (Fossitt, 2000), which seldom occur on cutover bog. Only where a habitat is underlain by shallow peat and good indicators of heath are present, such as Carex binervis, Galium saxatile and Juncus squarrosus, should heath habitats be considered for cutover bog.”

The vast majority of heath communities which have established on the cutover bog within the Site occur on peat with a depth of >0.5m and none of the good heath indicator species were recorded within these habitats during the field surveys undertaken. Therefore, the secondary heath type communities growing on cutover bog within the Site do not conform to Annex I heath habitats. They are secondary, cutover raised bog habitats that are located on deep peat and level ground. They do not conform to Annex I wet heath habitat as defined by the Irish Wildlife Manual (Perrin *et.al.* 2014). Neither do they conform to Annex I raised bog habitats or any other Annex I habitat.

In light of the above, given the habitat history, peat depths and the plant species present, ARB, DRB or Annex I heath habitats do not occur in the cutover bog within the Site.

Where cutover bog has become recolonised with other habitats such as transition mire, wet grassland and scrub, these habitats are discussed within the relevant sections below.

The following infrastructure is located on cutover habitats:

- Proposed Turbines 1 and 3 and associated permanent and temporary hardstand areas and proposed internal cabling route;
- Sections of proposed new tracks and internal cabling routes to the north of proposed Turbine 6 and west of Turbine 4;
- Proposed temporary road widening, temporary construction tracks and temporary hardstand areas associated with Turbine 4;
- Proposed passing bay;
- Proposed peat and spoil management areas;
- Proposed new tracks and temporary (construction phase) road widening areas accessing the proposed met mast and borrow pit.

The above infrastructure is all located in areas of degraded cutover bog with low *Sphagnum* cover comprising a mix of areas of bare peat and dry revegetating areas. The Proposed Project has been specifically designed to avoid the area of species-rich cutover bog (shown in Figure 6-7, described above and assessed for its potential to conform to Annex 1 Active Raised Bog) with all of the Proposed Project infrastructure located outside of this area of cutover bog.



Plate 6-6 An example of a revegetating Cutover bog (PB4) habitat located at the south of the Site.



Plate 6-7 Area of Cutover bog (PB4) in the northeast of the Site, with sitka spruce (*Picea sitchensis*) encroachment from the adjacent conifer plantation.



Plate 6-8 An area of species-rich Cutover bog (PB4) habitat in the centre of the Site.



Plate 6-9 Secondary heath community recolonising on Cutover bog (PB4) in the east of the Site.

6.4.1.1.3 Transition mire and quaking bog (PB4/PF3)

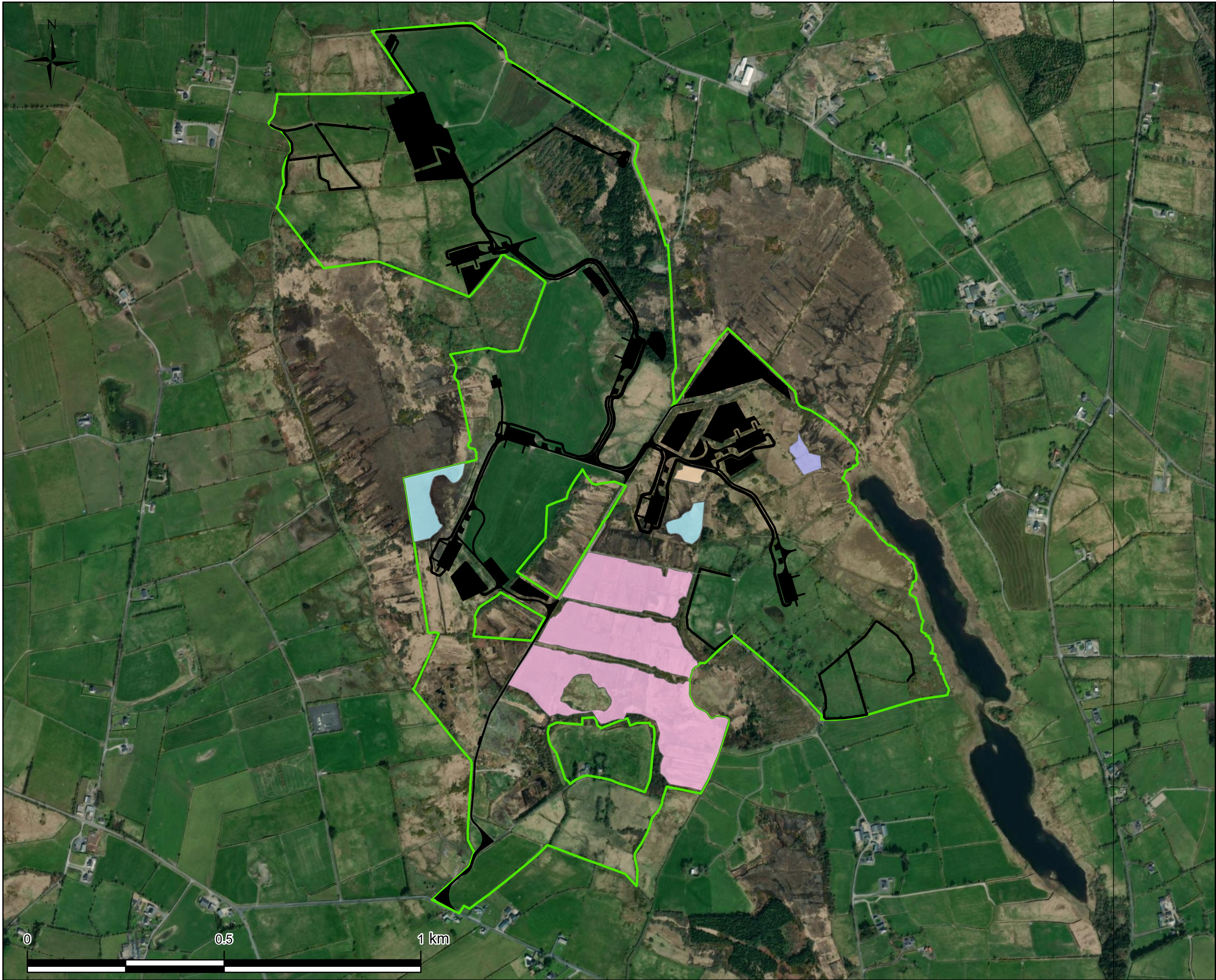
An area classified as transition mire which has developed on an area of cutover bog was recorded in the eastern section of the Site to the northwest of Drumady Lough (Plate 6-10). This area is therefore mapped in the habitat map in Figure 6-5 as Transition mire and quaking bog on Cutover bog (PB4/PF3).

An assessment was carried out on this area of transition mire, to assess its affinities to the Annex I habitat Transition mires and quaking bogs [7140]. The key positive indicator species recorded include common sedge (*Carex nigra*), water horsetail (*Equisetum fluviatile*), water mint (*Mentha aquatica*), bogbean (*Menyanthes trifoliata*), marsh cinquefoil (*Comarum palustre*), common cottongrass (*Eriophorum angustifolium*), bottle sedge (*Carex rostrata*) and *Sphagnum* species. Other species recorded in this area include purple moor grass (*Molinia caerulea*), lesser spearwort (*Ranunculus flammula*), marsh orchid (*Dactylorhiza kerryensis*), marsh lousewort (*Pedicularis palustris*), creeping bent (*Agrostis stolonifera*), marsh pennywort (*Hydrocotyle vulgaris*) and ragged robin (*Silene flos-cuculi*), with a diverse sedge component also including white beak-sedge (*Rhynchospora alba*), glaucous sedge (*Carex flacca*), brown sedge (*Carex disticha*), greater tussock-sedge (*Carex paniculata*) and star sedge (*Carex echinata*). This habitat conforms to the IVC community FE2A Water horsetail – Bogbean (*Equisetum fluviatile* – *Menyanthes trifoliata*) mire. According to the IVC synopsis for this community, “Stands with *Carex rostrata* or *Carex lasiocarpa* are like to correspond with EU HD Annex I habitat 7140 Transition mires”. Therefore, this habitat within the Site was considered to conform to the Annex I habitat Transition mire and quaking bog [7140] due to the presence of bottle sedge (*Carex rostrata*). This area is also shown in Figure 6-7 below.

There is no infrastructure proposed within this habitat. The proposed hardstand for Turbine 4 is located approximately 60m to the west of this habitat, with the internal cabling route located at approximately 40m west of this habitat



Plate 6-10 An area of Annex I Transition mire and quaking bog [7140] in the east of the Site.



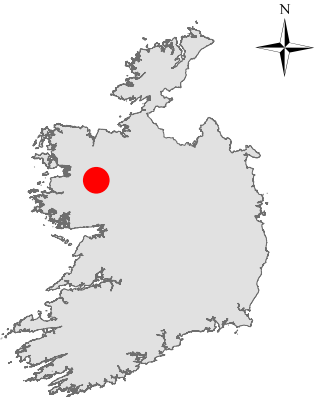
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Map Legend

- █ EIA Site Boundary
- █ Proposed Project Footprint
- Habitat**
- █ Cutover bog with small remnants of uncut raised bog
- █ Remnant raised bog
- █ Species-rich cutover bog (not found to conform to Annex I status)
- █ Transition mires and quaking bogs [7140]

Spatial Reference
Name: IREN95 Irish Transverse Mercator
Datum: IREN95
Projection: Transverse Mercator



SITE LOCATION - NOT TO SCALE

Drawing Title
Annex I and High Biodiversity Peatland Habitats

Project Title
Proposed Cunlaghfadda Green Energy Project

Project No. 220825	Drawing No. 6-7	Scale 1:9,000
Drawn By MNR	Checked By KB	Date 11/05/2026



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6.4.1.2 Grassland Habitats

Grassland habitats dominate the northern and eastern sections of the Site. These habitats primarily comprise Improved agricultural grasslands (GA1) and Wet grasslands (GS4) used for agricultural purposes, and areas of Dry meadows and grassy verges (GS2) along roadsides and where management is less intensive. A number of areas of species-rich wet grassland within the Site were also found to conform to the Annex I habitat *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]. These habitats are described in detail in the following sections.

6.4.1.2.1 Improved agricultural grasslands (GA1)

The dominant habitat throughout the north and mid region of the Site is Improved agricultural grassland (GA1) (Plate 6-11). These improved agricultural grasslands are generally species-poor consisting predominantly of perennial rye grass (*Lolium perenne*), Yorkshire-fog (*Holcus lanatus*), white clover (*Trifolium repens*) and creeping buttercup (*Ranunculus repens*). Other commonly occurring species include broad-leaved dock (*Rumex obtusifolius*), dandelion (*Taraxacum officinale* agg.), common mouse ear (*Cerastium fontanum*), Timothy grass (*Phleum pratense*), nettles (*Urtica dioica*), ribwort plantain (*Plantago lanceolata*) and creeping thistle (*Cirsium arvense*).

The proposed infrastructure located within improved agricultural grasslands include proposed Turbine 2 and associated hardstand areas, part of the Turbine 7 hardstand, proposed temporary road widening and temporary construction tracks, proposed wheel wash station, proposed temporary construction compound, proposed new onsite access tracks, proposed peat and spoil management area adjacent to Turbine 7, the northern portion of the proposed onsite substation, proposed underground cabling and one proposed end mast.



Plate 6-11 Example of typical sward of Improved agricultural grassland (GA1) within the Site.

6.4.1.2.2 Dry meadows and grassy verges including Dry meadows/Scrub mosaic (GS2, GS2/WS1)

Small areas of Dry meadows and grassy verges (GS2) are present within the Site, at the location of the proposed met mast (Plate 6-12) and to the northwest of Turbine 6. Species present within these grasslands include field horsetail (*Equisetum arvense*), Yorkshire fog (*Holcus lanatus*), ribwort plantain (*Plantago lanceolata*), common daisy (*Bellis perennis*), common dandelion (*Taraxacum officinale*), silverweed (*Argentina anserina*), curly dock (*Rumex crispus*), common bent grass (*Agrostis capillaris*), tormentil (*Potentilla erecta*), rosebay willowherb (*Chamaenerion angustifolium*), rough hawkbit (*Leontodon hispidus*) and sweet vernal grass (*Anthoxanthum odoratum*). Small areas of grassy verges were also commonly recorded as linear features along existing farm tracks and throughout the Site, however due to the small area of these habitats, these areas have not been mapped in detail.

At the location of the proposed Turbine 1 and proposed borrow pit, dry meadow habitat occurs in a mosaic with Scrub (GS2/WS1) (Plate 6-13). In this area the species composition included Yorkshire fog (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), ribwort plantain (*Plantago lanceolata*), yarrow (*Achillea millefolium*), tormentil (*Potentilla erecta*), lesser stitchwort (*Stellaria graminea*), common sorrel (*Rumex acetosa*), creeping thistle (*Cirsium arvense*), bird's-foot-trefoil (*Lotus corniculatus*), glaucous sedge (*Carex flacca*), red clover (*Trifolium pratense*), creeping buttercup (*Ranunculus repens*), marsh thistle (*Cirsium palustre*) and lady's bedstraw (*Galium verum*), with a scrub component comprising brambles (*Rubus fruticosus* agg.), European gorse (*Ulex europaeus*), rosebay willowherb (*Chamaenerion angustifolium*) and blackthorn (*Prunus spinosa*).

The proposed met mast and short stretches of proposed new access tracks are located within areas of dry meadows and grassy verges. The proposed borrow pit and the proposed Turbine 1 and associated hardstand are located within a mosaic of dry meadows and grassy verges and scrub.



Plate 6-12 Example of Dry meadows and grassy verges located at the location of the proposed met mast.



Plate 6-13 Mosaic of Dry meadows and grassy verges and Scrub (GS2/WS1) at the location of the proposed borrow pit.

6.4.1.2.3 Wet grassland (GS4)

Wet grassland was recorded throughout the Site and varied in nature from relatively species-poor agricultural wet grassland to more species-rich wet grasslands, often in close proximity to cutover habitats.

Many of the areas of wet grassland in the north-west of the Site in the vicinity of Turbines 6 and 7 and to the east of Drumady Lough in the vicinity of the proposed Turbine 5 are primarily used for agriculture and are relatively species-poor, with dominant plant species typically including soft rush (*Juncus effusus*), creeping buttercup (*Ranunculus repens*), broad-leaved dock (*Rumex obtusifolius*), Yorkshire fog (*Holcus lanatus*), common sorrel (*Rumex acetosa*), creeping bent grass (*Agrostis stolonifera*) and perennial rye grass (*Lolium perenne*) (Plate 6-14). Other commonly occurring species within these grasslands include white clover (*Trifolium repens*), marsh thistle (*Cirsium palustre*), marsh bedstraw (*Galium palustre*), meadowsweet (*Filipendula ulmaria*), silverweed (*Potentilla anserina*), creeping thistle (*Cirsium arvense*), cuckooflower (*Cardamine pratensis*), spear thistle (*Cirsium vulgare*), common ragwort (*Jacobaea vulgaris*) and great willowherb (*Epilobium hirsutum*).

Other areas of wet grassland within the Site were less intensively managed and were characterised by a greater plant species diversity. These included an area of wet grassland to the north-west of Drumady Lough at the location of the proposed Turbine 4, characterised by sweet vernal grass (*Anthoxanthum odoratum*) and purple moor grass (*Molinia caerulea*) and which also supported pockets of wet heath vegetation in places including ling heather (*Calluna vulgaris*), heath-rush (*Juncus squarrosus*), and *Carex* spp. It also includes an area in the south of the Site, comprising wet grassland on a small mound located on and area of Cutover bog (PB4/GS4). The species composition in this area comprised largely soft rush (*Juncus effusus*), Yorkshire fog (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), rough meadow-grass (*Poa trivialis*) and creeping bent (*Agrostis stolonifera*) with occasional marsh thistle (*Cirsium palustre*), tormentil (*Potentilla erecta*), glaucous sedge (*Carex flacca*), common cottongrass (*Eriophorum angustifolium*), perennial rye-grass (*Lolium perenne*), white clover (*Trifolium*

repens), oval sedge (*Carex leporina*) and star sedge (*Carex echinata*). This area also had infestations of Japanese knotweed (*Reynoutria japonica*), as outlined in Section 6.4.1.9 below.

Four areas of particularly species-rich wet grassland were identified within the Site. These areas are located outside of the Proposed Project footprint, approximately 70m to the southwest of the proposed onsite substation, approximately 10m to the southeast of the proposed Turbine 6, immediately to the south and east of proposed Turbine 4, and approximately 50m to the north of proposed Turbine 3, immediately to the east of the existing site access track, as shown in Figure 6-8 below. Annex I habitat assessments were carried out on these areas in line with Irish Wildlife Manual 102 ‘*The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats*’ (Martin *et al.*, 2018) in order to assess their conformity to the Annex I habitat *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]. Key high quality indicator species recorded across these habitat plots include meadow thistle (*Cirsium dissectum*), flea sedge (*Carex pulicaris*), common spotted orchid (*Dactylorhiza fuchsii*) and lesser butterfly orchid (*Platanthera bifolia*), with positive indicator species also including the sedges star sedge (*Carex echinata*), common sedge (*Carex nigra*), carnation sedge (*Carex panicea*) and glaucous sedge (*Carex flacca*), as well as devil’s-bit scabious (*Succisa pratensis*), meadowsweet (*Filipendula ulmaria*), tormentil (*Potentilla erecta*) and a range of species including jointed rush (*Juncus articulatus*), heath woodrush (*Luzula multiflora*), water mint (*Mentha aquatica*) and lesser spearwort (*Ranunculus flammula*). These habitats were highly diverse, and other species recorded included Yorkshire fog (*Holcus lanatus*), soft rush (*Juncus effusus*), sweet vernal grass (*Anthoxanthum odoratum*), common lousewort (*Pedicularis sylvatica*), bird’s-foot trefoil (*Lotus corniculatus*), marsh thistle (*Cirsium palustre*), bent grasses (*Agrostis* spp.), heath bedstraw (*Galium saxatile*), common sorrel (*Rumex acetosa*), yellow sedge (*Carex flava*), white clover (*Trifolium repens*), quaking grass (*Briza media*), crested dog’s-tail (*Cynosurus cristatus*), marsh pennywort (*Hydrocotyle vulgaris*), creeping buttercup (*Ranunculus repens*), meadow buttercup (*Ranunculus acris*), bog pimpernel (*Anagallis tenella*), self-heal (*Prunella vulgaris*), common daisy (*Bellis perennis*), marsh arrowgrass (*Triglochin palustris*), as well as the bryophytes *Pseudoscleropodium purum*, *Hylocomium splendens*, *Hypnum jutlandicum*, *Rhytidiadelphus squarrosus* and *Calliergonella cuspidata* (Plate 6-15).

The areas to the southwest of the proposed onsite substation and to the north of proposed Turbine 3 conform to the IVC community GL1D: Purple moor-grass – Tormentil – Creeping bent (*Molinia caerulea* – *Potentilla erecta* – *Agrostis stolonifera*) grassland, and the area to the south and east of proposed Turbine 4 conforms to the IVC community GL1C: Purple moor-grass – Devil’s-bit scabious (*Molinia caerulea* – *Succisa pratensis*) grassland. All three areas of wet grassland were found to conform to the Annex I habitat *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] (hereafter referred to as *Molinia* meadows) given the presence of ≥ 1 high quality positive indicator species and a total of ≥ 7 positive indicator species, low cover of negative indicator species, scrub, bracken, heath, *Polytrichum* spp and litter, as well as a sward height between 10-80cm in height and minimal areas of bare soil, serious grazing or disturbance (per Martin *et al.*, 2018¹⁴). All areas of Annex I *Molinia* meadows within the Site are shown in Figure 6-8 below.

The area of wet grassland located to the southeast of the proposed Turbine 6 was originally surveyed in 2023, following which it was found to conform to Annex I *Molinia* meadow. However, during repeat surveys undertaken in 2025, this area of wet grassland was found to have deteriorated in quality and was characterised by a high cover of tussocks of purple moor grass (*Molinia caerulea*) tussocks which had outcompeted other indicator species. During these surveys the habitat was found to correspond to the IVC community HE4D: Purple moor-grass – Tormentil – Cross-leaved heath (*Molinia caerulea* – *Potentilla erecta* – *Erica tetralix*) heath and no longer found to meet the criteria required to be considered Annex I *Molinia* meadow.

The Proposed Project has been purposely designed to avoid the above areas of *Molinia* meadow with no infrastructure proposed in these areas. The area to the southeast of Turbine 6 which, as described above, has deteriorated in quality over the course of the ecological surveys of the Site, is proposed for enhancement measures, as outlined in detail within the Biodiversity Management and Enhancement Plan (see Appendix 6-4).

Site infrastructure located within areas of species poor/non-Annex 1 wet grassland habitats includes the proposed Turbines 4, 5, 6 and 7, and associated new tracks and permanent and temporary hardstand areas, temporary road widening, temporary construction tracks and internal cabling, proposed peat and spoil management areas, proposed onsite substation and associated substation construction compound and Proposed Grid Connection cabling.



Plate 6-14 Example of typical sward of species-poor Wet grassland (GS4) within the northwest of the Site.



Plate 6-15 An example of Annex I Molinia meadow located southeast of proposed Turbine 5 within the Site (i.e., EIAR boundary).



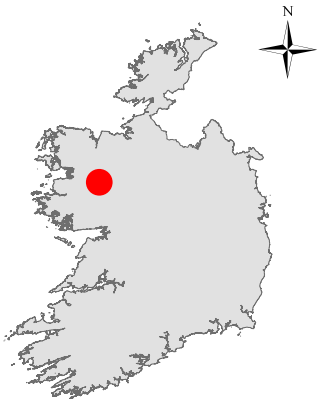
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Map Legend

- EIAR Site Boundary
- Proposed Project Footprint
- Habitat**
 - Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]

Spatial Reference
Name: IREN95 Irish Transverse Mercator
Datum: IREN95
Projection: Transverse Mercator



SITE LOCATION - NOT TO SCALE

Drawing Title
Annex I Molinia Meadows within the Site

Project Title
Proposed Cunlaghfadda Green Energy Project

Project No. 220825	Drawing No. 6-8	Scale 1:9,000
Drawn By MNR	Checked By KB	Date 11/05/2026



Email: info@mkofireland.ie Website: www.mkofireland.ie

6.4.1.3 Woodland, Scrub, Treeline and Hedgerow Habitats

A number of woodland and scrub habitats are present within the Site, including Scrub (WS1), Mixed broadleaved/conifer woodland (WD2), Mixed conifer woodland (WD3) and Conifer plantation (WD4). The Site is also traversed by a network of linear Hedgerows (WL1) and Treelines (WL2), primarily along agricultural and wet grassland field boundaries in the north and southeast of the Site. These habitats are each described in detail in the following sections.

6.4.1.3.1 Scrub (WS1)

Large areas of scrub and linear sections of scrub are present at various locations throughout the Site including areas where it has colonised cutover bog as well as along field boundaries, drainage ditches, treelines, and at the edges of woodland. Species predominantly comprise European gorse (*Ulex europaeus*), grey willow (*Salix cinerea*), eared willow (*Salix aurita*), downy birch (*Betula pubescens*), bramble (*Rubus fruticosus* agg.), bracken (*Pteridium aquilinum*), blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*) and dog rose (*Rosa canina*), often with a component of rosebay willowherb (*Chamaenerion angustifolium*), spear thistle (*Cirsium vulgare*), creeping thistle (*Cirsium arvense*), purple moor grass (*Molinia caerulea*), and/or nettles (*Urtica dioica*) (Plate 6-16).

Where scrub was recorded growing on cutover bog habitats, this is classified as such within the habitat map (PB4/WS1). In these areas, scrub was largely dominated by European gorse (*Ulex europaeus*), with occasional grey willow (*Salix cinerea*), eared willow (*Salix aurita*) and downy birch (*Betula pubescens*) (Plate 6-17). In the northeast of the Site is an area of cutover bog that has recolonised with dry heath communities in association with scrub upon an area of previously-felled conifer plantation (Plate 6-18). Parts of this habitat had recolonised with dense heather, bramble, and tussocks of purple moor grass. Old rotting tree stumps were noted under the tussocks of grass and heath. Species identified within this habitat included purple moor grass (*Molinia caerulea*), ling heather (*Calluna vulgaris*), cross-leaved heath (*Erica tetralix*), European gorse (*Ulex europaeus*), bramble (*Rubus fruticosus*), downy birch saplings (*Betula pubescens*), sitka spruce saplings (*Picea sitchensis*), willows (*Salix* spp.), *Sphagnum* spp., devil's-bit scabious (*Succisa pratensis*), tormentil (*Potentilla erecta*), deer grass (*Trichophorum cespitosum*), and bog myrtle (*Myrica gale*).

Where scrub occurs in a mosaic with dry meadows and grassy verges, this mosaic habitat is described in Section 6.4.1.2.2 above.

Sections of the proposed peat and spoil management areas, proposed onsite substation, internal cabling routes and stretches of internal site access tracks are located within scrub habitats, as well as a proposed end mast, new Proposed Grid Connection tracks and underground Proposed Grid Connection cabling.



Plate 6-16 Example of Scrub (WS1) habitat bordering a wet grassland located to the southwest of Turbine 6.



Plate 6-17 European gorse (*Ulex europaeus*) dominated Scrub growing on Cutover bog (PB4/WS1)



Plate 6-18 A mosaic of Scrub on Cutover bog (PB4/WS1) that has recolonised on an area of previously-felled conifer plantation in the northeast of the Site.

6.4.1.3.2 Mixed broadleaved/conifer woodland (WD2)

A small area of Mixed broadleaved/conifer woodland (WD2) was identified within the east of the Site, to the north of proposed Turbine 5. This woodland is comprised of immature and semi-mature sitka spruce (*Picea sitchensis*) trees along with ash (*Fraxinus excelsior*), downy birch (*Betula pubescens*) and holly (*Ilex aquifolium*). The understorey within this woodland is comprised mainly of bramble (*Rubus fruticosus*), nettles (*Urtica dioica*), bracken (*Pteridium aquilinum*), Yorkshire fog (*Holcus lanatus*), common hogweed (*Heracleum sphondylium*), herb-Robert (*Geranium robertianum*), short-fruited willowherb (*Epilobium obscurum*), false brome (*Brachypodium sylvaticum*) and European gorse (*Ulex europaeus*) (Plate 6-19).

There is no infrastructure proposed within this habitat.

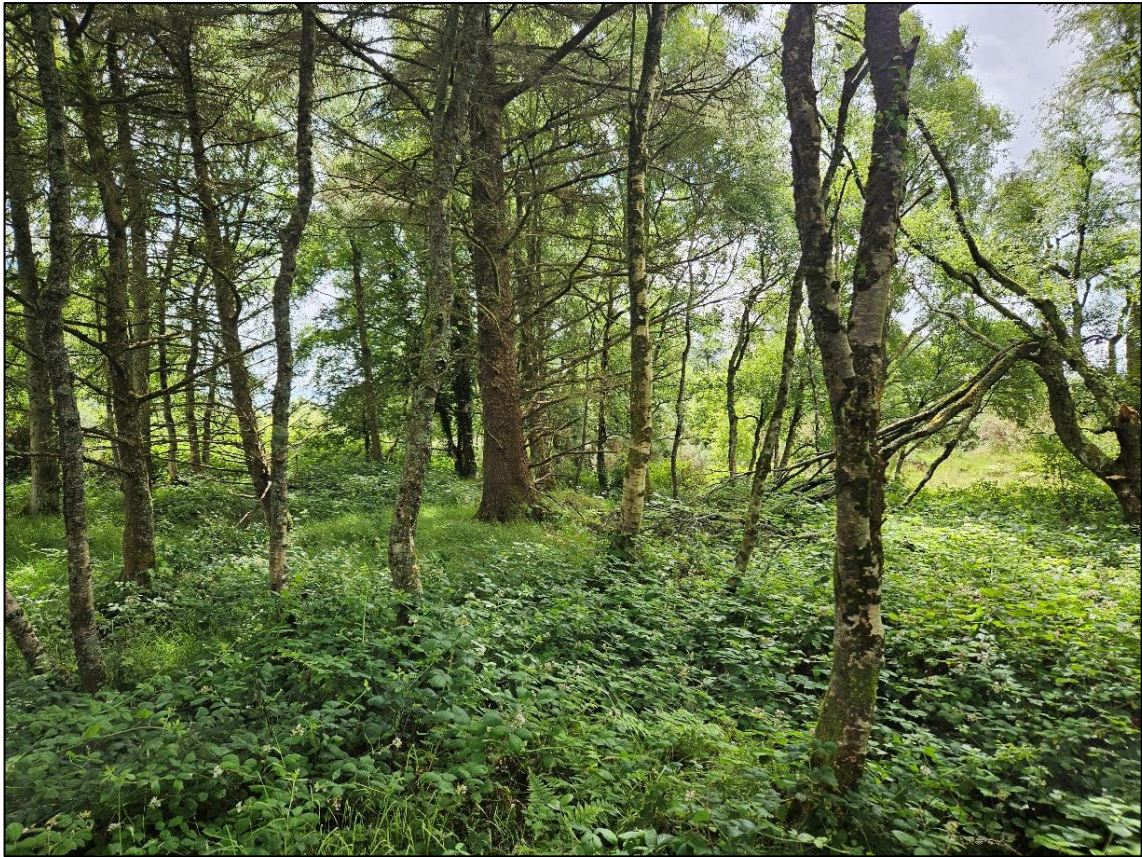


Plate 6-19 Mixed broadleaved/conifer woodland (WD2) located to the north of proposed Turbine 5

6.4.1.3.3 **Mixed conifer woodland (WD3)**

In the northwestern section of the Site, there is a small area of coniferous trees classified as Mixed conifer woodland (WD3) (Plate 6-20). This is comprised of semi-mature Douglas fir (*Pseudotsuga menziesii*), Scot's pine (*Pinus sylvestris*) and sitka spruce (*Picea sitchensis*) trees.

No infrastructure is proposed in this area of woodland. An area of woodland planting is proposed immediately to the east of the mixed conifer woodland, and will create continued woodland cover in this area. Further detail is provided in the Biodiversity Management and Enhancement Plan, included in Appendix 6-4.



Plate 6-20 Small area of Mixed conifer woodland (WD3) in the northern section of the Site.

6.4.1.3.4 Conifer plantation (WD4)

An area of Conifer plantation (WD4) was recorded in the northeast of the Site. This habitat is primarily dominated by sitka spruce (*Picea sitchensis*), with an understorey of heath-associated species (Plate 6-21). This habitat occurs as a mosaic with Scrub (WS1), and is bordered to the east and north by a Treeline (WL2).

Part of the proposed new tracks and end mast associated with the Proposed Grid Connection and proposed access track to Turbine 6 will result in the loss of some conifer plantation within the Site.



Plate 6-21 Area of sitka spruce (*Picea sitchensis*) dominated conifer plantation located in the northeast of the Site.

6.4.1.3.5 Hedgerows (WL1)

Hedgerows (WL1) occur frequently within the Site, primarily in the northern and southeastern areas, delineating agricultural field boundaries. Species recorded in the hedgerow habitats predominantly included hawthorn (*Crataegus monogyna*), European gorse (*Ulex europaeus*), holly (*Ilex aquifolium*), grey willow (*Salix cinerea*), bramble (*Rubus fruticosus*), and common ivy (*Hedera helix*) with an understorey composition reflecting the species within the adjacent habitats (Plate 6-22).

The proposed hardstand area and access track associated with Turbine 5 and the proposed onsite substation will result in the loss of some hedgerow habitats.



Plate 6-22 Example of a Hedgerow (WL1) in the northern section of the Site.

6.4.1.3.6 Treelines (WL2)

Treelines (WL2) were recorded bordering grasslands, farm tracks, and drainage ditches throughout the Site. Species recorded in the treeline habitats predominantly included hawthorn (*Crataegus monogyna*), ash (*Fraxinus excelsior*), blackthorn (*Prunus spinosa*) and beech (*Fagus sylvatica*) (Plate 6-23). The understorey primarily comprised of bramble (*Rubus fruticosus*), nettle (*Urtica dioica*), ivy (*Hedera hibernica*), dandelion (*Taraxacum officinale*), rough hawkbit (*Leontodon hispidus*), creeping thistle (*Cirsium arvense*), foxglove (*Digitalis purpurea*), elder (*Sambucus nigra*) and dog rose (*Rosa canina*).

The proposed onsite substation and proposed new tracks will result in the loss of some treeline habitats.



Plate 6-23 Treeline (WL2) located to the east of the proposed substation location.

6.4.1.4 Watercourses and Waterbodies

The Site is traversed by a network of Drainage ditches (FW4) that flow along the agricultural field boundaries and through cutover bog habitats. Additionally, there is a small pond located in the south of the Site. The Meander River also flows along the southern boundary of the Site. These habitats are described in detail in the following sections.

6.4.1.4.1 Depositing/lowland rivers (FW2)

The Meander River flows along the southern boundary of the Site, and is classified as a Depositing/lowland river (FW2) (Plate 6-24). Where it occurs within the Site, this watercourse has been extensively straightened and deepened, resulting in a trapezoidal channel with very poor hydromorphology and no observable flows at the time of survey. The stagnant channel was 1.5-2m wide and 0.05-0.1m deep. Widespread bank slumping resulting in abundant in-stream peat accumulations have caused frequent impoundments. The substrata were comprised exclusively of deep anoxic peat (often >0.5m in depth). The river was heavily vegetated with abundant bulrush (*Typha latifolia*) and common duckweed (*Lemna minor*). Branched bur reed (*Sparganium erectum*) and bottle sedge (*Carex rostrata*) were locally frequent. No aquatic bryophytes were identified, and *Leptothrix* sp. bacterial films were present on the water's surface. Encroachment of terrestrial vegetation was high with frequent willowherb (*Epilobium* spp.), floating sweet grass (*Glyceria fluitans*), meadowsweet (*Filipendula ulmaria*), rushes (*Juncus* spp.) and willow (*Salix* sp.) along the littoral areas and in-stream. This watercourse is bordered by Cutover bog (PB4) and reclaimed agricultural wet grasslands (GS4) with Conifer plantation (WD4) to the south further downstream.



Plate 6-24 A representative image of the uppermost reaches of the Meander River in the vicinity of the Site.

6.4.1.4.2 Drainage ditches (FW4)

There are numerous agricultural and turbary-associated drains classified as Drainage ditches (FW4) throughout the Site. Many of the drainage ditches associated with agricultural grassland areas (Plate 6-25) are heavily vegetated with low water levels and little to no flow. Species commonly recorded within agricultural drains include water horsetail (*Equisetum fluviatile*), perennial rye grass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), creeping buttercup (*Ranunculus repens*), common sorrel (*Rumex acetosa*), dandelion (*Taraxacum officinale*), silverweed (*Potentilla anserina*), meadowsweet (*Filipendula ulmaria*), red clover (*Trifolium pratense*) and white clover (*Trifolium repens*), reflecting the species composition of the adjacent grasslands. Where drainage ditches had water present and were highly vegetated, often in wet grassland habitats or along treelines, species such as water horsetail (*Equisetum fluviatile*), marsh horsetail (*Equisetum palustre*), water mint (*Mentha aquatica*), germander speedwell (*Veronica chamaedrys*), glaucous sedge (*Carex flacca*), soft rush (*Juncus effusus*), jointed rush (*Juncus articulatus*), common hogweed (*Heracleum sphondylium*) and lesser spearwort (*Ranunculus flammula*) were also recorded.

Drainage ditches were also recorded across the cutover bog habitats within the Site, in some instances being newly dug at the time of survey (Plate 6-26). These drains were generally sparsely vegetated.



Plate 6-25 An example of Drainage ditch (FW4) to the northeast of Turbine 7 within an agricultural grassland.



Plate 6-26 A newly-dug Drainage ditch (FW4) within cutover bog habitat in the south of the Site.

6.4.1.4.3 Pond (Other)

In the southeast of the Site is a small, very shallow, heavily enriched pond approximately 0.2ha in area. The landlocked pond is a homogeneous 0.1-0.2m deep with a bed comprised exclusively of organic rich soft sediment overlaying compacted gravels. The margins are heavily grazed and poached by cattle (Plate 6-27). Water turbidity was very high at the time of survey given livestock access and a very significant cyanobacterial bloom. This had resulted in a near absence of macrophytes, with only common duckweed (*Lemna minor*) and floating sweet grass (*Glyceria fluitans*) in the sheltered littorals. The southern and eastern part of the small basin was colonised by dense soft rush (*Juncus effusus*) (Plate 6-28). The pond is located in improved grassland with grazed margins supporting marsh cudweed (*Gnaphalium uliginosum*), sharp-flowered rush (*Juncus acutiflorus*), toad rush (*Juncus bufonius*), redshank (*Pericaria maculosa*), oval sedge (*Carex leporina*) and water-cress (*Nasturtium officinale*), as well as and common agricultural species including white clover (*Trifolium repens*), Yorkshire fog (*Holcus lanatus*), perennial rye grass (*Lolium perenne*), creeping bent (*Agrostis stolonifera*), annual meadow-grass (*Poa annua*), smooth meadow-grass (*Poa pratensis*), creeping buttercup (*Ranunculus repens*) and common mouse ear (*Cerastium fontanum*).

The proposed Turbine 5 and associated hardstands and cabling are located approximately 15m to the northeast of this pond.



Plate 6-27 The margins of the pond located in the southeast of the Site, which have been highly poached by cattle.



Plate 6-28 Soft rush (*Juncus effusus*) dominated vegetation within pond in the southeast of the Site.

6.4.1.5 Artificial and Cultivated Habitats

6.4.1.5.1 Tilled land (BC3)

During surveys of the Site undertaken in July 2025, a field in the eastern section of the Site was identified as Tilled land (BC3). During previous surveys of the Site this area had been classified as an agricultural grassland, and had been recently ploughed (Plate 6-29).

Part of the hardstand and new access track associated with the proposed Turbine 5 is located within this area of tilled land.



Plate 6-29 Area of recently ploughed grassland in the east of the Site, classified as Tilled land (BC3)

6.4.1.5.2 **Spoil and bare ground (ED2)**

Farm tracks are present throughout the Site and are classified as Spoil and bare ground (ED2). These tracks are made up of loose stone chippings and compacted dirt with small numbers of plant species colonising parts of the centre of the track. An area of spoil and bare ground was also recorded in the south of the Site, in an area being used for storage of wood chippings and brash (Plate 6-30) where regular tracking of tractors and machinery have created bare soil.

Several of the farm tracks classified as spoil and bare ground are proposed for upgrade as part of the Proposed Project.



Plate 6-30 Area of Spoil and bare ground (ED2) in the south of the site being used for storage of wood chippings and brash.

6.4.1.5.3 Recolonising bare ground (ED3)

Where farm tracks within the Site have begun to revegetate, they are classified as Recolonising bare ground (ED3). Typical species in these areas include pineappleweed (*Matricaria discoidea*), greater plantain (*Plantago major*), common daisy (*Bellis perennis*), annual meadow grass (*Poa annua*), creeping bent (*Agrostis stolonifera*), white clover (*Trifolium repens*), perennial rye grass (*Lolium perenne*), thyme-leaved speedwell (*Veronica serpyllifolia*) and creeping buttercup (*Ranunculus repens*). In the north of the site, due to the presence of limestone chippings along the farm tracks, some areas have also recolonised with a more diverse sward including calcareous species, such as quaking grass (*Briza media*), common knapweed (*Centaurea nigra*), bird's-foot trefoil (*Lotus corniculatus*), common spotted orchid (*Dactylorhiza fuchsii*), meadow buttercup (*Ranunculus acris*), red clover (*Trifolium pratense*), glaucous sedge (*Carex flacca*), red fescue (*Festuca rubra*), tufted hair-grass (*Deschampsia cespitosa*), crested dog's-tail (*Cynosurus cristatus*), common milkwort (*Polygala vulgaris*), meadow vetchling (*Lathyrus pratensis*), ribwort plantain (*Plantago lanceolata*), cock's-foot (*Dactylis glomerata*), yarrow (*Achillea millefolium*), tufted vetch (*Vicia cracca*) and false oat-grass (*Arrhenatherum elatius*) (Plate 6-31). There is also a small area of recolonising bare ground in the southeast of the Site where recent scrub clearance has exposed bare ground and allowed recolonisation of wet grassland species.

The proposed onsite substation is located partially within recolonising bare ground habitat (Plate 6-32). At this location the species composition is similar to that of the adjacent agricultural and wet grasslands, including common knapweed (*Centaurea nigra*), crested dog's-tail (*Cynosurus cristatus*), red clover (*Trifolium pratense*), rough meadow-grass (*Poa trivialis*), soft rush (*Juncus effusus*), nettles (*Urtica dioica*), creeping buttercup (*Ranunculus repens*) and creeping thistle (*Cirsium arvense*).



Plate 6-31 Farm track classified as Recolonising bare ground (ED3) located in the north of the Site.



Plate 6-32 Recolonising bare ground (ED3) at the location of the proposed onsite substation.

6.4.1.5.4 **Stonewalls and other stonework (BL1)**

Stone walls classified as Stone walls and other stonework (BL1) were recorded in the north of the Site bordering agricultural grassland and wet grassland habitats and also in the south and southeast of the Site within wet grassland habitat (Plate 6-33). The stone walls located in the north of the Site were well maintained and often in association with short sections of treeline and hedgerow habitats. It was noted that the stonewalls recorded at the south of the Site tended to be less maintained with frequent gaps and destruction due to livestock and trampling.

Additionally, a ruin of an old stone building was identified in the southeast of the Site, northwest of proposed Turbine 2 and was also classified as stone walls and other stonework. This stone building is disused with semi-mature trees and scrub growing from within (Plate 6-34). This structure is located outside of the footprint of the Proposed Project.

There will be some loss of stone walls due to the construction of the hardstand at the proposed Turbine 5, the proposed temporary and permanent access tracks at Turbine 7, and the proposed onsite substation and associated access tracks.



Plate 6-33 Stone walls (BL1) delineate several agricultural fields in the northern areas of the Site.



Plate 6-34 Old stone building classified as Stonewalls and other stonework (BL1) located at the southeast of the Site.

6.4.1.5.5 **Buildings and artificial surfaces (BL3)**

The main site access to the Site is via the L15053 road which is located within the south of the Site. This existing road is comprised of a tarmac road for a short distance before becoming a gravel track (Plate 6-35) and is therefore classified as Buildings and artificial surfaces.

This section of road is proposed for upgrade to facilitate the construction traffic and access to the Site during construction and operation.



Plate 6-35 Main access road to the Site (L15053), classified as Buildings and artificial surfaces (BL3)

6.4.1.6 Habitats Along the Proposed Grid Connection Route

The Proposed Grid Connection will be located entirely within the Site and as such the habitats associated with the footprint of the Proposed Grid Connection have been discussed in detail in the preceding sections. The layout of the Proposed Grid Connection in relation to the onsite habitats is shown in Figure 6-6a-b above.

In summary, the location of the proposed 110kV onsite substation will be located within an area of Wet grassland (GS4) and Improved agricultural grassland (GA1), with sections of Scrub (WS1), Recolonising bare ground (ED3) and a farm track classified as Spoil and bare ground (ED2). A short section of Hedgerow (WL1) largely comprising brambles (*Rubus fruticosus* agg.) growing over a Stone wall (BL1), with sparse European gorse (*Ulex europaeus*) and hawthorn (*Crataegus monogyna*) is also located within the footprint of the proposed onsite substation. A Treeline (WL2) dominated by hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*) and occasional sycamore (*Acer pseudoplatanus*) is also present at the location of the proposed onsite substation. The proposed construction compound for the onsite substation is also located within Wet grassland (GS4) habitat.

The proposed underground cabling route associated with the Proposed Grid Connection extends northwards from the proposed onsite substation along proposed new tracks for approximately 150m to the location of a proposed end mast, all located within Improved agricultural grasslands (GA1) and alongside a section of Treeline (WL2). An additional section of proposed underground cabling associated with the Proposed Grid Connection is located to the south of the proposed onsite substation within proposed new tracks, crossing eastwards through an existing Treeline (WL2) and Stone wall (BL1) into an Improved agricultural grassland (GA1) for approximately 120m. The habitat then transitions into a Wet grassland (GS4) at the eastern side of this agricultural grassland. The proposed cabling route and new track then crosses a Drainage ditch (FW4) along the field boundary and enters a section of Scrub (WS1) dominated by willows (*Salix* spp.), European gorse (*Ulex europaeus*), brambles (*Rubus fruticosus* agg.) and rosebay willowherb (*Chamaenerion angustifolium*), with some immature

sitka spruce (*Picea sitchensis*) encroaching from the adjacent conifer plantation. The route then turns southeast through this scrub, entering Conifer plantation (WD4) and then an area of Scrub on Cutover bog (PB4/WS1). The second proposed end mast and the end of this section of proposed new tracks and underground cabling are located within this area of cutover bog.

6.4.1.7 Habitats Along the Turbine Delivery Route

As detailed in Section 4.6.2 of Chapter 4 Description of the Proposed Project of this EIAR:

“For the purpose of this EIAR, the Port of Galway has been selected and assessed to facilitate turbine delivery to the Site. Vehicles delivering large turbine components and other abnormal loads to the Site will depart from Galway Port and travel northwest through Galway City along the R339 and R336 Regional Roads before reaching the N6 National Road at the Bothar na dTreabh/Tuam Road junction. The delivery vehicles will continue west along the N6/M6 Motorway before merging onto the M17 at the M6/M17/M18 intersection through the Rathmorris Interchange. From here, the delivery vehicles will continue north on the M17 and N17 Tuam bypass. The delivery vehicles will continue on the N17, travelling through Claremorris town on the L1519 before turning east onto the L1506. The delivery vehicles will travel on the L1506 for approximately 2.5 km before turning north onto the L1505, followed by taking a turn on to the L15053 towards the proposed Site entrance.”

Areas where minor accommodation works will be required were surveyed as part of the multi-disciplinary ecological walkover surveys, comprising mostly of overhanging trees which require pruning, and small areas of land-take due to overrun at junctions along the route. These areas are shown in Appendix 15-3 of this EIAR.

Trees are proposed for pruning along the L55512 to the north of Claremorris town (Plate 6-36). These are present as a Treeline (WL2) comprised mostly of ash (*Fraxinus excelsior*) with elder (*Sambucus nigra*) and sycamore (*Acer pseudoplatanus*), some of which are densely clad with ivy (*Hedera helix*). The understory contains hazel (*Corylus avellana*), blackthorn (*Prunus spinosa*), honeysuckle (*Lonicera periclymenum*) and brambles (*Rubus fruticosus* agg.). The overhanging branches are predominantly those of the ash trees, with some elder and sycamore also overhanging the road.

A small area of temporary land-take due to overrun and temporary road widening is required at the junction of the L55512 and the R320. This area is located at the edge of an Improved agricultural grassland (GA1) that is intensively grazed by sheep (Plate 6-37), with a small amount of soft rush (*Juncus effusus*) encroachment. The field boundary is delineated by a stone wall classified as Stone walls and other stonework (BL1) which will require removal as part of the accommodation works.

Further branches of overhanging trees require pruning from the Treelines (WL2) along the L1506. Trees in this area include beech (*Fagus sylvatica*), horse chestnut (*Aesculus hippocastanum*), sycamore (*Acer pseudoplatanus*) and ash (*Fraxinus excelsior*), with the majority of overhanging branches along this road being those of ash trees. Immature trees within the understorey in these treelines include willows (*Salix* spp.), hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*).

At the junction of the L1506 and the L1505, further pruning of overhanging Treelines (WL2) is required, including mature sycamore (*Acer pseudoplatanus*) and ash (*Fraxinus excelsior*). A small area of temporary road widening is also required at this location, which will involve the removal of a dry stone wall classified as Stone walls and other stonework (BL1) and the edge of an Improved agricultural grassland (GA1).

Additionally at this junction, an unmapped watercourse was identified and classified as an Eroding/upland river (FW1), likely having developed from a roadside drainage ditch. This stream is culverted under the adjacent house entrances and emerges at the roadside. Its bank width is approximately 1m, with a wetted width of approximately 0.8m. Its substrate is comprised of approximately 60% cobbles, 30% boulders and 10% gravel, and has a depth of 30cm at deepest point, but averaging 10-15cm. No turbidity was recorded at the time of survey and the stream had a moderate

flow rate. A fisheries habitat assessment was undertaken on this stream. Due to the high percentage of cobble substrate and low percentage of gravels, the stream was considered to be of negligible potential for spawning fish species, including salmonids and lamprey. The presence of the adjacent culvert which creates a partial barrier to upstream migration, as well as its location adjacent to a roadway and lack of shaded sections also results in a low potential as a salmonid nursery habitat. For these reasons, in addition to an absence of soft sediment, it was considered of negligible potential as a lamprey nursery habitat. The presence of riffles, flows and glides may encourage invertebrates and provide feeding potential for some fish species, including European eel for which potential in this stream was assessed as low. As a holding habitat for salmonids, potential is also considered to be low due to its narrow width and generally shallow depth. The existing culvert is proposed to be extended as part of the proposed Turbine Delivery Route.

At the entrance to the Site, additional accommodation works are required at the junction of the L1505/L15053, this consisting of the temporary construction site entrance. In this area, temporary road widening is required within two fields of Improved agricultural grassland (GA1). Additionally, short sections of Hedgerows (WL1) will be removed in order to facilitate the road widening, as well as associated stone walls classified as Stone walls and other stonework (BL1). The hedgerows in this area are comprised of blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*), bramble (*Rubus fruticosus*), ivy (*Hedera helix*) and sycamore (*Acer pseudoplatanus*) saplings. At the Site entrance, willows (*Salix* spp.) were also recorded.

An assessment of the trees along the proposed Turbine Delivery Route for potential for roosting bats is outlined within the Bat Report, included as Appendix 6-2 of this EIAR.



Plate 6-36 An example of overhanging Treelines (WL2) along the proposed Turbine Delivery Route which are proposed for pruning, located along the L55512.



Plate 6-37 An intensively sheep-grazed agricultural grassland within the land-take area at the junction of the L55512 and the R320, along the proposed Turbine Delivery Route.



Plate 6-38 A small stream classified as an Eroding/upland river (FW1) at the junction of the L1506 and the L1505

6.4.1.8 Protected Habitats and Flora

No botanical species listed under the Flora (Protection) Order (S.I. No. 235 of 2022), listed in Annex II of the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded within the Site. All other species recorded are common in the Irish landscape. No rare and protected plant species identified in the desk study as occurring in the wider area, including those records obtained from the NPWS data request (see Section 6.3.1.6), were recorded within the Site.

As described in the preceding sections, the following Annex I habitats were recorded within the EIAR Site Boundary, however they are located completely outside of the footprint of the Proposed Project:

- Active raised bog [7110] and Degraded raised bog still capable of natural regeneration [7120]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Transition mires and quaking bogs [7140] which has established on cutover bog

As outlined in the preceding sections, no areas of cutover bog were found to correspond to Annex I Active raised bog [7110] however an area of species-rich bog was identified, and is considered of high biodiversity value.

A map of the Annex I and high biodiversity peatland habitats are shown in Figure 6-7 above, and the areas of Annex I *Molinia* meadows are shown in Figure 6-8 above.

No Annex I habitats or habitats of high biodiversity value, including species-rich cutover bog, are located within the footprint of the Proposed Project.

6.4.1.9 Invasive Plant Species

One invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) was recorded during the ecological surveys. Large stands of Japanese knotweed (*Reynoutria japonica*) occur frequently throughout the south of the Site and show significant evidence of spread.

This species was recorded within the footprint of the Proposed Project along the main site access route, where the public road (L15053) is proposed for upgrade. Japanese knotweed has spread widely through the south of the Site in areas of cutover bog and wet grassland on cutover bog. Several large stands are present, measuring up to 50m in extent (Plate 6-39), with significant numbers of seedlings in the surrounding area (Plate 6-40), possibly spread through local machinery tracking and turbary activities.

The locations of recorded Japanese knotweed stands within the Site are shown in Figure 6-9 below.

During baseline aquatic surveys undertaken by Triturus Environmental Ltd., the aquatic invasive species Canadian pondweed (*Elodea canadensis*) was recorded at sites B2 (unnamed tributary of the River Robe), L1 and L2 (Drumady Lough) (see Figure 2.1, Appendix 6-3 for survey locations). This species was listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) before its removal in 2015 (S.I. 355 of 2015)²⁶, and is not listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024).

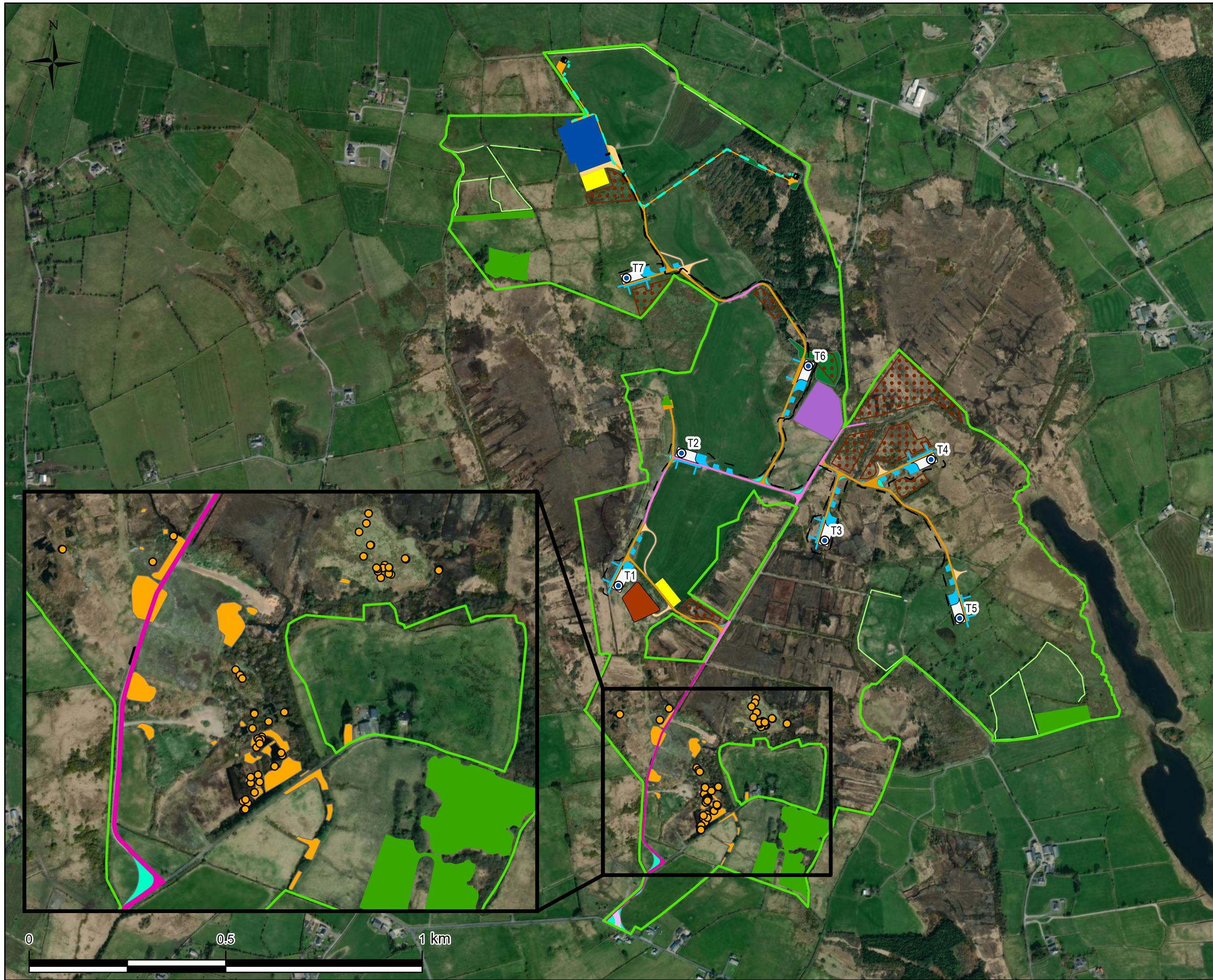
²⁶ Irish Statute Book [online]. Available at: <https://www.irishstatutebook.ie/eli/2015/si/355/made/en/print> [Accessed 01/04/2026]



Plate 6-39 Large stands of Japanese knotweed present within the south of the Site.



Plate 6-40 Significant numbers of seedlings showing the spread of Japanese knotweed through the south of the Site.



Map Legend

- EIAR Site Boundary
- Japanese Knotweed - Point
- Japanese Knotweed - Polygon
- Proposed Felling
- Proposed Construction Compound

Proposed Wind Farm

- Proposed Turbines
- Proposed Turbine Hardstands
- Temporary Hardstand Areas
- Proposed Borrow Pit
- Peat and Spoil Management Areas
- Proposed Internal Cables
- Proposed Met Mast

Proposed Grid Connection

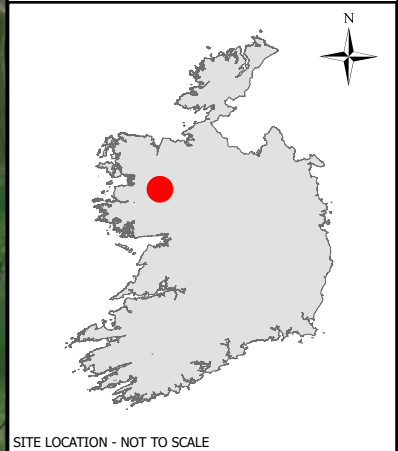
- Proposed 110kV Substation
- Proposed 100kV Grid Connection Cable Route
- Proposed End Masts

Proposed Habitat Enhancement

- Proposed Woodland Planting
- Proposed Linear Planting and Enhancement
- Proposed Marsh Frillary Enhancement Areas

Proposed Site Roads

- Proposed Upgrade to Existing Access Tracks
- Proposed New Access Tracks
- Proposed Upgrade to Public Road
- Temporary Construction Tracks
- Temporary Site Entrance
- Temporary Widening
- Passing Bay



SITE LOCATION - NOT TO SCALE

Drawing Title
Japanese Knotweed Locations

Project Title
Proposed Cunlaghfadda Green Energy Project

Project No. 220825	Drawing No. 6-9	Scale 1:9,000
Drawn By MNR	Checked By KB	Date 05/05/2026

6.4.2 Fauna in the Existing Environment

The following subsections provide the results of the faunal surveys undertaken within the Site during the surveys undertaken as outlined in Section 6.2.3 (Field Surveys). Incidental records during the extensive ornithological surveys undertaken within the vicinity of the Site (see Chapter 7 of this EIAR) are also incorporated, where relevant.

6.4.2.1 Badger

An individual badger was observed during ornithological surveys within the Site on one occasion, which was an observation of a single individual foraging at dusk within an agricultural field in the north of the Site in May 2025. Badger signs were also identified in the southeast of the Site in the form of tracks and prints along the margins of wet grassland habitats. No active or potential breeding locations for badger were identified within the Site during the dedicated badger surveys or any of the other surveys undertaken within the Site.

6.4.2.2 Otter

During the aquatic baseline surveys, Triturus Environmental Ltd. surveyed 5 no. riverine and 2 no. lacustrine sites located hydrologically downstream of the Site, including the Meander River along the Site's southern boundary as outlined in Section 6.2.3.3.2 above. In addition, a pond within the Site was surveyed, however this was found to have negligible suitability for otter. While the site is crossed by a network of drains, these do not provide optimal habitat for otter.

The following section should be read in conjunction with Figure 2.1 (survey locations) in the Aquatic Baseline Report (Appendix 6-3).

During the aquatic baseline surveys in 2025, otter signs were identified in the following locations:

- Four otter spraint sites were identified on exposed boulders under the road crossing at survey site A2 along the Meander River, approximately 1.8km downstream of the Site. These spraints were found to contain crayfish remains. This survey site is located upstream of the River Moy SAC, for which otter is a Qualifying Interest (QI).
- A regular spraint site containing abundant crayfish remains was also recorded on a mossy wall/revetment approximately 30m upstream of the road bridge at survey location B2 on an unnamed tributary of the River Robe, located approximately 5.0km downstream of the Site. A second spraint site (also with abundant crayfish remains) was located on the cutwater/bridge abutment located immediately downstream of the bridge.
- At survey site L1 in the north of Drumady Lough, located adjacent to the Site, a regular spraint site was recorded on a marginal tussock along the banks.

Otter spraint sites were also recorded at sites A2 on the Meander River and site B2 on the unnamed River Robe tributary in 2023. No breeding (holt) or couch (resting) areas were identified within 150m of any of the survey sites during the 2023 or 2025 surveys.

6.4.2.3 Other Mammals

Irish hare (*Lepus timidus hibernicus*) was observed within the Site during a walkover survey on the 25th of July 2023 (Plate 6-41). Additionally, Irish hare were recorded within the Site and immediate surrounding area on 24 occasions as incidentals during ornithological surveys of the Site between October 2021 and September 2025. These records were all sightings of individuals foraging in grassland and peatlands and running through the Site, often flushed by surveyors. No breeding locations for Irish hare were identified within the Site during any of the interdisciplinary surveys undertaken.

During mammal surveys, potential mammal burrows were recorded along an agricultural field margin and in an area of dry meadows and grassy verges, both in the north of the Site. These burrows are located approximately 2.5m from a proposed new track, and within a proposed peat and spoil management area. Due to their locations within and adjacent to proposed infrastructure and potential for disturbance, camera traps were deployed to determine whether they were in use by any mammal species. No mammals were observed entering or exiting the burrows, however the trail footage showed evidence of fox (*Vulpes vulpes*) presence within the Site (although not utilising the burrows), and mouse species presence. These are therefore mapped as disused mammal burrows in Figure 6-10a.

In addition to fox activity recorded on deployed camera traps, foxes were also observed on five separate occasions within the Site and immediate surrounding area. These were recorded as incidentals during ornithological surveys of the Site between October 2021 and September 2025 and were primarily sighting of individuals travelling through the area, with a vixen also heard on one occasion. Additionally, a fox den was identified within the area of mixed broadleaved/conifer woodland in the southeast of the Site, located over 55m from the nearest proposed infrastructure.

An American mink (*Mustela vison*) scat was also identified in the north of the Site. American mink is listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024).

In addition to the above, mammal tracks were also recorded in three locations in the centre and north of the Site. A rabbit (*Oryctolagus cuniculus*) was also recorded on one occasion in the south of the Site.

No signs of any other protected mammals were recorded during any of the extensive ecological and ornithological surveys of the Site. While pine marten (*Martes martes*), pygmy shrew (*Sorex minutus*), Irish stoat (*Mustela erminea* ssp. *hibernica*) and hedgehog (*Erinaceus europaeus*) are known to occur in the wider area (see Desk Study Section 6.3.1 above) and suitable habitat for these species exists within the Site, no evidence of these species were recorded within the Site. Additionally, while suitable habitat for red squirrel (*Sciurus vulgaris*) is also present, this species was not recorded during surveys of the Site and the desk study revealed no records for this species in the area.

All mammal signs and sightings recorded within the Site and immediate surroundings are shown in Figures 6-10a-b below.



Plate 6-41 Irish hare (*Lepus timidus hibernicus*) within the Site in July 2023.



Map Legend

EIAR Site Boundary

Mammal Species

- Badger
- Fox
- Hare
- Rabbit

Spatial Reference

Name: IREN95 Irish Transverse Mercator

Datum: IREN95

Projection: Transverse Mercator

SITE LOCATION - NOT TO SCALE

Drawing Title

Mammal Signs South

Project Title

Proposed Cunlaghfadda Green Energy Project

Project No.	Drawing No.	Scale
220825	6-10b	1:4,500
Drawn By	Checked By	Date
MNR	KB	09/04/2026

Email: info@mkofireland.ie / Website: www.mkofireland.ie

6.4.2.4 Marsh Fritillary

Suitable marsh fritillary habitat within the Site was identified and mapped during multi-disciplinary ecological walkover surveys. Dedicated marsh fritillary larval web surveys were undertaken within the suitable habitat within the Site between 2023 and 2025.

While no larval webs were recorded during the surveys undertaken in 2023 and 2024, active larval webs were identified in several areas during repeat surveys in 2025. A total of 41 larval webs were identified in 2025, primarily as a core population within the area of Annex I *Molinia* meadow to the south of Turbine 4 (36 webs), with sparse records also within areas of cutover bog and wet grassland to the north of Turbine 3 (5 webs). No webs were identified within the footprint of the Proposed Project, with the nearest web located approximately 2.5m from the temporary hardstand areas associated with Turbine 3. Additional areas of suitable habitat were identified to the north of Turbine 4, west of Turbine 3, southwest of Turbine 6 and west of the proposed met mast location, however no larval webs were located in these areas.

Habitat condition assessments for marsh fritillary were also undertaken within each area of identified suitable habitat for marsh fritillary within the Site. Of these, five areas were assessed as being in *Good Condition* per NBDC guidelines due to the relative abundance of devil's-bit scabious (*Succisa pratensis*), the larval foodplant, as well as well-structured vegetation and a low cover of scrub. A further five areas were classified as *Suitable (Under-grazed)* as there was an abundance of devil's-bit scabious, however the vegetation structure was generally tall (>25cm) and unstructured. A single area was classified as *Unsuitable* due to a low abundance of devil's-bit scabious within generally tall (>25cm) swards.

A map showing larval web records, as well as areas of suitable marsh fritillary habitat, is shown in Confidential Appendix 6-7.

6.4.2.5 Bats

Full details of results of bat surveys undertaken in Spring, Summer and Autumn 2025 are provided in the Bat Report (Appendix 6-2) and are summarised in this section. All survey and detector locations are shown in Figure 3-1 in the Bat Report.

Seven static detectors were deployed at or near the Proposed Wind Farm turbine locations during each survey season in accordance with NatureScot (2021) guidance. In addition, a bat habitat appraisal, roost inspections, dusk emergence surveys and manual activity surveys were undertaken.

The static surveys recorded a total of 34,559 bat passes during the 2025 survey period. Activity was dominated by common pipistrelle (n = 11,590), followed by Leisler's bat (n = 10,461) and soprano pipistrelle (n = 10,414). Lower levels of activity were recorded for *Myotis* spp. (n = 1,305), brown long-eared bat (n = 404), lesser horseshoe bat (n = 12) and Nathusius' pipistrelle (n = 2). Overall, bat activity was highest during the spring survey period, with broadly similar activity levels recorded during the summer and autumn periods. Common pipistrelle and Leisler's bat activity was highest in spring, while soprano pipistrelle activity was greatest in autumn. *Myotis* spp. and brown long-eared bat were recorded at low levels throughout the survey period, with relatively higher activity recorded in spring. Lesser horseshoe bat was recorded infrequently in spring and autumn, while Nathusius' pipistrelle was recorded only during the autumn survey period.

Median activity levels varied across the Site by detector location and season, with clear spatial patterns evident. Higher levels of bat activity were recorded at detector D06 during the spring survey period and at detector D03 during the autumn survey period, while lower activity levels were recorded across the remaining detector locations and seasons. Overall, bat activity across the Site was predominantly *Low* at most detector locations based on median values, with *Moderate* and *High* activity recorded at specific locations, particularly at D03 and D06. Elevated activity was associated with detectors located adjacent

to linear features such as treelines and hedgerows, while lower activity was recorded in more open habitats.

Nightly variation in activity was also observed, with increased activity occurring during late spring and early autumn periods. Leisler's bat exhibited distinct within-night variation, with activity distributed throughout the night during spring and summer, and more pronounced activity around sunset and sunrise during autumn, indicating seasonal behavioural changes consistent with increased movement or transitional activity.

The manual activity transect surveys, carried out during each survey season, covered accessible tracks within the Site, including areas around turbine locations and central sections of the Site. The species composition recorded during transects was similar to the static detector results, except that *Nathusius' pipistrelle* and lesser horseshoe bat were not recorded during manual surveys. Activity was recorded sporadically during the transects, reflecting the open nature of the Site, and was mainly associated with the limited treelines, hedgerows and forestry edges present, which provide foraging habitat and commuting corridors.

During the bat habitat appraisal, three structures within 268m of proposed Turbine 5 were inspected for bat roosting potential (see Figure 3-1; Appendix 6-2 Bat Report. One structure (Structure 2), located 100m from Turbine 5, was assessed as having *Negligible* suitability and two structures (Structures 1 and 3) located 140m and 150m from Turbine 5, respectively, were assessed as having *Low* suitability for roosting bats. The two structures assessed as having *Low* suitability were subject to dusk emergence surveys, which confirmed bat roosts in both structures. Emergence surveys recorded three soprano pipistrelles emerging from Structure 3 in spring, one soprano pipistrelle emerging from the same structure in autumn, and 16 bats emerging from Structure 1 in summer, identified as soprano pipistrelle and Leisler's bat.

Within the Proposed Grid Connection footprint, the majority of trees inspected were assessed as having no roosting potential, although a small number were identified as supporting features suitable for individual bats (PRF-I). Trees within the Turbine Delivery Accommodation works areas also included a small number with PRF-I. However, no evidence of bat roosts or bat use was identified in any of these trees during the surveys. Habitats within the Site were predominantly assessed as providing *Low* suitability for commuting and foraging bats, with *Moderate* suitability associated with treelines, hedgerows, scrub, woodland edges and the pond habitat. No habitats within the Site were assessed as offering *High* suitability for commuting or foraging bats.

6.4.2.6 Reptiles and Amphibians

During the aquatic baseline surveys, Triturus Environmental Ltd. recorded smooth newt (*Lissotriton vulgaris*) at two survey locations. The small pond within the Site located approximately 19m from the proposed Turbine 5 in the southeast of the Site, and approximately 12m from the proposed internal cabling route, entirely outside of the proposed infrastructure footprint. This pond was found to support a low density of early stage smooth newt efts. Additionally, at survey site L2 in the south of Drumady Lough (see Figure 2.1 of Appendix 6-3 for survey location details), a low density of juvenile smooth newt were recorded from the shallow littorals along the eastern shore. Newts were not detected at these locations during the suite of aquatic surveys undertaken in 2023. Breeding sites of smooth newts vary but typically include still or slow flowing waterbodies ranging from ditches to small/medium ponds and large lakes (O'Neill *et al.*, 2004; Buckley, 2012). During breeding, females require broadleaved aquatic vegetation in which to lay their several hundred eggs individually in the folds of the vegetation in or near the water using their hind feet. In the pond within the Site, it was noted that the smooth newt efts appeared to be confined to areas of littoral soft rush stands, which provide the necessary shelter for breeding. Following egg laying, newt efts then develop slowly, with the majority emerging between July and September when they emerge from the ponds to the surrounding vegetation (Inns, 2009) where they will remain in their terrestrial life stage until reaching sexual maturity at 2-3 years. Newts usually remain within approx. 80m of a suitable waterbody. However, some are known to travel up to 250m to find suitable breeding conditions. As such, the habitats within 80m of the pond on Site is considered to

encompass the core terrestrial habitat for the breeding newt population during their terrestrial life stages. The breeding season (courting, mating and egg-laying) is during March - June (Inns, 2009) after which adults will also return to terrestrial habitats to seek refuge under vegetation, logs or rocks.

Newts primarily hibernate in terrestrial habitats under logs, hedgerows, and dense vegetation however some are known to overwinter in ponds. It was observed that the pond on Site was bordered to the west by a field boundary featuring an old stone wall (BL1) which potentially serves as a winter hibernacula for adult newts. Following hibernation, adult newts then return to freshwater breeding sites from late January to March depending on ambient air temperature, repeating the cycle outlined above (O'Neill *et al.*, 2004; Inns, 2009).

Live adult common frogs (*Rana temporaria*) were also recorded within the Site, particularly within the cutover bog and wet grassland habitats in the eastern portions of the Site. No breeding activity was recorded for the species, however suitable habitat for this species is abundant within the Site.

Although no records of common lizard (*Zootoca vivipara*) were identified during the desk study or during field surveys within the Site, suitable habitat for this species exists within the Site. Common lizard hibernate throughout October to March, often in groups²⁷. They have a preference for sheltered frost-free spots, under rubble or stones, or old tree roots and in hedge banks²⁸. Stone walls in particular can provide suitable hibernation sites for common lizard. Vegetated stone walls were recorded within the Site and as such could provide suitable hibernation sites for this species.

6.4.2.7 Fisheries and Aquatic Fauna

Full details of results of aquatic surveys undertaken in July 2025 in watercourses hydrologically downstream of the Site are provided in the Aquatic Baseline Report (Appendix 6-3) and are summarised in this section. The 2025 survey findings form the core dataset for assessment and are supplemented by data from previous aquatic baseline surveys undertaken in 2023, where relevant. The locations of the survey sites (n=8) are outlined in Table 6-4 above, and all survey locations are shown in Figure 2.1 in the Aquatic Baseline Report (Appendix 6-3).

The following has been summarised from the baseline report.

6.4.2.7.1 Watercourses

The two watercourses surveyed in the vicinity of the Site, the Meander River and the River Robe, were lowland, alkaline channels that had been historically modified (straightened and or deepened). Historical straightening and deepening of watercourses (as has occurred within the Meander River) removes habitat and hydromorphological heterogeneity, encourages siltation of substrata and results in an irreparable reduction in fisheries potential, particularly for salmonids but also lamprey and European eel (O'Grady *et al.*, 2017, O'Grady, 2006 cited in Aquatic Report).

The invasive macrophyte Canadian pondweed (*Eloдея canadensis*) was recorded at site B1 on an unnamed River Robe tributary and was abundant in both Drumady Lough basins (L1 & L2). The species is relatively widespread in Ireland and was listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) before its removal in 2015 (S.I. 355 of 2015)²⁶.

6.4.2.7.2 Fish Species

Both the Meander River and unnamed Robe tributary were found to support brown trout populations during surveys undertaken in 2025 and 2023. Fish abundances and distributions recorded in 2025 were

²⁷ <https://iwt.ie/wp-content/uploads/2017/09/WL42-Lizzards-eng.pdf>

²⁸ <https://www.arguk.org/info-advice/id-guides/529-dragons-in-the-hills-the-amphibian-and-reptiles-of-northern-ireland/file>

similar to those recorded in 2023, with greater numbers of brown trout recorded at sites A3 and B2 in 2025 where superior nursery and spawning habitats were located. No Atlantic salmon were recorded, in keeping with data for the wider survey area. Lamprey (*Lampetra* sp.) were recorded in low densities at sites A2 and A3 on the Meander River only (Table 3.1 of the Aquatic Baseline Report), where sub-optimal and limited nursery habitat was present. Suitability for lamprey was typically poor given a paucity of spawning habitat (clean gravels) and organic-rich soft sediment >5cm in depth required for healthy populations (Appendix A of the Aquatic Baseline Report). Despite widespread suitability, no European eel were recorded during electro-fishing surveys undertaken in 2023 or 2025. However, eel were detected in eDNA samples from both the Meander River (A3) and the Robe tributary (B2) (Appendix B of the Aquatic Baseline Report). Drumady Lough north and south basins (sites L1 & L2) were also of high suitability for eel.

In summary, the following fish species were recorded during the aquatic baseline surveys.

- **Brown trout** (*Salmo trutta*) were recorded from 3 no. sites in total (A2, A3 and B2).
- **Lamprey ammocoetes** (*Lampetra* sp.) were recorded from 2 no. sites (A2 and A3).
- **Three-spined stickleback** (*Gasterosteus aculeatus*) were recorded from 4 no. sites (A1, A2, A3 and B1).
- **Pike, minnow and stone loach** (*Esox lucius*, *Phoxinus phoxinus*, *Barbatula barbatula*) were also recorded from site B2.

6.4.2.7.3 White-clawed crayfish

White-clawed crayfish were recorded from site A2 and A3 on the Meander River, with crayfish remains also recorded in otter spraint at site A2. White-clawed crayfish were also recorded from sites B1 and B2 on an unnamed River Robe tributary at low and very high densities, respectively. Crayfish distributions recorded in 2023 and 2025 were similar.

6.4.2.7.4 eDNA analysis

In support of site surveys, composite water samples were collected from the Meander River (site A3) and an unnamed tributary of the River Robe (B2) in July 2025 and analysed for lamprey (*Lampetra* sp.), European eel, freshwater pearl mussel (*Margaritifera margaritifera*) and crayfish plague (*Aphanomyces astaci*) environmental DNA (eDNA).

In support of electro-fishing surveys, lamprey eDNA was detected at site A3 on the Meander River. Whilst not recorded during electro-fishing, European eel eDNA was detected at both sites A3 and B2. These results were considered as evidence of the species' presence at and or upstream of the sampling locations.

No crayfish plague or freshwater pearl mussel eDNA was detected at the two riverine sampling sites in 2023 or 2025. These results were considered as evidence of the absence of crayfish plague and freshwater pearl mussel at and or upstream of the sampling locations.

6.4.2.7.5 Kick-sampling and Q-Value

No rare or protected macro-invertebrate species (according to national red lists) were recorded in the biological water quality samples taken from 5 no. riverine sites or sweep samples collected at 3 no. lacustrine sites in July 2025.

Site A2 on the Meander River and B2 on the unnamed Robe tributary achieved **Q4 (good status)** water quality in July 2025 and thus met the target good status ($\geq Q4$) requirements of the European Union Environmental Objectives (Surface Waters)(Amendment) Regulations 2019 and the Water Framework Directive (2000/60/EC as amended). This was given the presence of EPA group A (most pollution sensitive) taxa in at least fair numbers ($\geq 5\%$ of total sample abundance), namely the flattened mayflies *Ecdyonurus dispar* or *Heptagenia sulphurea*. Whilst both of these group A species were also present at

site B1, the site achieved **Q3-4 (moderate status)** given they were only recorded in low numbers (<5% of total sample). Thus, this site did not meet the qualifying criteria for good status as set out by Toner *et al.* (2005).

Sites A1 and A3 on the Meander River achieved **Q3 (poor status)** based on a dominance of pollution tolerant EPA group C and D species such as freshwater shrimp (*Gammarus duebeni*) and freshwater hoglouse (*Asellus aquaticus*). It should be noted that the rating for site A1 was tentative due to poor flows and an absence of riffle areas for sampling at the time of survey (as per Toner *et al.*, 2005).

Siltation and eutrophication of riverine watercourses was noted during the surveys and is known to be a primary threat to water quality in the survey area, in addition to hydromorphological modifications (EPA, 2018, 2019 cited in Aquatic Report).

6.4.2.8 Other Faunal Species

A range of other invertebrate species were recorded within the Site, including dragonflies, damselflies, beetles, butterflies including peacock butterfly, ringlet butterfly and small copper butterflies, and moths including emperor moths, emperor hawk moths and fox moths. Habitat for invertebrate species is abundant within the Site and the wider environment.

6.4.3

Identification of Key Ecological Receptors

Table 6-10 lists all identified receptors and assigns them an ecological importance in accordance with TII (2009) Guidelines. This table also provides the rationale for this determination and identifies the habitats and species that are Key Ecological Receptors (KERs). The potential for significant effects on identified ecological receptors is considered in Section 6.5 below. Following the impact assessment mitigation measures are incorporated into the Proposed Project where required, to avoid potential significant impacts on these KERs.

Table 6-10 Identification of Key Ecological Receptors within the ZoI of the Proposed Project

Ecological feature or species	Reason for inclusion as a KER	KER
Designated Sites		
European Designated Sites	The following Special Areas of Conservation are identified in the AA Screening as being within the Likely ZoI and are assessed fully in the NIS that accompanies this application: ➤ River Moy SAC [002298] ➤ Balla Turlough SAC [000463] These sites are assigned International Importance and included as a KER as there is potential for indirect effects on them due to deterioration of water quality. Note: SPAs within the Likely ZoI are considered in Chapter 7 Birds and in the NIS with respect to potential <i>ex-situ</i> effects.	Yes
Nationally Designated Sites	The following Nationally Designated Sites were identified as being within the ZoI of the Proposed Project: ➤ Balla Turlough pNHA [000463] ➤ Lough Carra/Mask Complex pNHA [001774] These sites are assigned National Importance and included as a KER as there is potential for indirect effects on them due to deterioration of water quality and <i>ex-situ</i> effects on bird populations.	Yes
Terrestrial Habitats		
➤ Raised bog (PB1)	A number of areas of uncut raised bog were identified within the Site. The area of uncut raised bog to the west of the Site, the southern corner of which is located within the Site, is assigned County Importance. This is because the central sections of this habitat were found to be characterised by vegetation communities which correspond to the Annex I habitat 'Active raised bog' with other, drier areas having potential to conform to the Annex I habitat 'Degraded raised bogs still capable of natural regeneration'. The marginal areas located to the north of proposed Turbine 1 are degraded and subject to ongoing peat cutting at the facebank. The area of remnant raised bog to the east of proposed Turbine 3 is assigned Local Importance (Higher Value). This area occurs as an isolated area of highly degraded high bog which does not conform to any Annex I habitats. However, it is	Yes

	considered to be of high biodiversity in a local context and provides habitat connectivity through the Site. While highly fragmented, the small sections of remnant raised bog within cutover bog (PB4/PB1) in the south of the Site are assigned County Importance as the vegetation communities present suggest they have potential to conform to the Annex I habitat ‘Degraded raised bogs still capable of natural regeneration’. These areas are located to the east of the existing access track and are surrounded by drains and a complex of cutover bog. The Proposed Project has been designed to avoid all areas of remnant raised bog habitat, with no infrastructure proposed within any of these habitats. Nonetheless, given the sensitivity of raised bog habitat and the proximity of elements of the Proposed Project to this habitat, raised bog has been included as a KER.	
➤ Cutover bog (PB4) and associated habitats, including transition mires which has established on cutover bog	Much of the cutover bog within the Site is heavily drained, species-poor and subject to ongoing turbary, with large areas of bare peat. Nonetheless, areas of wetter, revegetating cutover bog characterised by a higher plant species richness including species typical of raised bog habitat, were also recorded within the Site. While these wetter areas were not found to correspond to Annex I Active raised bog (as per Smith and Crowley 2020), collectively the mosaic of cutover bog habitats within the Site have high biodiversity value in a local context and are therefore considered to be of Local Importance (Higher Value). The area of transition mire and quaking bog which has developed on cutover bog in the east of the Site is assigned County Importance as relevé data collected at this location identified that it conforms to the Annex I habitat ‘Transition mires and quaking bogs’. The Proposed Project has been specifically designed to avoid this habitat which is located outside of and approximately 40m from the nearest proposed infrastructure (internal cabling for the proposed Turbine 4). While the Proposed Project has been specifically designed to avoid the wettest, most species-rich areas of cutover bog, including the area identified as transition mire, the potential for significant effects on this habitat as a result of habitat loss and potential drainage impacts is further considered below and therefore cutover bog is included as a KER.	Yes
➤ Improved agricultural grassland (GA1) ➤ Dry meadows and grassy verges (GS2)	Much of the Proposed Project infrastructure is located within Improved agricultural grassland (GA1) This habitat is highly modified and in the context of the Site is a species-poor habitat. It is therefore of Local Importance (Lower Value) and is not included as a KER. Dry meadows and grassy verges (GS2) is considered to be of Local Importance (Higher Value) due to the comparative species diversity and provision of shelter and foraging habitat for small mammals and pollinators compared to more intensively managed grassland habitats. Dry meadows occur only in small areas of the Site, often as a verge habitat, and the loss of this habitat will be very small in the context of the wider surroundings. For these reasons, this grassland habitat is also not included as a KER.	No

➤ Wet grassland (GS4), including <i>Molinia</i> meadows	Wet grassland habitats within the Site include large areas of agricultural wet grasslands. These habitats are generally highly modified, grazed and species-poor and are therefore assigned Local Importance (Lower Value) and not included as a KER. Areas of species-rich wet grassland were identified at a number of locations within the Site. Areas of wet grassland which were found to conform to the Annex I habitat '<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] are considered to be of County Importance. Other areas of relatively species-rich wet grassland were recorded at the location of the proposed Turbine 4 where the species composition also included elements of wet-heath type vegetation and in the south of the Site on cutover bog and in the east of the Site at the location. These areas of wet grassland have been assigned Local Importance (Higher Value) based on their high degree of biodiversity at a local level and potential to support other species such as small mammals, however they were not found to conform to any Annex I habitat type. The areas of Annex I <i>Molinia</i> meadow were identified at an early stage in the Project design and the layout of the Proposed Project was specifically designed to avoid these areas. There will be no direct loss of these habitats. Nonetheless, there is potential for indirect effects on this habitat where it occurs in close proximity to the construction footprint. In addition, there will be some loss of species rich wet grassland at the location of Turbine 4. Therefore areas of species rich wet grassland, including those areas that conform to the Annex I habitat <i>Molinia</i> meadow, are included as a KER.	Yes
➤ Mixed broadleaved/conifer woodland (WD2) ➤ Mixed conifer woodland (WD3)	These woodland habitats, while small in extent within the Site, are considered to be of Local Importance (Higher Value) as they provide habitat for species such as protected mammals, provide connectivity to the wider landscape and maintain links between features of higher ecological value. There is no infrastructure proposed within these woodland habitats and therefore no potential for loss of or impacts on these habitats. As such these habitats are not included as KERS and not considered further in this assessment.	No
➤ Conifer plantation (WD4)	There will be loss of commercial conifer forestry to facilitate the Proposed Project. This habitat where it occurs within the Site is very species poor in both canopy and ground layer and is limited in value to local wildlife. It is assigned Local Importance (Lower Value) and it is not considered as a KER.	No
➤ Scrub (WS1) ➤ Scrub on Cutover bog (PB4/WS1) ➤ Dry meadows and grassy verges and Scrub mosaic (GS2/WS1)	Areas of Scrub within the Site are assigned Local Importance (Higher Value). This is on the basis that they consist of semi-natural habitats with a high biodiversity value in the local area but do not correspond to habitats that are listed on Annex I of the EU Habitats Directive. As there will be some loss of Scrub habitat, including habitat comprising a mosaics of Scrub and grassland, this habitat has been included as a KER	Yes
➤ Treelines (WL2) ➤ Hedgerows (WL1)	Hedgerows, treelines and stone walls have all been assessed as being of Local Importance (Higher Value) as these linear habitats provide connectivity to the wider landscape and provide supporting habitat for a wide variety of faunal species. In order to facilitate construction of the Proposed Project and	Yes

	maintain a separation in distance between the proposed turbine blades and hedgerow features (likely to be used by commuting and foraging bat species locally), there will be some loss of hedgerow/treeline habitat within the Site.	
➤ Tilled land (BC3) ➤ Stone walls and other stonework (BL1) ➤ Buildings and artificial surfaces (BL3) ➤ Spoil and bare ground (ED2) ➤ Recolonising bare ground (ED3)	These habitats are common and widespread in the wider area. The habitats have been assessed as of Local Importance (Lower Value) as they are largely associated with artificial site access tracks and/or are of low biodiversity value. For this reason, they have not been identified for further assessment and are not included as a KER. Please note, where stone walls have been identified as potentially providing winter hibernacula for smooth newts where they occur in proximity to the small pond within the Site, this loss is considered in relation to amphibians as a KER below.	No
Aquatic habitats		
➤ Eroding/upland rivers (FW1) and Depositing/lowland rivers (FW2)	The Meander River flows along the southern boundary of the Site. In addition, there are a number of EPA mapped watercourses located hydrologically downstream of the Site via drainage channels draining the Site, i.e. an un-named tributary of the River Robe which outfalls from Drumady Lough to the east of the Site and the River Robe itself, located approximately 5.6km downstream, both lowland depositing rivers. Furthermore an unmapped stream, classified as an eroding/upland river was recorded in close proximity to proposed road widening works along the proposed Turbine Delivery Route. The watercourses mentioned above have been assigned Local Importance (Higher Value) as they have high biodiversity value in a local context and help provide connectivity to the wider landscape. As there is potential for indirect effects on the above watercourses, these have been included as KERs.	Yes
➤ Drainage ditches (FW4)	Drainage ditches are found throughout the Site, particularly along field boundaries and throughout the areas of cutover bog. They are highly modified and species poor where they occur, but provide some connectivity with natural watercourses downstream of the Site. As such they are assessed as being Local Importance (Higher Value) and are considered further as a KER due to potential connectivity with higher value watercourses.	Yes
➤ Pond (Other)	The small pond located close to Turbine 5 has been assigned Local Importance (Higher Value) given the presence of a smooth newt population identified during baseline aquatic surveys in 2025 (see Appendix 6-3). The pond itself was heavily enriched and turbid at the time of survey with a significant cyanobacterial bloom due to the poaching and use of the field by cattle. However, due to its provision of breeding habitat for smooth newt, this habitat is included as a KER for further assessment. Please note that the amphibian populations using this pond are considered separately below.	Yes
Fauna		

Badger	Badger as an ecological receptor has been assigned Local Importance (Higher Value) on the basis that the habitats within the Site are utilised by a locally occurring badger population of Local Importance. It should be noted that no badger sets were recorded within the Site. However, given the observation of an individual within the Site and tracks and prints along field boundaries, the species is known to inhabit the area, therefore potential for direct and indirect impacts on badger are considered further in this assessment and the species has been included as a KER.	Yes
Otter	The Meander River, which flows along the southern boundary of the Site, is hydrologically connected to the River Moy SAC approximately 4.9km downstream. Otter utilising the Meander River downstream of the Site have potential to be associated with the SAC and therefore are assigned International Importance on a precautionary basis. Signs of otter were also recorded at Drumady Lough and along the stream which outfalls from the lake to the south. Populations of otter occurring in these watercourses are considered to be of Local Importance (Higher Value). As such, otter are considered as a KER.	Yes
Irish hare	Irish hare were recorded within the Site and surrounding areas on several occasions during the extensive ecological and ornithological surveys undertaken. All observations were those of individuals foraging and travelling, and no breeding sites for Irish hare were identified in any locations. As such, this species is assigned Local Importance (Higher Value) as no evidence of populations of Irish hare of greater than local importance were recorded utilising the Site. Additionally, while there are areas of suitable habitat for this species within the Site, including grasslands and bogs, the footprint of the Proposed Project is relatively small in the context of the Site and the wider landscape and will be predominantly restricted to species-poor cutover bog, conifer plantation and agricultural grasslands as well as small areas of scrub. The areas of these habitats to be lost are very small in comparison to their overall cover within the Site. As such, no significant disturbance or habitat loss effects are anticipated, therefore this species is not included as a KER for further assessment.	No
Bats	Bats have been recorded commuting and foraging across the Site. The Site supports a bat assemblage of Local Importance (Higher Value), dominated by common pipistrelle, soprano pipistrelle and Leisler's bat, with lower levels of activity recorded for <i>Myotis</i> spp., brown long-eared bat, lesser horseshoe bat and Nathusius' pipistrelle. Roosting bats were confirmed within two structures within the Site; however, these structures will be retained as part of the Proposed Project. Limited roosting potential (i.e. PRF-I) was identified within trees along the Proposed Grid Connection and Turbine Delivery Accommodation works areas; however, no evidence of bat roosts or bat use was recorded in these features during surveys, and no such features will be directly impacted by the Proposed Project.	Yes

	The Proposed Project has the potential to result in direct and indirect effects on bats, including disturbance, loss or alteration of commuting and foraging habitat, and potential collision risk associated with turbine operation. Therefore, bats are considered a KER and are assessed further in this chapter.	
Additional protected mammals i.e., pine marten, Irish stoat, red squirrel, pygmy shrew, hedgehog	No other protected mammals were identified within the Site during any of the extensive ecological and ornithological surveys undertaken. The recorded evidence therefore suggests that despite the presence of areas of suitable habitat within the Site for a range of protected mammals, the Site is not utilised by populations of protected mammals of higher than local significance and no potential for significant effects on other mammal species at the population level have been identified. Given the relatively small footprint of the Proposed Project relative to the overall Site, and the fact that areas of suitable mammal habitat to be lost are small relative to their overall cover within the Site, other protected mammal species are unlikely to be significantly affected by the Proposed Project and are not included as KERs.	No
Marsh fritillary	During dedicated marsh fritillary surveys undertaken within the Site, a breeding population of marsh fritillary was identified within areas of suitable habitat in the south of the Site. Given the Annex II protection of this species, the population within the Site is considered to be of County Importance . Therefore, the potential for impact on this species must be considered and they are considered as a KER for further assessment.	Yes
Smooth newt	During baseline aquatic surveys of the Site in 2025 (see Appendix 6-3) the small pond within the Site was found to support a population of early stage smooth newt efts of Local Importance (Higher Value) . Due to the proximity of the proposed Turbine 5 to this pond there are potential disturbance and mortality effects on this breeding population of smooth newt, as well as some loss of an adjacent stone wall which was identified as providing a potential winter hibernacula for the species. Therefore, smooth newt is included as a KER.	Yes
Common frog	Common frog were recorded within the Site on several occasions, particularly within the cutover bog and wet grassland habitats in the eastern portions of the Site. This species is assigned Local Importance (Higher Value) as no evidence of populations of common frogs of greater than local importance were recorded utilising the Site. Additionally, there is an abundance of suitable habitat for this species within the Site, including wet grasslands and bogs, and the footprint of the Proposed Project is relatively small in the context of the Site and the wider landscape. The areas of these habitats to be lost are very small in comparison to their overall cover within the Site. As such, no significant disturbance or habitat loss effects are anticipated, therefore this species is not included as a KER for further assessment.	No
Common lizard	It is considered that the Proposed Project will not result in a significant loss of suitable habitat for reptiles. No lizard were recorded within the Site. Additionally, the desk study did not provide any records of common lizard within the hectad in which the Site is located. No likely significant effects on this	No

	species are anticipated and therefore further survey/ assessment was not deemed necessary.	
Aquatic and Fisheries Species		
Aquatic and Fisheries Species	The Meander River, which flows along the southern boundary of the Site, is hydrologically connected to the River Moy SAC approximately 4.9km downstream. As aquatic and fisheries species (e.g. white-clawed crayfish, lamprey spp.) are listed as QIs of the SAC, the downstream populations of these faunal species associated with the SAC are assigned International Importance. As such, they are considered as a KER. Watercourses and waterbodies downstream of the Site including Drumady Lough, an unnamed tributaries of the River Robe and the Meander River (outside of the SAC), are known to support a number of aquatic species (see Section 6.4.2.7 and Appendix 6-3 Aquatic Baseline Report for further detail). As these populations are located outside of any European Sites, they are considered of Local Importance (Higher Value). There is potential for indirect effect on these features as a result of impacts on water quality. Aquatic and fisheries species are therefore included as a KER for further assessment.	Yes
Invasive Species		
Japanese knotweed (<i>Reynoutria japonica</i>)	The invasive plant species Japanese knotweed is present across the south of the Site, spread widely through areas of cutover bog and wet grassland on cutover bog. This species is listed as a species of national concern under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), and is included as a KER as it occurs within the footprint of the Proposed Project along the main site access route, where the public road is proposed for upgrade.	Yes

6.5 Ecological Impact Assessment

6.5.1 Do-Nothing Effect

If the Proposed Project were not to proceed, it is unlikely that there would be any significant changes to the current land use practices within the Site. The majority of the lands within the Proposed Project area would continue to be managed as they are now either as forestry, improved agricultural grassland and associated grazing, or for turbary activities. The other habitats identified within the Site, including stone walls, treelines, hedgerows, drains etc. would likely remain in a similar condition.

In some areas where scrub succession is establishing, including on cutover bog habitats, this scrub may develop if not managed by the landowners and in time, this may undergo succession to small areas of woodland. There is also potential that wetter, species-rich areas of cutover bog could develop into peat-forming active raised bog if left to develop and not subject to continued turf cutting. The general biodiversity on the Site, as described in this chapter, would likely remain similar to its current state as activity levels and land use would not change. It is possible that due to the continuation of local land practices, that the extensive stands of Japanese knotweed in the area would continue to spread significantly and establish into new areas of the Site through accidental contamination on tyres and machinery.

The opportunity to harness the wind energy resource of County Mayo would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment in this sector would also be lost.

Furthermore, as this application includes a Biodiversity Management and Enhancement Plan (Appendix 6-4) and a site-specific Invasive Species Management Plan (ISMP) presented in Appendix 6-5 to be implemented during the Proposed Project's operation, the opportunity to enhance the site for biodiversity, at a local scale, would also be lost.

6.5.2 Likely Significant Effects During Construction Phase

6.5.2.1 Effects on Habitats During Construction

Potential impacts on habitats during construction of the Proposed Project include direct loss of habitat within the Proposed Project footprint, drainage related impacts on habitats outside of but in close proximity to the Proposed Project footprint and indirect deterioration of aquatic habitats due to deterioration of water quality.

The Proposed Project will result predominantly in the loss of areas of improved agricultural grassland, species poor agricultural wet grassland and dry degraded but vegetated cutover bog. The improved agricultural grassland and wet grassland habitats within the footprint of the Proposed Project are of relatively low biodiversity value and are considered to be of Local Importance (Lower Value) (TII, 2009) and have not been identified as KERs in Table 6-10 above. While cutover bog within the habitat has been assigned Local Importance (Higher Value), the Proposed Project has been designed to avoid the wetter, more species rich areas of this habitat with the construction footprint of the Proposed Project predominantly located in dry, degraded and relatively species poor areas of this habitat. The potential for significant effects on cutover bog is nonetheless assessed in Section 6.5.2.1.3 below.

Table 6-11 below provides details of the extent of the habitats that will be lost to facilitate the construction of the Proposed Project. A buffer of 5m was also applied to the construction footprint for the Proposed Project footprint as there is potential for temporary habitat loss in this buffer during construction to allow for tracking of vehicles outside the footprint as drawn. These areas will be allowed

to revegetate following construction, however the habitat loss figures in Table 6-11 below include habitats within this buffer on a precautionary basis.

In addition, the habitat loss figures in Table 6-11 below allow for loss of habitat within bat buffers which will be established around turbines to discourage use of this area by bat species during the operational phase of the Proposed Project. Where relevant, mitigations to prevent these additional losses are included in the following sections.

A map showing the Proposed Project footprint overlaying the habitat map is provided in Figure 6-6a-b above.

Table 6-11 Habitats occurring within the footprint of the Proposed Project

Habitat	Area to be permanently lost to the Proposed Project footprint, and turbine bat buffer (scrub and linear vegetation only) (ha/m)	Area to be lost during construction within 5m of the Proposed Project footprint	Total area to be lost (permanent + temporary losses)	KER
Scrub (WS1)	1.5264ha	0.9110ha	2.4374ha	Yes
Dry meadows and grassy verges and Scrub mosaic (GS2/WS1)	1.0132ha	0.1015ha	1.1147ha	Yes
Hedgerows (WL1)	835m	119m	954m	Yes
Treelines (WL2)	421m	299m	720m	Yes
Cutover bog (PB4)	3.7095ha	2.0966ha	5.8061ha	Yes
Improved agricultural grassland (GA1)	3.0302ha	2.7036ha	5.7338ha	No
Dry meadows and grassy verges (GS2)	0.3252ha	0.2332ha	0.5584ha	No
Wet grassland (GS4)	4.2977ha	2.6345ha	6.9322ha*	No
Conifer plantation (WD4)	0.6560ha	0.0981ha	0.7541ha	No
Tilled land (BC3)	0.1308ha	0.0800ha	0.2108ha	No
Spoil and bare ground (ED2)	0.6645ha	0.1193ha	0.7838ha	No
Recolonising bare ground (ED3)	0.1004ha	0ha	0.1004ha	No
Stone walls and other stonework (BL1)	432m	335m	767m	No
Buildings and artificial surfaces (BL3)	0.1661ha	2.6978ha	2.8639ha	No

* including 0.0293ha (293m²) of Annex I Molinia meadow – see Section 6.5.2.1.3 below.

The Proposed Grid Connection infrastructure is located entirely within the Site and as such any habitat losses as a result of the proposed 110kV onsite substation, underground 110kV cabling and end masts connecting the proposed 110kV substation to the 110kV Castlebar to Cloon overhead line, access

tracks and all ancillary works and apparatus are encompassed within the habitat area loss figures outlined in Table 6-11 above. In addition to the above, there will be small temporary losses of improved agricultural grassland and stone wall habitats along the proposed Turbine Delivery Route. These are very small in extent and, as outlined in Chapter 4 of this EIAR, once the turbines have been delivered, road widening areas will be reseeded/reinstated.

The effects on habitats that are identified as KERs are described in the below Tables 6-12 – Table 6-17. The habitats brought forward for further assessment as described in the table above, include the following:

- Surface and groundwater (with associated fisheries and aquatic fauna)
- Raised bog (PB1)
- Cutover bog (PB4)
- Species-rich Wet grasslands (GS4) including areas classified as Annex I *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Scrub habitats: Scrub (WS1), Dry meadows and grassy verges/Scrub mosaic (GS2/WS1), Scrub on Cutover bog (PB4/WS1)
- Hedgerows (WL1) and Treelines (WL2)

The invasive species Japanese knotweed is also considered for further assessment in the following sections.

6.5.2.1.1 **Assessment of Potential Effects on Aquatic Habitats and Associated Aquatic Species**

Table 6-12 Assessment of potential for effects on aquatic habitats and associated aquatic species during construction

Description of Effect	The potential effects on water quality as a result of the Proposed Project are fully described in Chapter 9 Water of this EIAR and are described here specifically in relation to ecological receptors. The Site is crossed by a network of drainage ditches. In the south of the Site, agricultural and peat drains discharge to Lough Nambrackkeagh and Meander River, which flows along the southern boundary of the Site. The north of the Site is also drained by a network of manmade drainage features which direct water to the north towards Lough Fark. The central section of the Site drains, also via peat and agricultural drains to Drumady Lough located adjacent to the eastern boundary of the Site. A small unnamed watercourse outfalls from the south of Drumady Lough and discharges to the River Robe approximately 5.6km to the south of the Site. Additionally, an unmapped watercourse classified as an Eroding/upland river (FW1) was identified along the proposed Turbine Delivery Route and a small pond was recorded in an area of agricultural grassland within the Site. This section assesses the potential for significant effects on the above aquatic habitats and associated aquatic species including white-clawed crayfish, lamprey, salmonids, coarse fish, aquatic invertebrates and other aquatic species identified during the desk study and dedicated aquatic surveys as occurring or being likely to occur in the watercourses downstream of the Site, with the exception of smooth newt and otter which are assessed separately in Sections 6.5.2.2.2 and 6.5.2.2.4 below. Direct Disturbance and Mortality While a number of manmade agricultural, peat and forestry drains within the Site will be crossed by the Proposed Project infrastructure and require culverting, these are highly modified in nature, and do not provide optimal habitat for aquatic fauna. The Meander River although located along the southern boundary of the Site is over 300m from the nearest proposed infrastructure. Along the proposed Turbine Delivery Route, a small unmapped watercourse was identified which flows in a westerly direction towards a tributary of the River Robe. The
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	Proposed Project will require in-stream works in this location in order to facilitate the extension of an existing culvert, which will involve interaction with the channel/stream bed. A temporary flow management system will be implemented in order to isolate the works area from the flow and allow construction, which will involve temporary damming of the area and the over-pumping of water flow through the channel. This watercourse was assessed as having low suitability as a nursery and holding habitat for salmonids and low suitability as a habitat for European eel. Therefore while the stream does not provide optimal habitat for these species, there is nonetheless potential for these species to occur within the stream. As such, in the absence of mitigation, there is potential for direct disturbance and mortality of these sensitive aquatic species which may reside within the stream. Habitat Degradation - Water Quality Deterioration The construction phase of the Proposed Project will require activities including ground excavations, cement usage, tree felling, excavation dewatering and use of fuel powered machinery, all of which, in the absence of mitigation, have potential to result in deterioration of water quality as a result of run-off of pollutants to surface waters or percolation of pollutants to groundwater. There is potential for pollutants and sediment-laden surface water run-off to enter the network of drainage ditches throughout the Site. A number of these drainage ditches have hydrological connectivity with the Meander River and River Robe downstream of the Site and therefore there is potential for degradation of these downstream aquatic habitats and supporting habitat for aquatic species. There is also potential for run-off of pollutants to the watercourse within the land-take area along the proposed Turbine Delivery Route, to Drumady Lough, as well as to the pond within the Site, resulting in potential degradation of these aquatic habitats. Hydrological connectivity has also been identified between the Site and the River Moy SAC and Balla Turlough SAC/pNHA via surface water and groundwater pathways respectively and therefore there is potential for significant effects on aquatic receptors associated with these sites. The potential for significant effects on these receptors is assessed in Section 6.5.5 below and in the NIS which accompanies the planning application for the Proposed Project
Assessment of Significance Prior to Mitigation	Direct Disturbance and Mortality In the absence of mitigation, due to the in-stream works along the proposed Turbine Delivery Route, there is potential for the Proposed Project to result in a short-term, negative, likely direct effect on sensitive aquatic species that may reside within the unmapped stream. This effect would be significant at the local geographic scale. Habitat Degradation - Water Quality Deterioration In the absence of mitigation, there is potential for the Proposed Project to result in a short-term, negative indirect likely effect on the identified aquatic habitats and species which is significant at a local geographic scale in the form of habitat degradation as a result of deterioration of water quality during the construction phase of the Proposed Project. No significant effects due to direct habitat loss are anticipated, as no instream works will occur in any natural watercourse and the crossings of artificial drains relate to waterbodies that provide poor-quality habitat for fisheries and aquatic fauna.
Mitigation	Direct Disturbance and Mortality The following mitigation measures are included within Chapter 9 Water of this EIAR and will be strictly adhered to during works along the proposed Turbine Delivery Route: ➤ The works will be carried out to the specification of the OPW's <i>Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945</i>; and in consultation with Inland Fisheries Ireland;

	➤ The works will only be undertaken during low flow conditions and during a dry period between July and September (as required by IFI for in-stream works) to avoid the salmon spawning season and to have more favourable (drier) ground conditions; ➤ During the works, the water will be isolated from the works area (e.g. by over pumping or temporary damming of the channel) to prevent the entrainment of suspended solids; ➤ Sediment and pollution control measures, including silt fencing, will be installed and maintained for the duration of the works; ➤ Pollution prevention measures will be implemented with respect to hydrocarbons (refer to Section 9.5.2.5 of Chapter 9 Water) and cement-based products (Section 9.5.2.6); ➤ Pre-cast concrete units will be utilised; ➤ Water quality will be monitored upstream and downstream of the works to ensure there is no adverse effect. Works will be suspended in the event of any observed impact until corrective measures have been undertaken. In addition, the following measures will also be adhered to: ➤ All in-stream works will be undertaken in line with Inland Fisheries Ireland (2016) <i>Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters</i> and OPW (2019) <i>Environmental Guidance: Drainage Maintenance and Construction</i>²⁹. ➤ All in-stream works will be supervised by an Ecological Clerk of Works (ECoW), who will have the power to halt works if non-compliance is observed. ➤ In order to minimise causing direct physical damage and mortality of species living in the riverbed, the temporary dam will be constructed using sand bags and these will be placed by hand, such that any animals within the vicinity of the footprint will have a chance to leave for alternative suitable areas before potentially harmful effects. ➤ Prior to the commencement of works, Section 14 Authorisation from the Inland Fisheries Division of the Department of Environment, Climate and Communications will be obtained. Prior to the pumping out of water from the enclosure, electrofishing will be carried out within the dammed area and any recovered aquatic individuals will be relocated by the ECoW to suitable similar river habitat downstream of the works location, under licence. ➤ Only after electrofishing is complete and any fish species are removed, if present, may the water from within the dammed area begin to be pumped out from within this temporary works area. ➤ Machinery, construction equipment and construction materials will not enter the water; the works will only occur after the dry working area is created. ➤ All machinery, PPE and equipment used within the watercourse will be thoroughly cleaned and disinfected using a broad-spectrum cleaner (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) prior to entering the watercourse and after removal from the watercourse to ensure biosecurity is upheld and limit the spread of invasive species and infectious waterborne diseases. This will occur within a designated wash-down area, which will be underlain by a washable membrane or hard surface. Habitat Degradation - Water Quality Deterioration The pathways that would allow potential impacts to occur due to deterioration of water quality were considered in the design of the Proposed Project. The environmental management framework to be adhered to during the construction phase of the Proposed Project includes comprehensive detail regarding site set up, pollution prevention and hydrocarbon management and incorporates mitigating measures as detailed in Chapter 9 Water of this EIAR and in the Construction Environmental Management Plan (CEMP) in
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²⁹ Brew, T., Gilligan, N., 2019, *Environmental Guidance: Drainage Maintenance and Construction. Series of Ecological Assessments on Arterial Drainage Maintenance No 13. Environment Section, Office of Public Works, Trim, Co. Meath, Ireland.*

	Appendix 4-5 of the EIAR to ensure that there is no significant effect on water quality or aquatic receptors within or downstream of the Proposed Project. In addition to this, specific mitigation is provided in relation to protection of surface water quality in Chapter 9 Water of this EIAR, see Section 9.5. These mitigations relate to tree felling, earthworks, surface water quality and groundwater levels during excavations, potential release of hydrocarbons during construction and storage, release of cement-based products, contamination from wastewater disposal, morphological changes to surface watercourses and drainage patterns within the Site and the use of siltbusters. Potential effects on designated sites and potential effects arising from biodiversity management and enhancement measures are also outlined in detail. All works in proximity to watercourses will adhere to Inland Fisheries Ireland (IFI) <i>Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters</i> (2016).
Residual Effect Following Mitigation	Following the implementation of mitigation, there will be no significant residual effect on aquatic habitats or species as a result of the Proposed Project.

6.5.2.1.2 Assessment of Potential Effects on Raised bog (PB1)

Table 6-13 Assessment of potential effects on Raised bog (PB1) during construction

Description of Effect	Direct Habitat Loss The Proposed Project has been specifically designed to avoid all areas of uncut raised bog within the Site, including the areas to the east of proposed Turbine 3 and to the north of proposed Turbine 1, the southern marginal section of which is located within the Site. All areas of remnant uncut raised bog which occur within a complex of cutover bog (PB4/PB1) have also been avoided as part of the Proposed Project. Therefore, there will be no direct loss of uncut raised bog. Habitat Degradation – Drainage Effects While there will be no direct loss of uncut raised bog, this habitat is located in proximity to the proposed project infrastructure where it occurs to the north of proposed Turbine 1, east of proposed Turbine 3 and in a complex with cutover bog to the east of the existing site access track. Section 9.5.2.17 of Chapter 9 Water of this EIAR considers the potential for construction phase activities at the Site to impact peatland habitats through the alteration of the local hydrogeological regime. Deep excavations can require temporary dewatering which would impact on water levels in the surrounding lands. Due to the proximity of proposed infrastructure to these areas of remnant raised bog, (approximately 16m from proposed Turbine 1 cabling route, approximately 14m from proposed Turbine 3 cabling route and immediately adjacent to the existing access track), a potential pathway for indirect drainage related effects on this habitat arising from construction was identified. Habitat Degradation – Dust Deposition Given that construction works will take place within 50m of the raised bog habitat, the potential for impact to the habitat and associated plant communities as a result of dust deposition from construction works must be considered. Dust deposition has the potential to smother sensitive plant communities.
Assessment of Significance Prior to Mitigation	Direct habitat loss As there will be no loss of uncut raised bog habitat as a result of the Proposed Project, there is no potential for significant effects as a result of direct habitat loss. Habitat Degradation – Drainage Effects

As outlined in Section 9.5.2.17 of Chapter 9 of this EIAR, in the absence of mitigation, the potential drainage effects on areas of remnant raised bog within the Site represents a short-term, negative unlikely effect on peat water levels in the remnant uncut raised bog areas. In the absence of mitigation measures there would be no significant effect on peat water levels in the remnant uncut raised bog areas as the hydrological regime is already highly modified at the Site. The Proposed Wind Farm drainage infrastructure is consistent with the baseline environment having significantly modified drainage from its natural state. According to the Peatland Code (IUCN, 2023)³⁰, peatland is considered 'drained' if it is within 30m of an artificial drain or a natural drain formed by the presence of a hagg and gully.

There is no potential for significant effects on the remnant uncut raised bog to the north of Turbine 1 due to the following:

- The potential for effects is limited given the separation distance between the works areas and the remnant high bog (remnant high bog exists ~30m north of Turbine 1 and ~18m from the associated hardstand).
- The drainage in this areas is already heavily modified.
- Turbary peat cutting in the cutover bog areas, where Turbine 1 is proposed, has already impacted the peat water table around the margins of the remnant high bog. A ~1m high peat face bank exists around the perimeter of this high bog and water levels in the high bog adjacent to this peat face have already experienced local drawdown.
- A large drain is located between the Proposed Project location and the remnant high bog. This drain acts as a hydraulic barrier between the works area and the remnant high bog and is the primary control on water levels within the high bog.
- The presence of low permeability subsoils underlying the peat acts as a hydrogeological barrier, preventing groundwater recharge, essentially isolating the peat water table from the underlying regional groundwater system.
- No significant groundwater dewatering will be required due to the relatively shallow nature of the turbine base excavations (no piled turbine foundation are proposed).

There is no potential for significant effects on the remnant uncut raised bog to the east of Turbine 3 due to the following:

- Mitigation by avoidance – the Proposed Wind Farm layout has avoided ecological sensitive areas and there are no proposed works within or immediately adjacent to the area of remnant high bog.
- The potential for effects is limited given the separation distance between the works areas and the remnant high bog (remnant high bog exists ~28m from Turbine 3, ~16.5m from the associated hardstand and ~8.5m from the internal cabling).
- Turbary peat cutting in the cutover bog areas, where the Turbine 3 is proposed, has already impacted the peat water table around the margins of the remnant high bog. A high peat face bank, and deep drains, exists around the perimeter of this high bog and water levels in the high bog adjacent to this peat face have already experienced local drawdown.
- The presence of low permeability subsoils underlying the peat acts as a hydrogeological barrier, preventing groundwater recharge, essentially isolating the peat water table from the underlying regional groundwater system.
- No significant groundwater dewatering will be required due to the relatively shallow nature of the turbine base excavations (no piled foundation are proposed).

There is no potential for significant effects on the mosaic cutover bog with small areas of remnant uncut raised bog to the south of Turbine 3 and adjacent to the main access track through the Site due to the following:

³⁰ https://www.iucn-uk-peatlandprogramme.org/sites/default/files/2023-03/Peatland%20Code%20V2%20-%20FINAL%20-%20WEB_2.pdf

	➤ The works proposed in this area of the Site are limited, comprising of widening of an existing access track. ➤ These works do not involve any significant or deep excavations or significant alteration of drainage patterns. ➤ Deep drains currently exist along the access track and act as a hydraulic barrier between the track and the cutover bog. ➤ This area has been subject to turbary peat cutting and is currently in a modified drainage state, reducing its sensitivity to further hydrological/hydrogeological changes. ➤ The presence of low permeability subsoils underlying the peat acts as a hydrogeological barrier, restricting groundwater recharge, essentially isolating the peat water table from the underlying regional groundwater system. ➤ No groundwater dewatering will be required due to the shallow nature of the works. In relation to the internal cabling routes associated with proposed Turbines 1 and 3 which are located approximately 16m and 14m, respectively, from the margins of remnant raised bog, any potential drainage effects associated with the internal cabling trenches will be very minor and will not extend any significant distance from the excavation (a maximum of ~3-5m). Furthermore, the trench excavations will be temporary, transient and shallow (~1m). Any effects will be localised and short-lived/temporary. The Site is a cutover peatland which exists in a heavily modified hydrological condition. The baseline environment includes deep drains and active peat cutting and this is the main control on water levels within the areas of remnant high bog and the regenerating cutover bog. Furthermore, due to the local hydrogeological regime (low permeability soils/subsoils) and the separation distance between the proposed work areas and the areas of remnant raised bog and regenerating cutover bog, the potential for effects on the peat water table in the remnant high bog is negligible. Therefore, there is no potential for significant effects on uncut remnant raised bog habitat as a result of drainage due to the proposed infrastructure. Habitat Degradation – Dust Deposition As per Chapter 10 Air Quality of the EIAR, per the Institute of Air Quality Management in the UK (IAQM) guidance document ‘<i>Guidance on the Assessment of Dust from Demolition and Construction</i>’³¹, the areas of remnant raised bog habitat within the Site are considered a ‘High’ sensitivity receptor. The remnant raised bog habitats are located within the 20m IAQM dust deposition band at their closest. Taking a precautionary approach, the potential for indirect effects on raised bog due to habitat degradation arising from dust deposition as a result of adjacent construction works has the potential to be a short-term, slight negative effect which would be considered significant at the local geographic scale in the absence of mitigation.
Mitigation	Mitigation by Design The Proposed Project layout has been specifically designed to avoid direct loss of uncut raised bog habitats and to minimise impacts thereon. This was achieved through an early-stage ecological constraints study informed by field surveys and habitat mapping. The Proposed Project layout was thereby altered through the iterative design process to avoid important peatland habitats, and as a result there will be no direct loss of raised bog within the Site or significant drainage effects on this habitat either within or beyond the Site. The potential for significant effects on this habitat due to habitat degradation arising from dust deposition during construction was identified above and therefore mitigation measures in relation to this are provided below.

³¹ <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf>

	While there will be no loss of remnant uncut raised bog as a result of the Proposed Project, as an additional precautionary measure, the following measures will be implemented during the construction phase: ➤ Prior to the commencement of construction works, temporary fencing will be erected along the western margins of the remnant raised bog adjacent to the existing access track which is proposed for upgrade, as shown in Figure 6-11a-b below. The erection of this fencing will be overseen by the ECoW. This will act to create an exclusion zone around the works and prevent encroachment onto and loss of any remnant raised bog which occurs adjacent to the proposed construction footprint. ➤ This fencing will be maintained throughout construction and will be checked for integrity at regular intervals by the ECoW on site. Habitat Degradation – Dust Deposition A range of construction phase mitigation measures to prevent dust related impacts on the Site in general have been set out in Chapter 10: Air Quality. These include the following and will serve to ensure that there will be no significant effects on raised bog habitat as a result of dust deposition: ➤ Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored by the appointed Ecological Clerk of Works (ECoW) to avoid, insofar as reasonably possible, increased runoff. ➤ Vehicle speeds will be controlled when passing over access tracks and hardstanding areas within the Site, particularly during extended dry periods ➤ If necessary, excavated material will be dampened prior to transport to the spoil management areas. ➤ Local roads on approach and within the Site will be regularly inspected for cleanliness and cleaned as necessary. ➤ The roads adjacent to the site entrances will be checked weekly for damage/potholes and repaired as necessary. ➤ The transportation of materials from the borrow pit around the Site will be covered by tarpaulin during extended dry periods where necessary. ➤ Construction materials will be sourced from local quarries and will be covered by tarpaulin during extended dry periods where necessary. ➤ A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-5). The CEMP includes dust suppression measures. ➤ The ECoW will perform daily visual site inspections of dust occurrence on the Site during construction, particularly during periods of dry weather and windy conditions. This will be noted as part of site environmental audits. The appointed construction manager for the contractor will be notified if dusty conditions are prevalent on site. ➤ The ECoW will have power to halt construction works if required. ➤ The construction contractor will be required to monitor monthly dust deposition levels each month for the duration of construction phase for comparison with the guideline of 350mg/m²/day (for non-hazardous dusts). This monitoring will be carried out at a series of suitable locations within the Site. Where dust levels are measured to be above this, mitigation measures will be reviewed as part of a dust minimisation plan.
Residual Effect	With the above mitigation in place, there is no potential for residual significant effect on uncut raised bog habitat.

6.5.2.1.3 Assessment of Potential Effects on Cutover Bog (PB4) and Associated Habitats including Transition Mire and Quaking Bog

Table 6-14 Assessment of potential effects on Cutover bog (PB4) and associated habitats during construction

Description of Effect	Direct Habitat Loss The Proposed Project has been designed, through an iterative design process, to avoid the loss of the wettest and most species rich areas of cutover bog within the Site. This included an area identified as species-rich cutover bog to the northeast of Turbine 3 (this area was not found to conform to Annex I Active raised bog status per Smith and Crowley (2020) however it is of high biodiversity value in a local context) and an area of transition mire located over 40m from the internal cabling associated with proposed Turbine 4. This area of transition mire has established on cutover bog and was found to conform to the Annex I habitat Transition mires and quaking bogs [7140]. There will be no direct loss of these habitats. Much of the cutover bog within the Site is heavily drained, species-poor and subject to ongoing turbary, with large areas of bare peat. The Proposed Project will result in the loss of approximately 3.7095ha of these cutover bog habitats within the Proposed Project footprint. As mentioned above, while the Proposed Project has been designed to avoid the most species rich, wettest areas of cutover bog within the Site, the area of species rich cutover bog to the northeast of Turbine 3 is located within 5m of some of the Proposed Project infrastructure i.e., within 5m of the proposed internal cabling route associated with proposed Turbines 4 and 5. Therefore, taking a precautionary approach and in the absence of mitigation, there is potential for accidental loss of areas of species-rich cutover bog within 5m of the Proposed Project footprint. Habitat Degradation – Drainage Effects The potential for drainage related effects on the area of species rich cutover bog to the northeast of proposed Turbine 3 and the transition mire on cutover habitat in the east of the Site was considered. While these habitats lie outside the construction footprint, elements of the Proposed Project infrastructure are located in close proximity and therefore a potential pathway for drainage related effects on these habitats was identified. Habitat Degradation – Dust Deposition In the absence of mitigation, construction works adjacent to and within cutover bog habitats have the potential to indirectly impact on this habitat due to dust-related impacts. Airborne dust from construction works could settle on this habitat resulting in degradation of the habitat.
Assessment of Significance Prior to Mitigation	Direct Habitat Loss The Proposed Project has been designed, through an iterative design process, to avoid all areas of species-rich cutover bog and transition mire habitat within the Site. While the identified area of species-rich cutover bog to the northeast of Turbine 3 lies outside of the Proposed Project construction footprint, the potential for accidental/temporary loss of the marginal area of this habitat was identified due to tracking of machinery within a 5m buffer of the construction footprint. This effect is considered a short-term, slight negative effect which is significant at the local geographic scale in the absence of mitigation, given the high local biodiversity value of these habitats. Habitat Degradation – Drainage Effects While the area of species-rich cutover bog to the northeast of Turbine 3 was not found to conform to Annex I Active raised bog, it comprises a habitat of high biodiversity value in a local context. While this habitat was completely avoided as part of the Proposed Project, the construction of a proposed new track approximately 7m to the north, and the proposed internal cabling route located immediately adjacent, have the potential to result in indirect drainage effects on this habitat. However, in relation to the internal cabling routes any

	potential drainage effects associated with these will be very minor and will not extend any significant distance from the excavation (maximum of ~3-5m) as outlined in Chapter 9 of the EIAR. Furthermore, the trench excavations will be temporary, transient and shallow (~1m). Any effects will be localised and short-lived/temporary. Therefore, no significant effects of drainage are anticipated on species-rich cutover bog. Additionally, the area of transition mire and quaking bog habitat is located approximately 40m from the nearest proposed infrastructure, the proposed internal cabling route associated with Turbine 4, and approximately 60m from the proposed hardstand for Turbine 4. As per Chapter 9, these are outside the relevant ZoI for drainage related effects as a result of the Proposed Project and no significant effects in this regard are anticipated. Habitat Degradation - Dust Deposition A potential for effect to cutover bog as a result of dust deposition from construction works has been identified. As per Chapter 10 Air Quality of the EIAR, per the IAQM guidance document ‘<i>Guidance on the Assessment of Dust from Demolition and Construction</i>’, cutover bog habitats are considered a ‘High’ sensitivity receptor. The area of species-rich cutover bog within the Site is located within the 20m IAQM dust deposition band, and the area of Annex I Transition mires and quaking bog is located within the 50m IAQM dust deposition band. Taking a precautionary approach, the potential for indirect effects on these high-sensitivity receptors due to habitat degradation arising from dust deposition as a result of adjacent construction works has the potential to be a short-term, slight negative effect which would be considered significant at the local geographic scale in the absence of mitigation.
Mitigation	Mitigation by Design The Proposed Project has been specifically designed to avoid direct impacts on identified species-rich cutover bog and the area of transition mires and quaking bog habitat within the Site. This was achieved through an early-stage ecological constraints study informed by field surveys and habitat mapping. The Proposed Project layout was thereby altered where possible through the iterative design process to avoid the direct loss of these high value habitats. Nonetheless, the potential for accidental or temporary loss of marginal areas of species-rich cutover bog to the northeast of proposed Turbine 3 in the absence of mitigation was identified above and therefore mitigation measures are prescribed below in this regard (as well as in relation to potential dust deposition) to ensure that there will be no significant effects on this habitat. Direct Habitat Loss As outlined above, while the proposed infrastructure footprint has been designed to entirely avoid areas of species-rich cutover bog, this area is located within 5m of the construction footprint, and is therefore at risk of additional temporary habitat loss due to realistic tracking of vehicles outside the footprint as drawn. Therefore, in order to prevent this additional loss, the following measures will be implemented during the construction phase: ➤ Prior to the commencement of works, a qualified ecologist will be appointed as the Ecological Clerk of Works (ECoW) for the Proposed Project. ➤ All works in close proximity to identified areas of species-rich cutover bog will be supervised by the ECoW ➤ Prior to the commencement of construction works, temporary fencing will be erected along the northern margin of the species rich cutover bog to the northeast of proposed Turbine 3 as shown in Figure 6-11a-b below. The erection of this fencing will be overseen by the ECoW. This will act to create an exclusion zone around the works and prevent encroachment onto and loss of any species-rich cutover bog within the 5m buffer zone of the construction footprint. ➤ This fencing will be maintained throughout construction and will be checked for integrity at regular intervals by the ECoW on site.

	Habitat Degradation – Dust Deposition The following mitigation applies to construction areas within 20m of species-rich cutover bog (in line with Table 4 of IAQM <i>Guidance on the Assessment of Dust from Demolition and Construction 2024</i>). No other high-value cutover bog habitats are located within 20m of the construction footprint: ➤ Groundworks (i.e., works with potential to create dust) associated with proposed access track to the north of, and within 20m of, the species-rich bog will be fully supervised by an ECoW. ➤ The ECoW will regularly monitor adjacent species-rich cutover bog on a daily basis for potential signs of dust deposition or any other habitat degradation. Dust level thresholds and weather will also be monitored in line with the mitigations set out in Section 6.5.2.1.1 above. ➤ If any signs of habitat degradation are noted, the dust-producing works will be immediately halted and further mitigation to protect sensitive habitats from dust will be implemented in advance of resuming work. ➤ The ECoW will have power to halt construction works if required as outlined above. All of the additional dust mitigation measures outlined in Section 6.5.2.1.1 above will apply, which will serve to protect all cutover bog habitats within the Site from potential impacts resulting from dust deposition.
Residual Effect Following Mitigation	Following the incorporation of the mitigation measures described above, no significant negative effects on cutover bog habitats are anticipated at any geographic scale.

6.5.2.1.4 **Assessment of Potential Effects on Species-rich Wet Grasslands including Annex I *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*) [6410]**

Table 6-15 Assessment of potential effects on Annex I *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*) [6410] during construction

Description of Effect	Areas of species rich grassland within the Site include four areas which were found to conform to the Annex I habitat <i>Molinia</i> meadows [6410]. These are located to the southwest of the proposed onsite substation, to the southeast of the proposed Turbine 6, south and east of proposed Turbine 4, and to the north of proposed Turbine 3. During initial surveys of the Site in 2023, all four of these areas were found to conform to the Annex I habitat <i>Molinia</i> meadows, however during repeat surveys undertaken in June 2025, the section of <i>Molinia</i> meadow to the southeast of Turbine 6 was found to have deteriorated in quality due to the high cover of tussocks of purple moor grass (<i>Molinia caerulea</i>) which had outcompeted other indicator species. The Biodiversity Management and Enhancement Plan (BMEP; see Appendix 6-4) provides for the enhancement of 1.16ha of <i>Molinia</i> meadow in this area to the southeast of proposed Turbine 6. It is envisaged that this management and enhancement will allow the improvement of the current deteriorated condition of this area, as outlined in detail within the BMEP. The potential for significant effects on this habitat is considered below. Direct Habitat Loss The Proposed Project has been designed, through an iterative design process, to avoid the loss of Annex I <i>Molinia</i> meadow habitat within the Site. However, there are areas of this habitat located within 5m of the Proposed Project infrastructure footprint, i.e. 0.0293ha in total associated with the internal cabling routes for the proposed Turbines 3 and 4, the proposed upgrades to the existing road through the Site, and the proposed peat and spoil management area to the south of proposed Turbine 4. Therefore, taking a precautionary approach and in the absence of mitigation, there is potential for accidental loss of or
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	encroachment onto areas of <i>Molinia</i> meadow where the habitat occurs within 5m of the Proposed Project footprint. Additionally, the area of <i>Molinia</i> meadow to the southwest of the proposed onsite substation is located approximately 30m to the west of areas proposed for replanting of linear habitat as part of the biodiversity enhancement measures proposed for the Site (refer to BMEP, Appendix 6-4). The area of <i>Molinia</i> meadow to the southwest of proposed Turbine 6 is also located adjacent to an area of scrub and conifer plantation that will require felling in order to accommodate the turbine bat buffers associated with Turbine 6. In the absence of mitigation, there is potential for accidental loss of <i>Molinia</i> meadow at these locations due to tracking of vehicles during felling and replanting activities. In addition to the above, there will be loss of approximately 0.174ha of species-rich wet grassland which is located within the construction footprint of the proposed Turbine 4. This areas of wet grassland was not found to conform to any Annex 1 habitat type. Habitat Degradation – Drainage Effects The potential for drainage effects on <i>Molinia</i> meadow during construction has been considered. The areas of these habitats within the Site are located in close proximity to proposed infrastructure. Therefore a potential pathway for indirect drainage related effects on this habitat arising from construction was identified. Habitat Degradation – Dust Deposition In the absence of mitigation, construction works adjacent to Annex I <i>Molinia</i> meadows has the potential to indirectly impact on this habitat due to dust-related impacts. Airborne dust from construction works could settle on this habitat resulting in degradation of the habitat.
Assessment of Significance Prior to Mitigation	Direct Habitat Loss The Proposed Project has been specifically designed to avoid the loss of the most species-rich areas of wet grassland within the Site, including those that conform to the Annex I habitat <i>Molinia</i> meadows. While there will be loss of approx. 0.174ha of relatively species-rich wet grassland at the location of the proposed Turbine 4, this habitat does not conform to any Annex I habitat type and the loss of approx. 0.174ha is not considered significant at any geographic scale given the overall area of more species rich grassland within the Site. While all areas of <i>Molinia</i> meadow lie outside of the Proposed Project construction footprint, the potential for accidental/temporary loss of the marginal areas of these habitats was identified due to tracking of machinery. This effect is considered a short-term, slight negative effect which is significant at the local geographic scale in the absence of mitigation. Habitat Degradation – Drainage Effects The small area of <i>Molinia</i> meadow in the north of the Site is located over 70m from the nearest proposed infrastructure (the proposed onsite substation and associated compound), with a network of drainage ditches present in the intervening distance. Likewise, the area of <i>Molinia</i> meadow located to the southeast of proposed Turbine 6 is bordered to both the east and west by existing drainage ditches, located between the habitat and the proposed infrastructure, as well as an existing road. Therefore, no drainage effects resulting from the construction of the Proposed Project are anticipated in these areas. Additionally, in relation to the internal cabling routes which are located in proximity to the <i>Molinia</i> meadows to the south and east of proposed Turbine 4, and to the north of proposed Turbine 3, any potential drainage effects associated with the internal cabling trench will be very minor and will not extend any significant distance from the excavation (maximum of ~3-5m). Furthermore, the trench excavations will be temporary, transient and shallow (~1m). Any effects will be localised and short-lived/temporary. Therefore, no significant effects of drainage are anticipated on Annex I <i>Molinia</i> meadows.

	Habitat Degradation - Dust Deposition A potential for effect to Annex I <i>Molinia</i> meadow as a result of dust deposition from construction works has been identified. Per the IAQM guidance document ‘<i>Guidance on the Assessment of Dust from Demolition and Construction</i>’, Annex I <i>Molinia</i> meadows are considered a ‘High’ sensitivity receptor. The areas of <i>Molinia</i> meadow within the Site are located within the 20m IAQM dust deposition band at their closest. Taking a precautionary approach, the potential for indirect effects on Annex I <i>Molinia</i> meadows due to habitat degradation arising from dust deposition as a result of adjacent construction works has the potential to be a short-term, slight negative effect which would be considered significant at the local geographic scale in the absence of mitigation.
Mitigation	Mitigation by Design The Proposed Project has been specifically designed to avoid direct impacts on identified Annex I <i>Molinia</i> meadows within the Site. This was achieved through an early-stage ecological constraints study informed by field surveys and habitat mapping. The Proposed Project layout was thereby altered where possible through the iterative design process to avoid the direct loss of any Annex I <i>Molinia</i> meadows. Nonetheless, the potential for accidental or temporary loss of marginal areas of this habitat in the absence of mitigation was identified above and therefore mitigation measures are prescribed below in this regard (as well as in relation to potential dust deposition) to ensure that there will be no significant effects on this habitat. Direct Habitat Loss In the north of the Site, bolstering of an existing treeline is proposed to the west of the area of Annex I <i>Molinia</i> meadow to the southwest of the proposed onsite substation. In order to avoid tracking or excessive trampling through the habitat, enhancement works at the treeline will be accessed and conducted from the western side of the treeline, through the improved wet grassland in that area, wherever possible. If required to be accessed from the east, no vehicles or machinery will be permitted to drive through the area of <i>Molinia</i> meadow, with works and transport being undertaken on foot, and with an ECoW present. As outlined above, while the proposed infrastructure footprint has been designed to entirely avoid areas of Annex I <i>Molinia</i> meadow, some areas of <i>Molinia</i> meadow are located within 5m of the construction footprint and felling areas associated with proposed Turbine 6, and are therefore at risk of additional temporary habitat loss due to realistic tracking of vehicles outside the footprint as drawn. Therefore, in order to prevent this additional loss, the following measures will be implemented during the construction phase: ➤ Prior to the commencement of works, a qualified ecologist will be appointed as the Ecological Clerk of Works (ECoW) for the Proposed Project ➤ All works in close proximity to <i>Molinia</i> meadows will be supervised by ECoW. ➤ Prior to the commencement of construction works, temporary fencing will be erected at the locations outlined below. The erection of these fences will be overseen by the ECoW. This will act to create an exclusion zone around the works and prevent encroachment onto and loss of any <i>Molinia</i> meadow within the 5m buffer zone of the construction footprint. These locations are also shown in Figure 6-11a-b below. ○ Along the margins of the Annex I <i>Molinia</i> meadow south and east of proposed Turbine 4 and its associated hardstand and cabling, continuing both north and south along its margins bordering the proposed peat and spoil management areas ○ Along the margins of the <i>Molinia</i> meadow to the southeast of proposed Turbine 6, where this habitat borders proposed construction works. ○ Along the eastern and western margins of the <i>Molinia</i> meadow located to the north of proposed Turbine 3, where the internal cabling route and upgrades to the existing track are proposed

	○ Along the northern margin of the <i>Molinia</i> meadow to the southwest of proposed Turbine 6, where felling will be required. ➤ This fencing will be maintained throughout construction and will be checked for integrity at regular intervals by the ECoW on site. While no loss of this habitat is anticipated, a BMEP has been prepared for the Proposed Project which includes for the enhancement of an area of wet grassland within the Site which although found to conform to <i>Molinia</i> meadow during surveys undertaken in 2023 has since deteriorated in quality becoming dominated by tussocks of <i>Molinia</i>. It is proposed to manage this area for the mutual benefit of <i>Molinia</i> meadows and marsh fritillary butterflies, through the introduction of a grazing regime, prevention of agricultural activities such as fertilisation and reseedling in the area, and monitoring scheme. Habitat Degradation – Dust Deposition The following mitigation applies to construction areas within 20m of Annex I <i>Molinia</i> meadows (in line with Table 4 of IAQM <i>Guidance on the Assessment of Dust from Demolition and Construction 2024</i>): ➤ Groundworks (i.e., works with potential to create dust) associated with proposed Turbines 3, 4 and 6, as well as upgrades to the existing tracks to the west of Turbine 3 will be fully supervised by an ECoW. ➤ The ECoW will regularly monitor adjacent Annex I <i>Molinia</i> meadows on a daily basis for potential signs of dust deposition or any other habitat degradation. Dust level thresholds and weather will also be monitored in line with the mitigations set out in Section 6.5.2.1.1 above. ➤ If any signs of habitat degradation are noted, the dust-producing works will be immediately halted. ➤ The ECoW will have power to halt construction works if required as outlined above. ➤ All of the additional dust mitigation measures outlined in Section 6.5.2.1.1 above will apply.
Residual Effect Following Mitigation	Following the incorporation of the mitigation measures described above, no significant negative effects on Annex I <i>Molinia</i> meadows are anticipated at any geographic scale.

6.5.2.1.5 Assessment of Potential Effects on Scrub (WS1)

Table 6-16 Assessment of potential effects on Scrub (WS1) during construction

Description of Effect	The Proposed Project will result in the permanent loss of approximately 1.5264ha of Scrub (WS1), including scrub on cutover bog, and 1.0132ha of Dry meadows and grassy verges and Scrub mosaic (GS2/WS1), totalling approximately 2.5396ha of scrub loss within the infrastructure footprint. This includes areas of scrub located within the footprint of the proposed borrow pit, small sections associated with proposed new tracks, proposed peat and spoil management areas and small additional pockets scattered through the Site. There will also be loss of areas of scrub to facilitate the proposed bat buffer zones around the proposed turbines, particularly in the vicinity of proposed Turbines 1 and 3, and a small amount around Turbines 4 and 6. The scrub in these areas is largely scrub on cutover bog and wet grassland, comprised of gorse (<i>Ulex europaeus</i>) with small willows (<i>Salix</i> spp.) and birches (<i>Betula</i> spp.). In the area of proposed Turbine 6, the scrub comprised largely of developing willows which are transitioning into an immature woodland. There is also potential for the additional loss of 1.0125ha of scrub habitats within the 5m buffer zone of the proposed infrastructure footprint, an area which, as outlined above, is considered a reasonable realistic footprint to allow for tracking of vehicles outside the construction footprint as drawn, in the absence of mitigation.
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Assessment of Significance prior to mitigation	Scrub habitats within the Site provide suitable habitat for a range of fauna and provide habitat connectivity to the wider landscape. Taking a precautionary approach, the cumulative loss of 3.5521ha of scrub and scrub mosaic habitats within the Site (2.5396ha of which is located within the construction footprint and 1.0125ha of which is located within a 5m buffer of the construction footprint and will be allowed to revegetate following construction) is considered to be a permanent significant effect at the local geographic scale.
Mitigation	A Biodiversity Management and Enhancement Plan (BMEP) has been prepared for the Proposed Project and is included as Appendix 6-4. As part of the plan, it is proposed to plant a total of 3.5ha of native trees which over time will develop into native scrub and woodland habitat. The proposed replanting areas are shown in Figure 3-1 of the BMEP. The areas for planting have been strategically chosen to link up with identified bat commuting corridors within the Site and will provide enhanced habitat forging area relative to the existing habitats within the Site as well as enhanced habitat connectivity throughout the Site. The proposed planting will comprise native tree species of various age structures. The loss of scrub as a result of the Proposed Project will be offset through the planting of native trees as part of the BMEP (Appendix 6-4) which over time will develop into native scrub and woodland habitat and result in a net gain of scrub and woodland habitat within the Site. The BMEP and associated planting proposals will be implemented within a planting season during or in advance of phase 1 of construction works in order to minimise the interim time necessary for growth and establishment of new habitat. In addition to the above the following mitigation will be implemented to protect approximately 0.2209ha of species rich areas of scrub which are not located within the construction footprint but are located within a 5m buffer: ➤ Prior to the commencement of construction works, temporary fencing will be erected bordering the areas of species-rich scrub which is transitioning to immature woodland at the locations shown in Figure 6-11a-b and it will not be permitted for vehicles or machinery to enter this area. While this area of scrub is not located within the construction footprint, it is located within a 5m buffer of the footprint and this measure will serve to prevent loss of or encroachment onto this area of mature scrub. ➤ This fencing will be maintained throughout construction and will be checked for integrity at regular intervals by the ECoW on site.
Residual Effect	With the implementation of the BMEP, there is no potential for residual significant effect. While there will be an initial loss of scrub habitat, over time the areas planted with native trees as part of the BMEP will develop into scrub and woodland habitats and result in an overall increase in the area of these habitats within the Site.

6.5.2.1.6 Assessment of Potential Effects on Hedgerows (WL1) and Treelines (WL2)

Table 6-17 Assessment of potential effects on Hedgerows (WL1) and Treelines (WL2) during construction

Description of Effect	The Proposed Project will result in the permanent loss of approximately 835m of Hedgerows (WL1) and 421m of Treelines (WL2), totalling approximately 1,256m of linear habitat loss in the infrastructure footprint. This includes areas within the proposed onsite substation and linear habitats associated with the proposed turbine bat buffers required for each turbine, particularly in the vicinity of proposed Turbines 5 and 6, and a small amount around Turbines 1, 4 and 7. These treelines and hedgerows are largely associated with agricultural field boundaries, the majority of which are gappy and unstructured, with scattered semi-mature trees. There are no trees to be removed along the proposed Turbine Delivery Route. Works to treelines along the Turbine Delivery Route will be
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	restricted to pruning works, which are addressed in Section 6.5.2.2.3 below in relation to bats. Additionally, there is potential for the loss of an additional 119m of hedgerows and 299m of treelines within the 5m buffer of the proposed infrastructure footprint, an area which, as outlined above, is considered a reasonable realistic footprint to allow for tracking of vehicles outside the footprint as drawn, in the absence of mitigation. This includes an area of mature treeline to the north of the proposed onsite substation, and a gappy treeline to the south of the substation. In this location the trees are generally semi-mature in nature with a species mix dominated by hawthorn (<i>Crataegus monogyna</i>) and blackthorn (<i>Prunus spinosa</i>). The areas of treeline proposed for removal within 5m of the footprint are located approximately 4m to the east of the proposed new access track to the substation, and approximately 3m to the west of the access track to the end mast in the north of the Site.
Assessment of Significance Prior to Mitigation	Taking a precautionary approach, the permanent loss of approximately 1,256m of hedgerows and treelines within the construction footprint and the potential for loss of an additional 418m of hedgerow and treeline within the 5m buffer of the construction footprint (totalling 1,674m of linear treeline and hedgerow habitat) is considered to be a permanent significant effect on the local scale.
Mitigation	A Biodiversity Management and Enhancement Plan (BMEP) has been prepared for the Proposed Project and is included as Appendix 6-4. The plan allows for the planting of new treelines and hedgerows within the Site and the bolstering of existing linear habitat features which are gappy in nature, through additional planting. The loss of hedgerow as a result of the Proposed Project will be offset through planting of approximately 2,500 linear metres of new treeline and hedgerow along selected boundaries of fields within the Site. The replanting areas are presented in Figure 3-1 of the BMEP (Appendix 6-4). These have been strategically chosen to link up with identified bat commuting corridors in the Site, as well as providing habitat connectivity to the proposed areas of native scrub and woodland planting also presented within the BMEP. This will result in a significant net gain in linear habitats within the Site and enhance overall habitat connectivity throughout the site. Species planted in these locations will be of a similar composition to those occurring on site and will be of local provenance where possible. Further details with regard to species, planting location, and management is contained within the BMEP. The BMEP and associated planting proposals will be implemented within the planting season during or in advance of the commencement of construction works in order to minimise the interim time necessary for growth and establishment of new habitat. In addition to the above the following mitigation will be implemented to protect 209m of additional treelines which are not located within the construction footprint but are located within a 5m buffer of the construction footprint., specifically, mature treelines in the vicinity of the proposed onsite substation. In order to prevent the additional losses beyond the footprint of the development, in these areas the following mitigations will be in place: ➤ Prior to the commencement of construction works, temporary fencing will be erected along the mature treelines in the vicinity of the substation (refer to Figure 6-11a-b to the exact locations). Vehicles or machinery will not be permitted to access the fenced off areas. This will act to create an exclusion zone around the works and prevent loss of or encroachment onto these treelines. ➤ This fencing will be maintained throughout construction and will be checked for integrity at regular intervals by the ECoW on site.
Residual Effect Following Mitigation	Following implementation of mitigation, no potential for significant effect exists at any geographic scale. The planting of additional linear habitats will result in a net gain of these habitats within the Site.

6.5.2.1.7 Assessment of Potential for Spread of Invasive Species

Large stands of Japanese knotweed (*Reynoutria japonica*) occur frequently throughout the south of the Site and show significant evidence of recent spread. This species was recorded within the footprint of the Proposed Project along the main site access route, where the public road is proposed for upgrade. Japanese knotweed has spread widely through the south of the Site in areas of cutover bog and wet grassland on cutover bog. Several large stands are present, measuring up to 50m in extent, with significant numbers of seedlings in the surrounding area, possibly spread through local machinery tracking and turbary activities.

There is potential for the disturbance and spread of this species within and outside the Site as a result of the construction of the Proposed Project due to the proposed upgrades to the existing access track, as well as the regular tracking of construction vehicles along this road. In the absence of mitigation, this has the potential to lead to the degradation of peatland and other habitats within the Site, as well as potential contamination of this species in to the drainage ditches within the Site, which ultimately have downstream connectivity with the River Moy SAC. While this European Site is located approximately 4.9km downstream of the Site via the Meander River, Japanese knotweed can spread through extremely small rhizomes, stem fragments and seeds. As such, the potential spread of Japanese knotweed within and outside of the Site, in the absence of mitigation, is considered a significant effect.

Due to its presence within the footprint of the Proposed Project and adjacent areas as outlined above, a site-specific Invasive Species Management Plan (ISMP) has been prepared and is presented in Appendix 6-5 of this EIAR. The management plan includes detailed measures for the treatment of Japanese knotweed within and adjacent to the construction footprint, including excavation, chemical treatment and ongoing monitoring over a number of years to monitor for and treat any regrowth.

As outlined within the ISMP, a pre-commencement invasive species survey will be undertaken by a fully qualified ecologist to determine the current location and extent of Japanese knotweed within and adjacent to the Site and to identify any changes in the extent of the Japanese knotweed infestation since the surveys undertaken to inform this Biodiversity Chapter and the ISMP for the Proposed Project. Surveys shall be conducted in the summer months (June–July) when stands are most visible.

The areas of Japanese knotweed outside of the Proposed Project footprint have potential to continue to spread through the Site over the lifetime of the Proposed Project, if left untreated. Therefore, the developer has committed to an extensive treatment plan of all areas of Japanese knotweed identified within the Site. The ISMP allows for the monitoring of areas outside the Proposed Project footprint, and their treatment, subject to the necessary permissions being in place.

Following the implementation of this ISMP and associated monitoring plan, no potential for significant effect exists at any geographic scale.

6.5.2.2 Effects on Fauna During Construction

The Proposed Project has the potential to result in habitat loss and disturbance impacts on faunal species that were recorded on the Site but were not included as KERs. Given the extensive area of cutover bog, grassland, woodland and scrub habitats that will remain undisturbed throughout the Site and the avoidance in so much as possible of the most significant areas of faunal habitat, no significant effects on non-KER faunal biodiversity are anticipated as a result of the Proposed Project. Therefore, these species were excluded from further assessment.

The Proposed Project has the potential to result in supporting habitat loss, degradation and disturbance impacts on faunal species identified in Table 6-10 as KERs. These include:

- Badger
- Otter
- Bats
- Smooth newt
- Marsh fritillary

It should be noted that no significant habitat for salmonids, lamprey, coarse fish, white-clawed crayfish, European eel, aquatic invertebrates or other aquatic species was recorded within the footprint of the Proposed Project, however suitable habitat for these species occurs downstream in the Meander River and River Robe and its tributaries. The potential for significant effects on aquatic species resulting from construction activities within the Site is restricted to indirect effects on their habitat resulting from water pollution. This has been assessed in Section 6.5.2.1.1 above and is not repeated below. Potential effects on aquatic species resulting from works required along the proposed Turbine Delivery Route are also assessed in Section 6.5.2.1.1 above and are not repeated below.

6.5.2.2.1 Assessment of Potential Effects on Badger

Table 6-18 Assessment of potential effects on badger during construction

Description of Effect	Direct Habitat Loss/Fragmentation Given the nature of the Proposed Project, there will be some minimal loss of suitable foraging habitat for badger, largely Improved agricultural grassland (GA1) and Conifer plantation (WD4), associated with the footprint of the Proposed Project infrastructure. The areas of these habitats to be lost are very small compared to their overall cover within the Site and will not be significant in the context of the widespread alternative foraging habitat available within the Site and the wider area. Additionally, there will be no barriers or impediments to free movement of mammals through the Site created by the proposed infrastructure. As such, there will be no significant loss/fragmentation of habitat for badger or other mammals as a result of the Proposed Project. Disturbance/Mortality No badger setts were identified during the ecological surveys undertaken of the Site, however, signs of badger activity were recorded within the Site (individual sighting, tracks and prints) in close proximity to the Proposed Project infrastructure including Turbines 4 and 5 as well as in proximity to the Proposed Grid Connection cabling route and new tracks, indicating the species' occasional use of the habitats within the Site. Therefore, in the absence of mitigation/best practice, there is potential for disturbance or displacement, and potentially mortality, of badger during the construction phase of the Proposed Project, particularly should any new sett be established in infrastructure areas in the interim between planning consent and construction commencement
Assessment of Significance Prior to Mitigation	Direct Habitat Loss/Fragmentation The loss of suitable foraging habitat will be small scale in nature and suitable habitat is abundant in the wider landscape. No significant overall loss or fragmentation of badger foraging habitat is anticipated at any geographic scale. Disturbance/Mortality Whilst no badger setts were recorded within the Site, baseline surveys identified badger activity within the Site suggesting that the habitats within the Site are used by a local badger population. Any potential for loss of, physical damage to or significant disturbance of occupied setts (if established between planning consent and commencement of construction), potentially resulting in significant disturbance or mortality would be considered significant at the local geographic scale in the absence of mitigation.
Mitigation	Habitat Loss/Fragmentation No specific mitigation is required for habitat loss or fragmentation. Disturbance/Mortality ➤ Due to the time that may elapse between the surveys undertaken to inform this assessment and the commencement of construction works,

	a pre-construction mammal survey of the Proposed Project footprint and adjacent areas will be carried out by a qualified ecologist to determine whether any setts have been established in the intervening period. During this survey, a search for evidence of other protected mammal species will also be undertaken. ➤ Any badger setts identified will be afforded protection in line with the requirements set out in the TII (2006) guidance document. An exclusion zone around the identified sett will be maintained for the duration of the construction works. No works will be undertaken within 30m of the sett. ➤ During the breeding season (December to June inclusive) no works will be undertaken within 50m of active setts or pile driving within 150m of active setts. If such works are required, exclusion measures will be put in place (as outlined above) prior to construction in line with TII Guidelines to ensure that the sett is evacuated. ➤ To protect individual badgers during the construction phase of the Proposed Project, all open excavations on site will be covered when not in use and backfilled as soon as possible. Excavations will also be covered at night and any deep excavations left open will have appropriate egress ramps in place to allow mammals to safely exit excavations should they fall in. ➤ If a newly established and active sett is identified within an area where works could not avoid direct impacts, then the sett will need to be excluded prior to works commencing. This will need to be undertaken in line with current guidelines by an appropriately qualified ECoW in advance of construction works commencing and in consultation with NPWS.
Residual Effect Following Mitigation	Following the incorporation of the mitigation measures described above, no significant residual effects on badger are anticipated at any geographic scale.

6.5.2.2.2 Assessment of Potential Effects on Otter

Table 6-19 Assessment of potential effects on otter during construction

Description of Effect	Direct Habitat Loss/Fragmentation, Disturbance and Mortality The network of bog and agricultural drains within the Site do not provide suitable habitat for otter. The nearest watercourse to the proposed works within the Site is the Meander River along the Site's southern boundary which is located >300m from the nearest proposed infrastructure, i.e. Turbine 5. As such, there is no potential for significant effects on otter due to direct habitat loss, disturbance or mortality. In relation to the small unmapped stream located along the proposed Turbine Delivery Route, this was not considered to provide optimal breeding, foraging or commuting habitat for otter given its very small size and location immediately adjacent to a roadway and no evidence of otter was recorded. Therefore there will be no significant effects on otter due to direct habitat loss, disturbance or mortality. Habitat Degradation - Impacts on Water Quality Evidence of otter activity was recorded at surveys sites on the River Robe, the Meander River downstream of the site and along the margins of Drumady Lough. Therefore in the absence of mitigation there is potential for construction works associated with the Proposed Project to result in indirect effects on otter where they occur downstream in the form of habitat degradation/loss of prey resource as a result of water pollution. This could arise due to potential run-off of silt and other pollutants such as hydrocarbons and cementitious material into surface drains within the Site with have downstream connectivity with these watercourses, or via percolation of pollutants to groundwater which discharges into nearby watercourses.
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Assessment of Significance Prior to Mitigation	Direct Habitat Loss/Fragmentation, Disturbance and Mortality There will be no significant effects regarding habitat destruction, barrier effect, disturbance and mortality as a result of the Proposed Project due to the absence of suitable habitat within or adjacent to the Site or associated works areas. Habitat Degradation - Impacts on Water Quality In the absence of mitigation, the indirect effect of water pollution on otter, where they occur downstream of the Site, during construction of the Proposed Project is considered a short-term negative effect which would be significant at the local geographic scale only.
Mitigation	The pathways that would allow potential impacts to occur due to deterioration of water quality were considered in the design of the Proposed Project. As outlined in Section 6.5.2.1.1 above in relation to the potential effects on aquatic habitats and associated aquatic species during construction, the environmental management framework to be adhered during the construction phase of the Proposed Project includes comprehensive detail regarding site set up, pollution prevention and hydrocarbon management and incorporates mitigating measures as detailed in Chapter 9 Water of this EIAR and in the CEMP in Appendix 4-5 of the EIAR to ensure that there are no significant effect on water quality or aquatic receptors within or downstream of the Proposed Project. In addition to this, specific mitigation is provided in relation to protection of surface water quality is provided in Chapter 9 Water of this EIAR, see Section 9.5. These measures will also serve to protect otter populations within the watercourses and waterbodies downstream of the Site.
Residual Effect Following Mitigation	Following the incorporation of the mitigation measures described above, no significant negative effects on otter are anticipated at any geographic scale.

6.5.2.2.3 Assessment of Potential Effects on Bats

The impact assessment in relation to bats has been undertaken in accordance with NIEA³² and NatureScot Guidance³³. As per the NatureScot Guidance, wind farms present five potential risks to bats:

- Operational collision mortality, barotrauma and other injuries (refer to Section 6.5.3.2.1)
- Loss or damage to commuting and foraging habitat
- Loss of, or damage to, roosts
- Displacement of individuals or populations
- Disturbance

For each of these five risks, the detailed knowledge of bat distribution and activity within the site has been utilised to predict the potential effects of the Proposed Project on bats. Potential risk of collision, barotrauma and other injuries relating to the operational phase and are presented in Section 6.5.3.2.1.

Table 6-20 Assessment of potential effects on bats during construction

Description of Effect	Loss of Roosting Habitat The Proposed Project is predominantly located within agricultural grassland and peatland habitats, which provide generally low suitability for roosting bats. A small number of structures and trees within the Site were identified as having roosting potential, with two
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³² Northern Ireland Environment Agency Natural Environment Division (NED) published Guidance on Bat Surveys, Assessment and Mitigation for Onshore Wind Turbine Developments in Northern Ireland (NIEA, 2021).

³³ NatureScot published Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Version: August 2021 (NatureScot, 2021).

	structures confirmed as supporting small numbers of roosting bats. These roosts are located outside the Proposed Project footprint and therefore will not be lost as a result of the Proposed Project. Tree removal is required at a number of turbine locations to facilitate bat felling buffers; however, none of the trees within these areas were identified as supporting potential roost features (PRFs). Vegetation clearance associated with the Proposed Grid Connection will include the removal of a small number of trees, some of which were identified as supporting features suitable for individual bats (PRF-I), including cavities, cracks and areas of mature ivy. Detailed inspections of these features did not record any bats or evidence of bat use. Turbine Delivery Accommodation works include localised removal of sections of stone wall and the pruning or removal of a small number of trees. Stone walls were assessed as having <i>Negligible</i> roosting suitability, while a small number of trees were identified as supporting PRF-I. Detailed inspections of these features did not record any bats or evidence of bat use. Given the above, there will be no loss of confirmed roosts within the Site.
	Loss or Damage to Commuting and Foraging Habitat In the absence of appropriate design, the loss or degradation of commuting and foraging habitat has the potential to reduce feeding opportunities and alter bat activity within the Site. The Site is predominantly characterised by agricultural grassland and peatland habitats, which provide generally <i>Low</i> suitability for bat commuting and foraging. However, linear features such as treelines, hedgerows and stone walls are present locally and provide <i>Moderate</i> suitability for commuting and foraging bats. The Proposed Project will result in the removal of approximately 1,256m of linear vegetation associated with the infrastructure footprint, including the Proposed Grid Connection, to facilitate the construction of turbine bases, access tracks and associated infrastructure. This includes vegetation removal required to implement bat buffers. In addition, approximately 0.7ha of conifer plantation will be removed. Minor accommodation works along the turbine delivery route will include the removal of sections of stone wall and the pruning or removal of a small number of trees. The stone walls affected are assessed as having <i>Low</i> suitability for commuting and foraging bats, while treelines within these areas are assessed as having <i>Moderate</i> suitability. The removal of linear vegetation has the potential to result in localised loss of commuting routes and foraging habitat and may result in temporary effects on habitat connectivity within the Site.
	Displacement of Individuals or Populations In the absence of appropriate design, disturbance arising from construction activities and changes to habitat structure may lead to displacement of bats from areas used for commuting and foraging. The Proposed Project is located within a landscape predominantly comprising habitats of <i>Low to Moderate</i> suitability for bats, with activity characterised by generally low levels and localised peaks. The removal of vegetation and presence of construction activity may result in temporary avoidance of affected areas, short-term changes in commuting routes and altered use of foraging habitat within the Site. Such effects are expected to be localised and relate to areas where bats utilise linear features and habitat edges.

Assessment of Significance Prior to Mitigation	Disturbance Construction activities associated with the Proposed Project, including turbine installation, access track construction, the Proposed Grid Connection and turbine delivery accommodation works, will generate noise, increased human activity and the use of artificial lighting. These activities have the potential to disturb bats using the Site for commuting and foraging. Disturbance may be greater in areas associated with treelines, hedgerows and habitat edges, which provide <i>Moderate</i> suitability for bats.
	Loss of, or Damage to, Roosts No confirmed bat roosts will be affected by the Proposed Project. A small number of trees supporting features suitable for individual bats (PRF-I) will be removed as part of the Proposed Grid Connection works, representing a minor loss of potential roosting features. However, no bats or evidence of bat use were recorded in these features during surveys.. On this basis, the effect is assessed as <i>Not Significant</i>.
	Loss or Damage to Commuting and Foraging Habitat The Proposed Project will result in the removal of a limited extent of commuting and foraging habitat, including approximately 1.3 km of linear vegetation and 0.7 ha of conifer plantation. The conifer plantation and stone walls affected are of <i>Low</i> suitability for commuting and foraging bats, while sections of treelines and hedgerows are of <i>Moderate</i> suitability. The loss of these features has the potential to result in localised and temporary effects on commuting routes, foraging opportunities and habitat connectivity within the Site. On this basis, the effect is assessed as <i>Significant</i> at the local scale.
	Displacement of Individuals or Populations The Proposed Project has the potential to result in temporary displacement of bats from areas used for commuting and foraging due to disturbance arising from construction activities and localised habitat changes. However, the Site is predominantly characterised by habitats of <i>Low to Moderate</i> suitability for bats, and baseline activity levels are generally low and spatially variable. Given the temporary and localised nature of these effects, and the availability of alternative habitat within the Site and surrounding landscape, the potential for displacement of individuals or populations is considered to be slight at a local scale. On this basis, the effect is assessed as <i>Not Significant</i> at the local scale.
	Disturbance Construction activities associated with the Proposed Project will generate noise, artificial lighting and increased human activity, which have the potential to disturb bats using the Site for commuting and foraging. However, given the generally <i>Low to Moderate</i> suitability of habitats within the Site, the absence of significant roosting features within the construction footprint, and the temporary and localised nature of construction activities, disturbance effects are expected to be limited in extent. On this basis, the effect is assessed as <i>Not Significant</i> at the local scale.

Mitigation	Loss or Damage to Commuting and Foraging Habitat The Proposed Project design has sought to minimise impacts on commuting and foraging habitat through the siting of turbines within predominantly open habitats and the retention of linear features where practicable. Bat buffers will be implemented around turbine locations in accordance with NatureScot (2021), reducing the proximity of turbines to key habitat features. A Biodiversity Management and Enhancement Plan (BMEP) will be implemented, which includes the provision of new linear planting and the reinforcement of existing hedgerows and treelines to enhance habitat connectivity within the Site (refer to Appendix 6-4 for details). These measures will provide additional commuting and foraging habitat for bats and will contribute to a net gain in linear habitat features within the Site. In addition, native broadleaved woodland planting will be undertaken to replace areas of scrub vegetation to be removed, as outlined in Section 6.5.2.1.5 above. The proposed native broadleaved woodland will provide high quality habitat for foraging over time. Any vegetation affected by turbine delivery accommodation works will be reinstated following completion of construction. Disturbance or Displacement of Individuals or Populations In relation to disturbance or displacement, while no significant effects on bats are anticipated, the following best practice measures will be implemented during the construction phase. Standard construction best practice measures will be implemented to minimise disturbance to bats. During the construction phase, plant and equipment will be operated in accordance with the Construction Plant and Equipment Permissible Noise Levels Regulations (S.I. No. 632 of 2001), and machinery will be switched off when not in use to minimise unnecessary noise. Where lighting is required, directional and low-intensity lighting will be used to minimise light spill onto adjacent habitats. Lighting will be directed away from treelines, hedgerows and other boundary features, and will utilise warm-spectrum sources in accordance with best practice guidance, including the Institute of Lighting Professionals Guidance Note 08/23 and Bat Conservation Ireland (2026). In addition to the above, the Proposed Project design has sought to minimise the potential for displacement through the siting of turbines within predominantly open habitats and the retention of key linear features where practicable. A Biodiversity Management and Enhancement Plan (BMEP) will be implemented, which includes the provision of new linear planting and the reinforcement of existing hedgerows and treelines to maintain and enhance habitat connectivity across the Site. In addition, native broadleaved woodland will be established to replace areas of conifer plantation, resulting in improved habitat quality for bats over time. These measures will maintain and enhance commuting routes and foraging opportunities within the Site, reducing the potential for displacement.
Residual Effect Following Mitigation	Taking into consideration the embedded design of the Proposed Project and the implementation of standard best practice and habitat enhancement measures, no significant residual effects on bats are anticipated as a result of the construction phase. Effects associated with loss or damage to commuting and foraging habitat, loss of, or damage to, roosts, displacement of individuals or populations, and disturbance are predicted to be localised, temporary and not significant.

6.5.2.2.4 Assessment of Potential Effects on Smooth Newt

Table 6-21 Assessment of potential effects on smooth newt during construction

Description of Effect	During baseline aquatic surveys of the Site in 2025 (see Appendix 6-3) the small pond within the Site was found to support a population of later stage smooth newt eft. A population of newts was also identified at Drumady Lough adjacent to the eastern boundary of the Site. Direct Habitat Loss, Disturbance and Mortality There are no works proposed within the pond, therefore there will be no direct loss of smooth newt breeding habitat. However, due to the construction of the proposed Turbine 5, associated hardstand and underground cabling, the removal of a short section of stone wall (approximately 80m) will be required. This stone wall runs adjacent to the pond and was identified as providing a potential winter hibernacula for the species. Additionally, due to the ecology of newts and their tendency to stay within 80m of a breeding pond, the loss of terrestrial habitat within 80m of the pond is also considered habitat loss for the species. Therefore there is potential for direct loss of terrestrial (including potential winter hibernacula) habitat as a result of the Proposed Project. During the construction works associated with the proposed Turbine 5, there is potential for disturbance and mortality of these species where they may occur within 80m of the breeding pond during the terrestrial life stages, or as they attempt to migrate to other suitable habitat due to disturbance. In order to accommodate the turbine bat buffers, there will be some removal of hedgerows in close proximity to the pond. As such, in the absence of mitigation there is also potential for these felling works and associated machinery to encroach upon the breeding habitat and cause additional disturbance/mortality. No significant drainage effects on the pond are anticipated given the distance between the pond and the infrastructure. The nearest infrastructure proposed is the internal cabling route, which is located approximately 12m from the edge of the pond. The proposed hardstand for Turbine 5 is located over 19m from the pond, and the proposed Turbine 5 is located over 35m away. Habitat Degradation – Impacts on Water Quality In the absence of mitigation there is potential for construction works associated with the proposed Turbine 5 to result in indirect effects on smooth newt where they occur within the pond in the form of habitat degradation as a result of water pollution. A population of newts was also identified at Drumady Lough, which is located to the east of the Site and hydrologically connected to the Site via a network of peat and agricultural drains. Impacts on water quality could arise due to potential run-off of silt and other pollutants such as hydrocarbons and cementitious material into the pond and drains which discharge to Drumady Lough.
Assessment of Significance Prior to Mitigation	Direct Habitat Loss, Disturbance and Mortality In the absence of mitigation the potential for direct habitat loss, disturbance to and direct mortality of smooth newt during construction of the Proposed Project is considered a permanent negative effect which would be significant at the local geographic scale only. Habitat Degradation – Impacts on Water Quality In the absence of mitigation, the indirect effect of water pollution on amphibians during construction of the Proposed Project is considered a short-term negative effect which would be significant at the local geographic scale only.
Mitigation	Direct Habitat Loss, Disturbance and Mortality

	Prior to the commencement of any construction or vegetation clearance works, a smooth newt fence will be erected to the east of the known breeding habitat at the location of the pond onsite. This fence will be located between the proposed construction footprint of Turbine 5 and the breeding pond, creating a protective barrier and exclusion zone for smooth newt. The fence will extend across the agricultural field from the stone wall and hedgerow to the northwest of the pond, to the hedgerow located to the southeast of the pond (approximately 90m in length). The fence will be located minimum of 5m to the east of the pond in order to retain a vegetated buffer zone along all margins of the pond. The fence will be erected as follows: ➤ Smooth newt fencing material to be erected using wooden poles and secured with nails/staples. ➤ Wooden poles to be erected external of the fence. ➤ Wooden poles to be spaced approx. 1.5 - 3m apart. ➤ Silt fencing material will be used in order to also protect the water quality, and must be adequately dug into the soil to ensure smooth newt cannot escape under the fencing. ➤ Silt fencing material is to be taut to ensure there is no sagging offer opportunity for smooth newt to grasp the material. ➤ Silt fencing is to be tall enough for smooth newt not to climb over (approx. 60cm+) Subsequent to the erection of the smooth newt fence and establishment of an exclusion zone, a pre-commencement survey for smooth newt will be undertaken within the known breeding habitat at the location of the pond onsite (to confirm the presence of breeding newt) and within suitable terrestrial habitat within the construction footprint to an 80m buffer of the pond. Surveys will be undertaken by a suitably qualified Ecologist and during the optimal (breeding) season, as per TII (2008a) guidelines and under licence from the NPWS. During this survey, any individuals or population of these species present in the terrestrial habitats within proposed works footprint (to an 80m buffer of the breeding pond) will then be translocated under a Section 23 & 34 licence from the NPWS to the pond side of the exclusion zone, from which they will not be able to re-enter the works zone. If pitfall traps are used to carry out these translocations, then these will be checked at dawn each morning in order ensure the wellbeing of the newts and prevent predation. Following UK Guidance for Great Crested Newt Mitigation Guidelines (English Nature, 2001), survey data indicate that surveys may reveal from around 2% to 30% of the population. Every effort will be made to translocate as many individuals from the area as possible. However, as it is possible that some individuals will remain despite a thorough survey and translocation effort, the following mitigation measures will also be implemented in order to protect any remaining population within the terrestrial habitats: ➤ Prior to the commencement of works, a qualified ecologist will be appointed as the Ecological Clerk of Works (ECoW) for the Proposed Project ➤ The fence will be retained throughout the construction phase of the Proposed Project, and will be checked at regular intervals to ensure that it is working effectively and is free from holes/damage. ➤ Any vegetation removal within 80m of the pond will be supervised by the ECoW, and any suitable smooth newt refuge habitat e.g. wooden logs, stones or dense vegetation will be manually checked by the ECoW for terrestrial smooth newts. ➤ Any smooth newts identified within the works area will be translocated under NPWS licence to the pond side of the exclusion zone. The ECoW will have the power to stop works in order to carry out the translocation.
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	> The removal of the stone wall adjacent to the pond, which provides a potential winter hibernacula habitat, which will be necessary for the construction of the proposed Turbine 5 will not occur during the winter hibernation season (November-February³⁴) as individuals should not be disturbed during this sensitive time. If removal during the hibernation season is required, it will be conducted under the supervision of the ECoW. > The removal of hedgerows on the pond side of the smooth newt fence will be required to accommodate the turbine bat buffer associated with the proposed Turbine 5. This will be undertaken by hand, with no machinery tracking through the fenced area. An ECoW will also be present in order to monitor unnecessary losses of the underlying stone walls, which potentially act as winter hibernacula for smooth newts and should be retained where possible. > Deadwood/brash/logs etc from any vegetation clearance (including the above hedgerow removals) in the vicinity will be placed within the fenced area to enhance the habitat for the smooth newt, under supervision by the ECoW. A Section 23 & 34 licence will be obtained from the NPWS prior to the commencement of construction, due to potential disturbance of smooth newts within the terrestrial habitats within 80m of the breeding site. The stone wall which requires removal during construction will be replaced at an alternative location along the existing hedgerow to the southeast of the pond in order to replace suitable winter hibernacula habitat for newts in an accessible area. Additionally, as outlined above, deadwood/brash/logs etc. from any vegetation or hedgerow clearance in the vicinity will be placed within the fenced area to enhance the habitat for smooth newt. Habitat Degradation – Impacts on Water Quality The pathways that would allow potential impacts to occur due to deterioration of water quality were considered in the design of the Proposed Project. As outlined in Section 6.5.2.1.1 above in relation to the potential effects on aquatic habitats and associated aquatic species during construction, the environmental management framework to be adhered to during the construction phase of the Proposed Project includes comprehensive detail regarding site set up, pollution prevention and hydrocarbon management and incorporates mitigating measures as detailed in Chapter 9 Water of this EIAR and in the CEMP in Appendix 4-5 of the EIAR to ensure that there are is no significant effect on water quality or aquatic receptors within or downstream of the Proposed Project. In addition to this, specific mitigation is provided in relation to protection of surface water quality is provided in Chapter 9 Water of this EIAR, see Section 9.5. These measures will also serve to protect the newt populations within the Site and at Drumady Lough to the east of the Site. Furthermore, the silt fencing around the pond as outlined above will act as both newt fencing to prevent egress of newts into the construction zone, while also preventing
Residual Effect Following Mitigation	Following the incorporation of the mitigation measures described above, no significant negative effects to smooth newt or common frog are anticipated at any geographic scale.

6.5.2.2.5 Assessment of Potential Effects on Marsh Fritillary

Table 6-22 Assessment of potential effects on marsh fritillary during construction

Description of Effect	Disturbance/Mortality
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³⁴ Amphibian and Reptile Conservation [online] Available at: <https://www.arc-trust.org/hibernation-faqs> [Accessed 23/03/2026]

	The Proposed Project has been designed, through an iterative design process, to avoid the key area of <i>Molinia</i> meadow in which the core breeding population of marsh fritillary was identified in 2025. As a result, there is no potential for significant direct impacts on the identified main breeding population. Given the proximity of the construction works required for some elements of the Proposed Project to identified marsh fritillary breeding areas, as well as proposed felling/scrub clearance works required to implement the proposed bat felling buffers associated with proposed Turbine 3, the potential for direct impacts on the species has been considered. Three larval webs were identified within 5m of the proposed infrastructure footprint which, as outlined above, is considered as a reasonable realistic construction footprint to allow for tracking of vehicles outside the footprint as drawn. Therefore, in the absence of mitigation there is potential for direct loss of/mortality of marsh fritillary larval webs in the vicinity of the proposed Turbine 3 should they be present at the time of construction works. Direct Habitat Loss The Proposed Project has been designed, through an iterative design process, to avoid the key area of <i>Molinia</i> meadow in which the core breeding population was identified in 2025. However, the Proposed Project will result in the loss of approximately 0.1124ha of suitable marsh fritillary breeding habitat (i.e., habitat containing the foodplant devil's-bit scabious (<i>Succisa pratensis</i>) in the areas surrounding proposed Turbine 3. There will be approximately 0.0413ha of loss of habitat classified as <i>Good Condition</i> and 0.0514ha of loss of habitat classified as <i>Suitable (Under-grazed)</i> due to the footprint of the proposed temporary and permanent hardstand areas and internal cabling route. However, these habitats are more fragmented than the identified core breeding area and are not representative of the areas of most suitable habitat within the Site. There will also be approximately 0.0194ha of loss of habitat classified as <i>Unsuitable</i> due to a low abundance of devil's-bit scabious within a generally tall sward, however due to the unsuitability of this habitat it is not considered further. In addition to those areas of suitable habitat located within the construction footprint, a further 0.2053ha of suitable habitat is located within a 5m buffer of the Proposed Project footprint, which is considered during construction as a reasonable realistic footprint to allow for tracking of vehicles outside the footprint as drawn. In the absence of mitigation, this area will also be lost. Habitat Degradation – Dust Deposition In the absence of mitigation, construction work adjacent to existing breeding areas has the potential to indirectly impact marsh fritillary. Airborne dust from construction works could settle on marsh fritillary larval webs resulting in suffocation or degradation of breeding habitat.
Assessment of Significance Prior to Mitigation	Disturbance/Mortality Taking a precautionary approach, in the absence of mitigation, the potential for direct impacts on marsh fritillary would be a significant effect to the population at the County Scale. Direct Habitat Loss Given that the highest quality existing breeding habitat for marsh fritillary has been avoided, i.e., the <i>Molinia</i> meadow to the south of proposed Turbine 4, and the Proposed Project footprint contains only small areas of fragmented habitat which is used opportunistically only in certain years, it is considered that there is no potential for significant loss of marsh fritillary habitat at the County scale. However, given the requirements of marsh fritillary populations on a small landscape scale due their narrow range where they occur, the permanent loss of 0.1124ha of fragmented potential marsh fritillary habitat is considered, on a precautionary basis, to have the potential to be significant at the local scale.

	Habitat Degradation – Dust Deposition A potential for effect to marsh fritillary and marsh fritillary suitable habitat as a result of dust deposition from construction works has been identified. Per the IAQM guidance document ‘<i>Guidance on the Assessment of Dust from Demolition and Construction</i>’, marsh fritillary is considered a ‘High’ sensitivity receptor. The areas of marsh fritillary suitable habitat are located within the 20m IAQM dust deposition band at their closest. Taking a precautionary approach, the potential for indirect effects on marsh fritillary and marsh fritillary suitable habitat due to habitat degradation arising from dust deposition as a result of adjacent construction works has the potential to be a short-term, slight negative effect which would be considered significant at the County Scale in the absence of mitigation.
Mitigation	Mitigation by Design ➤ The Proposed Project has been designed, through an iterative design process, to avoid the key area of <i>Molinia</i> meadow in which the core breeding population was identified in 2025. The Proposed Project layout was thereby altered where possible to avoid loss of high-quality habitats and key breeding habitat for marsh fritillary. ➤ Consequently, the Proposed Project permanent footprint is over 30m from the main populations of marsh fritillary identified within the Site. Disturbance/Mortality Construction and felling/scrub clearance works will occur in close proximity to identified marsh fritillary-populations at Turbine 3 and its associated hardstand and internal cabling. The following mitigations will be applied at this construction location: ➤ A pre-commencement survey for marsh fritillary larvae will be undertaken at the optimal time of year in advance of construction throughout footprint areas of the Proposed Project. ➤ Prior to the commencement of works, a qualified ecologist will be appointed as the Ecological Clerk of Works (ECoW) for the Proposed Project ➤ If active larval webs are recorded within the construction or felling footprint, these webs will be translocated by the ECoW to adjacent suitable existing foraging habitat outside of the construction footprint. This will be achieved by translocating a sod of earth with entire, intact devils’ bit scabious plants upon which the larvae are feeding. ➤ Larval webs and associated food plants will only be translocated by the ECoW to existing breeding areas as shown in Confidential Appendix 6-7. ➤ As outlined below, existing suitable habitat will be fully fenced off along the margins of the construction footprint to prevent additional disturbance at the locations described above. ➤ ECoW supervision will be required for construction of components near existing breeding areas (such as Turbines 3 and 4). ➤ Where suitable marsh fritillary habitat occurs in close proximity to Proposed Project infrastructure, side casting of material will be to the opposite side of the proposed infrastructure to where the suitable habitat occurs. ➤ No clearance of scrub or conifer plantation within the proposed bat buffer of Turbines 3 or 6 will be carried out until sufficient exclusion zone fencing to a minimum of 5m is in place, or unless under ECoW supervision. Direct Habitat Loss

As described above, the Proposed Project will result in the loss of approximately 0.1124ha of potentially suitable marsh fritillary habitat (i.e. areas of devils bit scabious). The Biodiversity Management and Enhancement Plan (Appendix 6-4) provides for the enhancement of 1.16ha of Annex I *Molinia* meadow, which currently contains pockets of suitable marsh fritillary breeding habitat but in which no larval webs were identified. These enhancement measures will provide dual benefits for both the Annex I habitat and marsh fritillary butterflies, as outlined in detail within the Biodiversity Management and Enhancement Plan. It is envisaged that this management and enhancement will allow the expansion of the current pockets of suitable marsh fritillary habitat within this area, which are classified as *Suitable (Under-grazed)* in their current state, and thus will result in a net gain in availability of suitable habitat for the species within the Site as a result of the Proposed Project. In addition, it is also proposed to implement monitoring of existing marsh fritillary breeding areas within the Site. These measures will not only offset any potential loss of habitat but will result in a net gain and enhancement of the suitable marsh fritillary habitat within the Site.

Full details on habitat enhancement and monitoring are provided in the BMEP.

As outlined above, in addition to the small areas within the proposed infrastructure footprint, some areas of suitable marsh fritillary habitat are located within 5m of the construction footprint, and are therefore at risk of being lost due to realistic tracking of vehicles outside the footprint as drawn. Therefore, in order to prevent this additional loss, the following measures will be implemented during the construction phase:

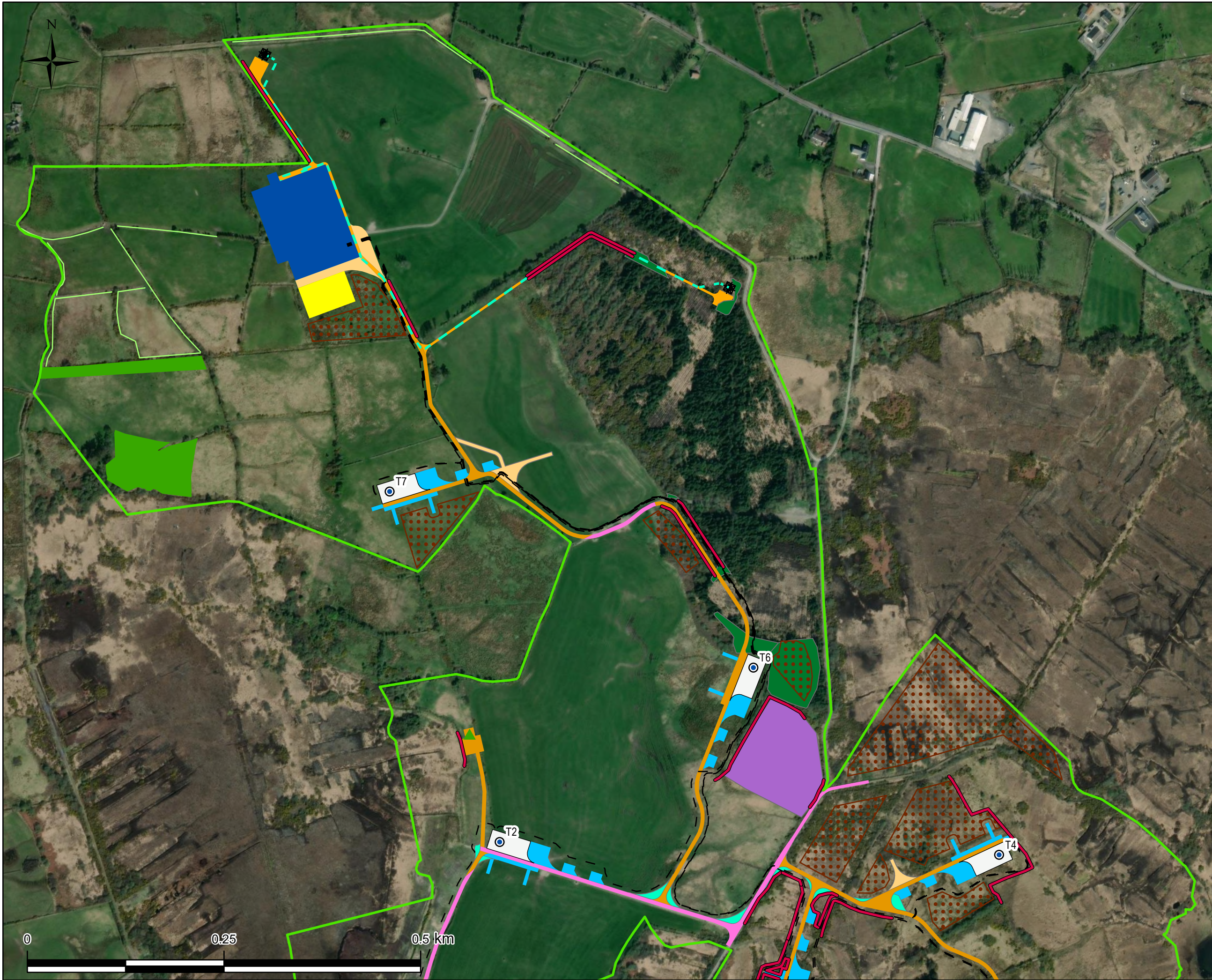
- Prior to the commencement of construction works, temporary fencing will be erected in the locations outlined in Section 6.5.2.1.3 above in relation to the protection of *Molinia* meadows, which coincide with several of the areas of marsh fritillary suitable habitat. The erection of these fences will be overseen by the ECoW. This will act to create an exclusion zone around the works and prevent the predicted additional loss of marsh fritillary suitable habitat beyond the construction footprint as drawn (i.e. no additional loss within 5m). In addition, the following area will also be subject to temporary fencing to protect marsh fritillary where suitable habitat occurs outside of *Molinia* meadows:
 - Around the proposed footprint as drawn surrounding the proposed Turbine 3 and associated cabling route. While there will be some direct loss due to the construction of the proposed infrastructure in this area, this will also act to prevent the predicted additional loss beyond that which is necessary within construction footprint as drawn (i.e. no additional loss within 5m).
 - To the west of the proposed met mast, along the margin of the area of marsh fritillary suitable habitat
- This fencing will be maintained throughout construction and will be checked for integrity at regular intervals by the ECoW on site.

Habitat Degradation – Dust Deposition

The following mitigation applies to construction areas within 20m of recorded marsh fritillary larval webs (in line with Table 4 of IAQM *Guidance on the Assessment of Dust from Demolition and Construction 2024*):

- Groundworks (i.e., works with potential to create dust) associated with proposed Turbines 3, 4 and 6, as well as upgrades to the existing tracks to the west of Turbine 3 will be fully supervised by an ECoW.
- The ECoW will regularly monitor adjacent marsh fritillary larval web areas on a daily basis for potential signs of dust deposition or any other habitat degradation. Dust level thresholds and weather will also be

	monitored in line with the mitigations set out in Section 6.5.2.1.2 above. ➤ If any signs of habitat degradation are noted, the dust-producing works will be immediately halted and further mitigation to protect larval web areas from dust will be implemented in advance of resuming work. ➤ The ECoW will have power to halt construction works if required as outlined above. ➤ All of the additional dust mitigation measures outlined in Section 6.5.2.1.2 above will apply.
Residual Effect Following Mitigation	Following the incorporation of the mitigation measures described above, no significant negative effects on marsh fritillary are anticipated at any geographic scale.



Map Legend

- EIAR Site Boundary
- Proposed Temporary Construction Fencing
- Proposed Felling
- Proposed Construction Compound

Proposed Wind Farm

- Proposed Turbines
- Proposed Turbine Hardstands
- Temporary Hardstand Areas
- Peat and Spoil Management Areas
- Proposed Internal Cables
- Proposed Met Mast

Proposed Grid Connection

- Proposed 110kV Substation
- Proposed 100kV Grid Connection Cable Route
- Proposed End Masts

Proposed Habitat Enhancement

- Proposed Woodland Planting
- Proposed Linear Planting and Enhancement
- Proposed Marsh Fritillary Enhancement Areas

Proposed Site Roads

- Proposed Upgrade to Existing Access Tracks
- Proposed New Access Tracks
- Temporary Construction Tracks
- Temporary Site Entrance
- Temporary Widening

Spatial Reference
Name: IREN95 Irish Transverse Mercator
Datum: IREN95
Projection: Transverse Mercator

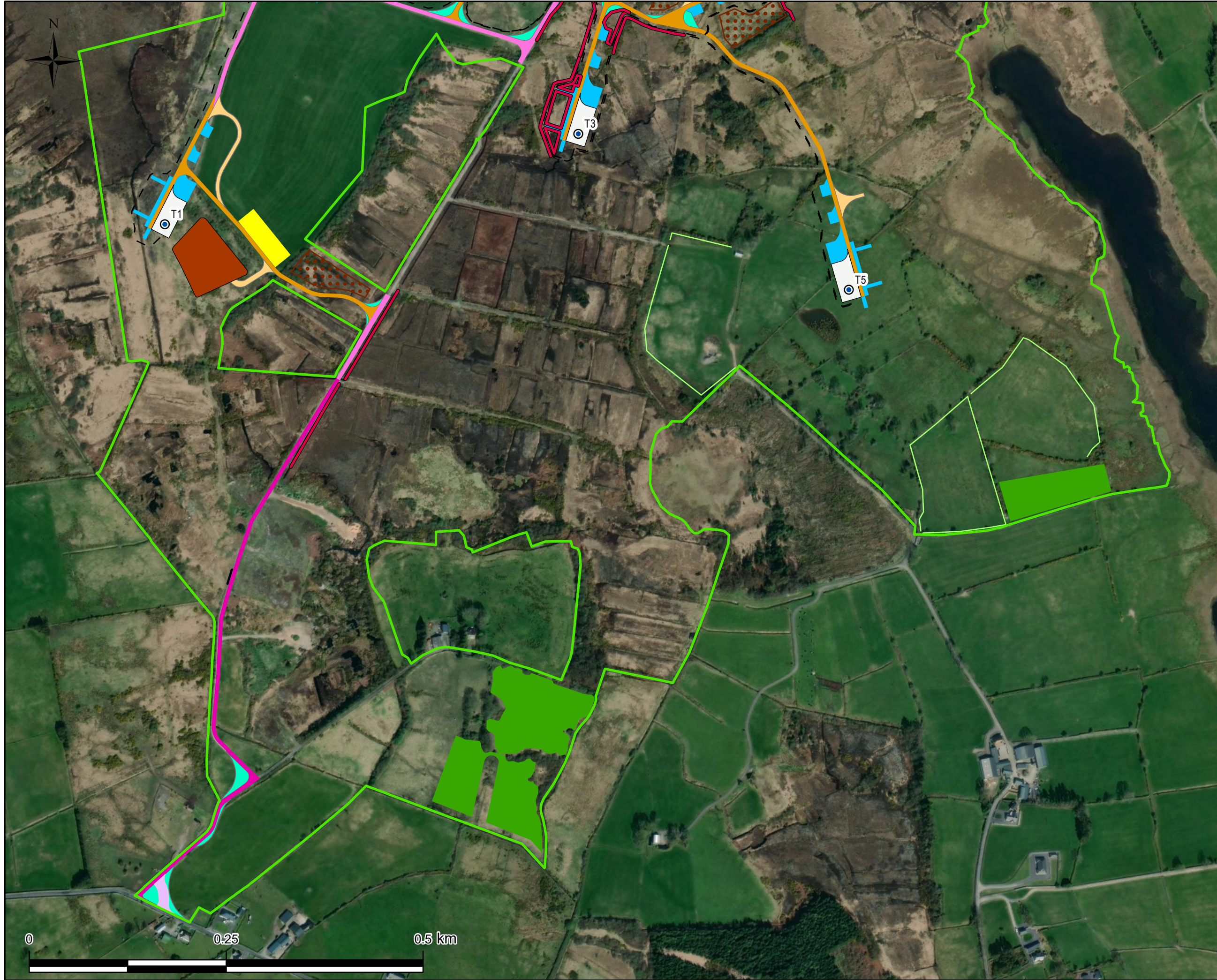
SITE LOCATION - NOT TO SCALE

Drawing Title
Proposed Temporary Fencing Locations North

Project Title
Proposed Cunlaghfadda Green Energy Project

Project No. 220825	Drawing No. 6-11a	Scale 1:4,500
Drawn By MNR	Checked By KB	Date 07/05/2026

Email: info@mkofireland.ie / Website: www.mkofireland.ie



Map Legend

- ElAR Site Boundary
- Proposed Temporary Construction Fencing
- Proposed Construction Compound
- Proposed Wind Farm**
 - Proposed Turbines
 - Proposed Turbine Hardstands
 - Temporary Hardstand Areas
 - Proposed Borrow Pit
 - Peat and Spoil Management Areas
 - Proposed Internal Cables
- Proposed Habitat Enhancement**
 - Proposed Woodland Planting
 - Proposed Linear Planting and Enhancement
- Proposed Site Roads**
 - Proposed Upgrade to Existing Access Tracks
 - Proposed New Access Tracks
 - Proposed Upgrade to Public Road
 - Temporary Construction Tracks
 - Temporary Site Entrance
 - Temporary Widening
 - Passing Bay

Spatial Reference
Name: IREN95 Irish Transverse Mercator
Datum: IREN95
Projection: Transverse Mercator

SITE LOCATION - NOT TO SCALE

Drawing Title
Proposed Temporary Fencing Locations South

Project Title
Proposed Cunlaghfadda Green Energy Project

Project No. 220825	Drawing No. 6-11b	Scale 1:4,500
Drawn By MNR	Checked By KB	Date 07/05/2026

Email: info@mkofireland.ie / Website: www.mkofireland.ie

6.5.3 Likely Significant Effects During Operational Phase

6.5.3.1 Effects on Habitats during Operation

The operation of the Proposed Project will not result in any additional land take or loss of habitats and as such there is no potential for any significant effects in this regard.

The BMEP which has been prepared for the Proposed Project (included as Appendix 6-4) includes for enhancement of 1.16ha of *Molinia* meadow and suitable marsh fritillary habitat within the Site, creation of approximately 3.5ha native scrub and woodland habitat and planting of over 2.5km of new linear treeline and hedgerow habitats/wildlife commuting corridors within the Site.

The habitat enhancement measures within the BMEP will commence during the planting season in advance of or during the first phase of construction of the Proposed Project and will be maintained for the operational lifetime of the Proposed Project.

The potential for significant effects on rivers, streams, open waterbodies and sensitive aquatic species as a result of potential deterioration of water during the operational phase of the Proposed Project is assessed in detail in the following subsections in Table 6-23 and Table 6-24.

6.5.3.1.1 Assessment of Potential Effects on Aquatic Habitats and Associated Aquatic Species

Table 6-23 Assessment of potential effects on aquatic habitats and associated aquatic species during operation

Description of Effect	The potential for effects on water quality during the operational phase of the Proposed Project is fully described in Chapter 9 Water of this EIAR. Section 9.5.3 of Chapter 9 identified the following potential pathways for deterioration of water quality during the operational phase of the Proposed Project. Potential Effects from the Replacement of Natural Surfaces with Lower Permeability Surfaces Progressive replacement of the peat or vegetated surface with impermeable surfaces could potentially result in an increase in the proportion of surface water runoff reaching the surface water drainage network. This could potentially increase runoff from the site and increase flood risk downstream of the Site. In reality, the access tracks will have a higher permeability than the underlying peat. However, it is conservatively assumed in this assessment that the proposed access tracks and hardstands are impermeable. The assessed footprint comprises turbine bases and hardstandings, access tracks, site entrances, substation and temporary construction compounds. During storm rainfall events, additional runoff coupled with increased velocity of flow could increase hydraulic loading, resulting in erosion of watercourses and impact on aquatic ecosystems. Potential Effects from Runoff Resulting in Contamination of Surface Waters During the operational phase, the potential for silt-laden runoff is much reduced compared to the construction phase. In addition, all permanent drainage controls will be in place and the disturbance of ground and excavation works will be complete. Some minor maintenance works may be completed, such as maintenance of site entrances, internal roads, hardstand areas and amenity pathways. These works would be of a very minor scale and would be very infrequent. Potential sources of sediment laden water would only arise from surface water runoff from small areas where new material is added during maintenance works. These minor activities could, however, result in the release of suspended solids to surface water and could result in an increase in the suspended sediment load, resulting in
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	increased turbidity which in turn could affect the water quality of downstream water bodies. Potential effects could be significant if not mitigated. During such maintenance works there is a small risk associated with the release of hydrocarbons from site vehicles, although it is not envisaged that any significant refuelling works will be undertaken on site during the operational phase. Potential Effects from Water Supply at Substation During the operational phase it is proposed to either harvest rainwater from the roofs of the control buildings at the substation or to install a groundwater well adjacent to the substation in accordance with the Institute of Geologists Ireland, Guide for Drilling Wells for Private Water Supplies (IGI, 2007). The well will be flush to the ground and covered with a standard manhole. An in-well pump will direct water to a water tank within the roof space of the control building. The proposed groundwater well and associated extraction has the potential to effect local groundwater levels in the surrounding lands. In the absence of mitigation, there is potential as a result of the above identified pathways for deterioration of water quality which in turn has potential to affect watercourses including the Meander River and River Robe downstream of the Site as well as the pond identified within the Site and the aquatic fauna these aquatic habitats support.
Assessment of Significance Prior to Mitigation	In the absence of mitigation measures, there will be no potential for significant effects on local surface water quantity. This is due to the small footprint of the Proposed Project (5ha) with respect to the total Site area (165.3ha) and the baseline hydrological condition which is characterised by high rates of surface water runoff rates and restricted groundwater recharge. Additionally, in the absence of mitigation measures, there is no potential for significant effects on local surface water quality due to the minor and non-invasive nature of the maintenance works, and no potential for significant effects arising from water supply at the substation due to the small volumes of water required during the operational phase. Therefore there is no potential for significant effects on water quality or groundwater levels at any geographic scale during the operation of the Proposed Project.
Mitigation	Whilst no significant effects on water quality are anticipated, potential for effects on water quality associated with the operational phase drainage of the site has been fully mitigated through appropriate drainage design and mitigation as fully described in Chapter 9 of the EIAR.
Residual Effect Following Mitigation	Following the implementation of mitigation, there will be no significant residual effect on aquatic habitats or species as a result of the operational phase of the Proposed Project.

6.5.3.2 Effects on Fauna during Operation

The operation of the Proposed Project will not result in any additional habitat loss or deterioration, nor will it result in a significant increase in anthropogenic activity (relative to current agricultural and turbary management practices) due to its location and scale. As such, the operation of the Proposed Project will not result in a significant effect on faunal species due to habitat loss or disturbance at any geographic scale.

The BMEP measures described in Appendix 6-4 will result in the establishment of habitats of higher value for local faunal species. Such measures will have positive effects for fauna at the Site. Enhancement measures proposed to improve areas of *Molinia* meadow and suitable marsh fringing habitat will provide greater opportunity for the species to expand its range within the Site. There will be a net gain in linear habitat with the replanting plan for the Site, which will also provide more foraging opportunities for fauna, as well as additional shelter for birds and mammals, and commuting links for bats.

Any potential for effects on aquatic or water-dependent species as a result of water quality deterioration during the operational phase of the Proposed Project is captured and assessed within Section 6.5.3.1.1 above and is not repeated here.

The potential for significant effects on bat species resulting from the operation of the Proposed Project was identified and therefore, these are identified as KERs during the operational phase and assessed further in the section below.

6.5.3.2.1 Assessment of Potential Effects on Bats

Potential effects on bats during operation relate primarily to collision mortality, barotrauma and other turbine-related injuries. Potential disturbance or displacement effects associated with operational lighting and noise were also considered; however, as outlined in Section 5.4 of the Bat Report, included as Appendix 6-2 of this chapter, these are not identified as significant effect pathways for the Proposed Project. These effects were assessed with reference to baseline bat activity, species-specific collision vulnerability, site-risk characteristics and the proposed operational mitigation strategy.

Table 6-24 Assessment of potential effects on bats during operation

Description of Effect	The following high collision risk species were recorded during the dedicated bat surveys: ➤ Leisler's bat ➤ Common pipistrelle ➤ Soprano pipistrelle ➤ Nathusius' pipistrelle The following low collision risk species were also recorded: ➤ <i>Myotis</i> spp. ➤ Brown long-eared bat ➤ Lesser horseshoe bat Overall activity levels for low collision risk species were low and no significant collision-related effects are anticipated for these species. The Proposed Project is located on a site of overall <i>Low</i> site risk in accordance with NatureScot (2021), reflecting the generally low suitability of the Site for commuting and foraging bats, the predominantly open grassland and peatland character of the Site, and the limited extent of linear features. The Proposed Project is classified as a medium-scale development, resulting in an overall <i>Low</i> site risk score. For the high collision risk species, overall collision risk was assessed using the NatureScot (2021) framework, based on a cross-tabulation of site risk and bat activity levels. Site-level collision risk for Leisler's bat, common pipistrelle and soprano pipistrelle was assessed as <i>Low</i> at typical activity levels and <i>Medium</i> at peak activity levels. Nathusius' pipistrelle was assessed as <i>Low</i> at both typical and peak activity levels. Elevated activity was recorded only at a limited number of detector locations, specifically D03 (T02) and D06 (T06), where high median activity of common and soprano pipistrelles was recorded during autumn and spring respectively. These localised increases in activity were associated with nearby treelines and hedgerows and do not indicate consistently elevated activity across the wider Site. Site observations also indicate that bat movement is largely associated with localised habitat features and is not concentrated across the turbine envelope. Confirmed roosts are located outside the Proposed Project footprint, and emergence survey observations indicated movement towards adjacent habitat features away from the nearest turbine location.
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	Operational noise and lighting were also considered. The Proposed Project does not include Battery Energy Storage System (BESS) infrastructure or other significant sources of ultrasonic emissions. Operational noise will be limited primarily to low-frequency audible noise generated by turbines and substation infrastructure and is not considered likely to interfere with bat echolocation or behaviour. Lighting will be limited in extent and duration and will be controlled through a sensitive lighting design to avoid illumination of important bat habitats and commuting routes.
Assessment of Significance Prior to Mitigation	No significant collision-related effects are anticipated for <i>Myotis</i> spp., brown long-eared bat or lesser horseshoe bat, as these species are considered to be at low collision risk and were recorded at low activity levels. For Leisler's bat, common pipistrelle and soprano pipistrelle, collision risk was assessed as <i>Low</i> at typical activity levels and <i>Medium</i> at peak activity levels at site level. Nathusius' pipistrelle was assessed as <i>Low</i> at both typical and peak activity levels. While the overall site risk is classified as <i>Low</i> and elevated activity is limited to locations associated with localised habitat features, these species are considered to be at higher collision risk due to their ecological traits and use of the Site. In accordance with Bat Conservation Ireland (2026) guidance, <i>Medium</i> risk at peak activity levels triggers the requirement for site-specific mitigation, particularly in relation to Leisler's bat. In the absence of mitigation, there is potential for collision mortality to result in negative effects on Leisler's bat, common and soprano pipistrelle at a local geographic scale. On this basis, the potential operational effect is considered to be <i>potentially significant at a local geographic scale</i> in the absence of mitigation.
Mitigation	A range of embedded and site-specific mitigation measures will be implemented to reduce operational collision risk and maintain low operational risk at the Site. These include: ➤ Implementation of bat felling buffers around all turbines in accordance with NatureScot (2021), NIEA (2021) and BCI (2026), such that habitat features used by bats are maintained outside the turbine risk zone; ➤ Management of vegetation within turbine buffer zones to prevent the development of features that could function as commuting routes or attractive foraging habitat close to turbines; ➤ Implementation of blade feathering across all turbines during periods below cut-in speed; ➤ Implementation of a targeted curtailment strategy for Leisler's bat during the principal peak activity period (August to September inclusive), operating from sunset to two hours after sunset and from two hours before sunrise to sunrise, when wind speeds are below 6 m/s and temperatures are above 10°C; ➤ Implementation of a sensitive operational lighting strategy, including directional, low-intensity, warm-spectrum lighting, maintenance of dark corridors, and avoidance of light spill onto treelines, hedgerows and other boundary habitats; ➤ Implementation of habitat enhancement measures under the BMEP, including approximately 2.5km of new native linear planting and approximately 3.5ha of native broadleaved woodland, designed to strengthen connectivity and improve habitat quality in areas separated from turbine locations; These measures represent embedded and site-specific operational mitigation and are designed to reduce collision risk and maintain bat activity away from turbine risk zones.
Residual Effect Following Mitigation	Taking into account the embedded design of the Proposed Project and the implementation of site-specific mitigation measures, no significant residual effects on bats are anticipated during operation.

	With the application of bat felling buffers, blade feathering, targeted curtailment and sensitive lighting design, residual effects associated with collision mortality, barotrauma and other operational effects are predicted to be <i>Not Significant</i> .
Monitoring	➤ A minimum three-year programme of post-construction monitoring, comprising carcass searches and acoustic monitoring, to validate the effectiveness of the mitigation strategy; ➤ Adaptive management of curtailment measures if monitoring identifies elevated mortality or unforeseen effects. ➤ A detailed bat monitoring plan is outlined in Section 6.4 of the Bat Report (Appendix 6-2).

6.5.4 Likely Significant Effects During Decommissioning phase

Decommissioning phase activities are fully described in Chapter 4 (Section 4.12) of the EIAR. There will be no additional habitat loss associated with the decommissioning of the Proposed Project and therefore there will be no significant effects in this regard.

The wind turbines proposed as part of the Proposed Wind Farm are expected to have a lifespan of approximately 35 years. Following the end of their useful life, the equipment may be replaced with a new technology, subject to planning permission being obtained, or the Proposed Wind Farm may be decommissioned fully.

Upon decommissioning of the Proposed Wind Farm, the wind turbines and the meteorological mast would be disassembled in reverse order to how they were erected. All above ground turbine and mast components would be separated and removed off-site for recycling. Turbine and mast foundations would remain underground and would be covered with earth and allowed to revegetate. Leaving the foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in significant temporary environment disturbances such as noise, dust and/or vibration. Site access tracks will be used during the operational phase by farm machinery and therefore will be retained post decommissioning to facilitate these activities.

The underground electrical cabling connecting the turbines to the proposed 110kV substation will be removed from the cable ducts. The cabling will be pulled from the cable ducts using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at the original cable jointing pits which will be excavated using a mechanical excavator and will be fully re-instated once the cables are removed. The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance. The cable materials will be transferred to a suitable recycling or recovery facility.

The proposed 110kV substation will remain in place as it will be part of the Electricity Grid under the ownership and control of ESB Networks and Eirgrid.

A Decommissioning Plan has been prepared (Appendix 4-6). The Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will be agreed with the competent authority at that time. The potential for effects during the decommissioning phase of the Proposed Wind Farm has been fully assessed in the EIAR.

As noted in the Scottish Natural Heritage report (SNH) *Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms* (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the Proposed Wind Farm,

technological advances and preferred approaches to reinstatement are likely to change. According to the SNH guidance, it is therefore:

“best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm”.

The same mitigation to prevent significant impacts on water quality and associated aquatic fauna and terrestrial habitats and fauna during construction will be applicable to the decommissioning phase. It can be concluded that following the implementation of preventative mitigation, there is no potential for the decommissioning of the Proposed Project to result in significant effects on biodiversity.

6.5.5 Likely Significant Effects on Designated Sites

6.5.5.1 European Designated Sites

The Proposed Project is located completely outside of the boundary of any European Sites. The Meander River, which flows along the southern boundary of the Site, has direct surface water hydrological connectivity to the River Moy SAC, located approximately 4.9km downstream. Additionally, there is potential groundwater connectivity with Balla Turlough SAC, located approximately 4.7km to the north of the Site. As such, the potential for likely significant effect was identified on the following European Sites:

- River Moy SAC [002298]
- Balla Turlough SAC [000463]
- Lough Mask SPA [004062]

Additionally, the Lough Mask SPA was considered within the Likely Zone of Influence due to the potential for *ex-situ* effects on associated bird species. All potential effects on bird species are fully assessed within Chapter 7 Birds of this EIAR.

In relation to European sites, an Appropriate Assessment Screening Report and Natura Impact Statement (NIS) have been prepared to provide the competent authorities with the information necessary to complete an Appropriate Assessment for the Proposed Project in compliance with Article 6(3) of the Habitats Directive.

As per the EPA Guidance (2022), “A biodiversity section of an EIAR, for example, should not repeat the detailed assessment of potential effects on European sites contained in documentation prepared as part of the Appropriate Assessment process, but it should refer to the findings of that separate assessment in the context of likely significant effects on the environment, as required by the EIA Directive”. This section provides a summary of the key assessment findings with regard to potential impacts on European Sites.

The Stage 1 Screening Assessment concluded as follows:

“It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the Proposed Project would be likely to have a significant effect on the following European Sites:

- River Moy SAC [002298]
- Balla Turlough SAC [000463]
- Lough Mask SPA [004062]

As a result, an Appropriate Assessment is required and a Natura Impact Statement has been prepared in respect of the Proposed Project.”

The findings presented in the NIS are that:

“Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction, operation and decommissioning of the Proposed Project will not adversely affect the integrity of European Sites.

Therefore, it can be objectively concluded that the Proposed Project, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.”

6.5.5.2 Nationally Designated Sites

As discussed in Section 6.3.1.1, the below listed Nationally Designated Sites have been identified as being within the Likely ZoI of the Proposed Project. A potential for impact as a result of deterioration in surface and groundwater quality as a result of construction of the Proposed Project was identified:

- Balla Turlough pNHA [000463]
- Lough Carra/Mask Complex pNHA [001774]

Balla Turlough pNHA and Lough Carra/Mask Complex pNHA are also assessed under their SAC and SPA designations within the NIS which accompanies this application. As discussed in Section 6.5.2 and 6.5.3, a range of mitigation measures are in place to protect surface water receptors and groundwater receptors during construction of the Proposed Project. Further detail with regard to these measures are provided in Chapter 9 Water of this ELAR. All potential effects on bird species are fully assessed within Chapter 7 Birds of this ELAR. With the prescribed mitigations in place, there is no potential for significant effects on these pNHAs via the identified pathways.

6.6 Cumulative Impact Assessment

The Proposed Project was considered in combination with other existing, consented and proposed plans and projects in the area that could result in cumulative impacts on the KERs identified in Section 6.4.3 of this report. This included a review of online Planning Registers and served to identify past, present and future plans and projects, their activities and their predicted environmental effects. The projects considered are listed in Section 2.9 of Chapter 2. The full list of projects has been considered and relevant projects from this list are discussed in this section.

6.6.1 Assessment of Projects

As described in Section 2.9 of the EIAR, relevant projects have been assessed in-combination with the Proposed Project. These include planning applications in the vicinity of the Site, within the ZoI of all habitats and species considered in this chapter, and other wind energy applications within the wider area. These have not been repeated here to reduce the duplication of information within this EIAR. However, they have been fully considered in this assessment with further detail provided below. In addition, Section 6.6.3 concludes on the potential for cumulative effects on biodiversity when the Proposed Project is considered in-combination with these projects.

Table 6-25 below provides the cumulative study areas for individual EIAR topics that are also relevant in relation to ecological receptors i.e., hydrological connectivity is important for assessing potential for effects on designated sites.

Potential for cumulative effects in relation to birds is assessed separately within Chapter 7 of this EIAR.

Table 6-25 Cumulative Study Areas in relation to ecological receptors (birds are assessed separately within Chapter 7 of this EIAR)

Individual Topic	Maximum Extent	Justification
Biodiversity – Flora and Fauna (excluding birds and bats)	10km from the Site	Using the precautionary approach and given the nature and scale of the Proposed Project, the geographical boundary for terrestrial ecological aspects, i.e. habitats, is 10 km for cumulative assessment for the Proposed Project.
Biodiversity - Bats	15km from the Proposed Wind Farm turbines.	Bats are a mobile species which can cover large distances for foraging and roosting over a range of varied habitats. NatureScot (2021) <i>'Bats and onshore wind turbines - survey, assessment and mitigation'</i> recommends a 10km cumulative study area for bats. Bat Conservation Ireland (2026) <i>'Bat Survey, Assessment & Mitigation Guidelines for Onshore Wind Turbines in Ireland'</i> recommends an increased cumulative impact assessment zone of 15km. Therefore, on a precautionary basis, a 15km cumulative study area is considered for potential cumulative effects on bats.
Water	WFD Catchment for large infrastructural developments such as wind farms, energy and public transport developments.	The Site is located in 2 no. WFD Catchments and the hydrological cumulative study area is delineated as follows:

	River Sub Basins for all smaller proposed, permitted or existing plans or projects (i.e. private and commercial type developments).	> A quantitative assessment was completed based on flow volumes obtained from the EPA HydroTool Nodes downstream of the Site in the Moy and Killala Bay Catchment. This assessment concludes that the due to dilution no hydrological cumulative effects will occur beyond EPA Hydrotool Node 34_3632 on the Manulla River near Belcarra. At this location, the Manulla River has a total upstream catchment area of 108km². There will be no potential for cumulative effects beyond this cumulative study area due to increases in flow volumes (as the catchment area increases) and increasing distance from the Site. > A further assessment has been completed within the Corrib Catchment. This assessment concludes that the due to dilution no hydrological cumulative effects will occur beyond EPA Hydrotool Node 30_2656 on the River Robe near Hollymount. At this location, the River Robe has a total upstream catchment area of 184km². There will be no potential for cumulative effects beyond this cumulative study area due to increases in flow volumes (as the catchment area increases) and increasing distance from the Site. > The Cong-Robe and Swinford GWBs underlying these areas have also been included for the purposes of a conservative cumulative impact assessment.
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6.6.1.1 Other Wind Farm Projects

As outlined in Table 6-25 above, for the purposes of this cumulative assessment, wind farms within a 15-kilometre radius of the Proposed Wind Farm turbine locations are listed below in Table 6-26. In total, 7 no. applications relating to wind energy were identified within 15km of the Site. Each identified wind energy project is considered further in the sections below.

Table 6-26 Wind farm projects within 15km of the Proposed Wind Farm turbines

County	Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
Mayo	Mace Upper Wind Farm	Existing	3	c.7.5km
	Cloontooa Wind Farm	Existing	6	c.9.0km
	Ballykinava Wind Farm	Existing	6	c.10.1km
	Cuillalea Wind Farm	Existing	4	c.10.5km
	Magheramore Wind Farm	Existing	6	c.11.0km
	Cuillalea Wind Farm Extension	Existing	2	c.11.0km

County	Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
	Connacht GAA Turbines	Permitted	3	c.14.9km

6.6.1.1.1 Mace Upper Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Mace Upper Wind Farm was considered. The planning file³⁵ was consulted on the Mayo County Council Planning Register and the Environmental Impact Statement (EIS) was reviewed.

The Wind Farm consists of 3 no. turbines on agricultural lands. In terms of ecology, the information provided within the EIS states *“No rare or protected plant species have ever been recorded as growing on the site. The study site has no statutory Natural Heritage designation.”* No further information is provided. In regards to hydrological impacts, *“From a geological point of view the topsoil is underlain by dense boulder clay. This boulder clay stratum possesses a low permeability. Thus any surface pollution would find great difficulty in getting into the underlying groundwater. In any case the constructional works carried out on this site will not produce any significant pollutional discharges... There will be no significant constructional impacts on the geology or hydrogeology of the site.”* No AA Screening Report of NIS was prepared with respect to this development.

The Mace Upper Wind Farm is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project, the lack of significant residual effects predicted as a result of Mace Upper Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMEP for the Proposed Project (Appendix 6-4 of this EIAR), there is no potential for significant cumulative effect.

6.6.1.1.2 Cloontooa Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Cloontooa Wind Farm was considered. The planning file³⁶ was consulted on the Mayo County Council Planning Register and the EIS and NIS were reviewed.

Cloontooa Wind Farm consists of 6 no. turbines on lands comprising cutover bog, conifer plantation and agricultural grasslands. Within the EIS, impacts on flora and habitats were considered in terms of habitat loss during the construction phase. Impacts on fauna during construction were considered in terms of bird species, water quality deterioration and works on bridges to facilitate turbine delivery. During operation, the potential for water quality deterioration was discussed and bats were considered in terms of collision risk and barotrauma impacts. Mitigation and monitoring measures were prescribed accordingly and residual impacts were considered negligible for all predicted impacts. A cumulative assessment was undertaken and it was concluded that significant cumulative effects were not expected.

The NIS for this project was also reviewed. The potential for likely significant effects were excluded due to the distance between the site and the SACs, and tenuous or lacking hydrological connections. The Lough Corrib SAC is located over 37km downstream of the development site, therefore it was considered unlikely that any significant effects would occur, following the implementation of mitigation measures. Therefore, no significant or indeterminate effects were predicted on any QIs or SCIs associated with any European Sites in the vicinity of Cloontooa Wind Farm.

³⁵ <https://www.eplanning.ie/MayoCC/AppFileRefDetails/001954/0>

³⁶ <https://www.eplanning.ie/MayoCC/AppFileRefDetails/13633/0>

While Cloontoa Wind Farm is located in the same hydrological sub-catchment as part of the Proposed Project (the Robe_SC_10), given the distance from the Proposed Project, the lack of significant residual effects predicted as a result of Cloontoa Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMEP for the Proposed Project (Appendix 6-4 of this EIAR), there is no potential for significant cumulative effect.

6.6.1.1.3 **Ballykinava Wind Farm**

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Ballykinava Wind Farm was considered. The planning file³⁷ was consulted on the Mayo County Council Planning Register and the EIS and NIS were reviewed.

Ballykinava Wind Farm consists of 6 no. turbines on lands comprising largely of agricultural grasslands. Within the EIS, impacts on flora and habitats were considered in terms of habitat loss during the construction phase. Impacts on fauna during construction were considered in terms of bird species, water quality deterioration and works on bridges to facilitate turbine delivery. During operation, the potential for water quality deterioration was discussed and bats were considered in terms of collision risk and barotrauma impacts. Mitigation and monitoring measures were prescribed accordingly and residual impacts were considered negligible for all predicted impacts. A cumulative assessment was undertaken and it was concluded that significant cumulative effects were not expected.

The NIS for this project was also reviewed. The potential for likely significant effects were excluded due to the distance between the site and the SACs, and tenuous or lacking hydrological connections. The Lough Corrib SAC is located over 37km downstream of the development site, therefore it was considered unlikely that any significant effects would occur, following the implementation of mitigation measures. Therefore, no significant or indeterminate effects were predicted on any QIs or SCIs associated with any European Sites in the vicinity of Ballykinava Wind Farm.

While Ballykinava Wind Farm is located in the same hydrological subcatchment as part of the Proposed Project (the Robe_SC_10), given the distance from the Proposed Project, the lack of significant residual effects predicted as a result of Ballykinava Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMEP for the Proposed Project (Appendix 6-4 of this EIAR), there is no potential for significant cumulative effect.

6.6.1.1.4 **Cuillalea Wind Farm**

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Cuillalea Wind Farm was considered. The planning file³⁸ was consulted on the Mayo County Council Planning Register and a document providing a high-level outline of the biodiversity, floral and faunal impacts of the development was reviewed.

Cuillalea Wind Farm consists of 4 no. turbines on lands comprising largely of blanket bog and wet heath. The blanket bog habitat is described as “*modified everywhere by cutting*”, being actively harvested and traversed by a network of drains, with no pools or pool remnants occurring and *Sphagnum* cover seldom more than 10%. As such it was not considered intact or active blanket bog. Heath also occurs on a mineral island within the site. Additionally, frogs were observed and it was noted that common lizard “*probably occurs*”. No effects on biodiversity, flora or fauna arising from the development were discussed.

No AA Screening Report or NIS was prepared with respect to this development, however it was noted that “*The site has not been included in any designated area (Natural Heritage Area, Special Area of Conservation etc.). The nearest such area is Balla turlough, a proposed candidate SAC.*”

³⁷ <https://www.eplanning.ie/MayoCC/AppFileRefDetails/13617/0>

³⁸ <https://www.eplanning.ie/MayoCC/AppFileRefDetails/981672/0>

The Cuillalea Wind Farm is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project, the lack of significant residual effects predicted as a result of Cuillalea Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMEP for the Proposed Project (Appendix 6-4 of this EIAR), there is no potential for significant cumulative effect.

6.6.1.1.5 **Magheramore Wind Farm**

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Magheramore Wind Farm was considered. The planning files³⁹ were consulted on the Mayo County Council Planning Register, and the EIS and NIS were reviewed.

Magheramore Wind Farm consists of 6 no. turbines on lands comprising largely cutover bog habitats. Within the EIS, impacts on flora and habitats were considered in terms of habitat loss during the construction phase. Impacts on fauna during construction were considered in terms of bird species, water quality deterioration and works on bridges to facilitate turbine delivery. During operation, the potential for water quality deterioration was discussed and bats were considered in terms of collision risk and barotrauma impacts. Mitigation and monitoring measures were prescribed accordingly and residual impacts were considered negligible for all predicted impacts. A cumulative assessment was undertaken and it was concluded that significant cumulative effects were not expected.

The NIS for this project was also reviewed. It was considered that, with the proposed drainage design and site management mitigations in place, any indeterminate or significant impacts on the River Moy SAC could be excluded. The Lough Corrib SAC is located over 37km downstream of the development site, therefore it was also considered unlikely that any significant effects would occur, following the implementation of mitigation measures. Therefore, no significant or indeterminate effects were predicted on any QIs or SCIs associated with any European Sites in the vicinity of Magheramore Wind Farm.

The Magheramore Wind Farm is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project, the lack of significant residual effects predicted as a result of Magheramore Wind Farm or the Proposed Project, as well as the enhancement measures proposed within the BMEP for the Proposed Project (Appendix 6-4 of this EIAR), there is no potential for significant cumulative effect.

6.6.1.1.6 **Cuillalea Wind Farm Extension**

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Cuillalea Wind Farm Extension was considered. The planning file⁴⁰ was consulted on the Mayo County Council Planning Register, and the Environmental Study and report on the Ecological Aspect of Landscape and Site Management were reviewed.

Cuillalea Wind Farm Extension consists of 2 no. turbines on lands comprising largely cutover bog and upland blanket bog. Within the Environmental Study, peat erosion was considered unlikely and the mitigation measures included the drainage scheme for the new roads and stilling basins. It was stated that *“The working turbines are expected to have no impact on flora and fauna”*. Considered cumulatively with the existing Cuillalea Wind Farm, *“The existing turbines have not noticeably altered the ecology or wildlife of the area and the two planned additions will not create a significant cumulative effect.”*

No AA Screening Report or NIS was prepared with respect to this development, however it was noted that *“The site has not been included in any designated area (proposed Natural Heritage Area,*

³⁹ <https://www.eplanning.ie/MayoCC/AppFileRefDetails/13631/0>

⁴⁰ <https://www.eplanning.ie/MayoCC/AppFileRefDetails/073371/0>

candidate Special Area of Conservation etc.) and with the absence of active blanket bog is unlikely to be suggested. The nearest such area is Balla turlough, a candidate SAC (Code No 463)."

The Cuillalea Wind Farm Extension is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project, the lack of significant residual effects predicted as a result of Cuillalea Wind Farm Extension or the Proposed Project, as well as the enhancement measures proposed within the BMEP for the Proposed Project (Appendix 6-4 of this EIAR), there is no potential for significant cumulative effect.

6.6.1.1.7 Connacht GAA Turbines

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the permitted Connacht GAA Turbines was considered. The planning file⁴¹ was consulted on the Mayo County Council Planning Register, and the Planning Report was reviewed.

No separate AA Screening Report or NIS were prepared with respect to this development, however European Sites and Screening for Appropriate Assessment were addressed within the Planning Report. It was stated that, *"Considering the nature of the proposed development, its size, scale and location, it is concluded that the proposed development is unlikely to result in significant effects on the identified European Sites."* No further information or ecological assessments are provided.

The Connacht GAA turbines are small and located within an agricultural landscape in a separate hydrological sub-catchment to the Proposed Project. Given the small scale of the development and distance from the Proposed Project, the lack of significant residual effects predicted as a result of the Proposed Project, as well as the enhancement measures proposed within the BMEP for the Proposed Project (Appendix 6-4 of this EIAR), there is no potential for significant cumulative effect.

6.6.1.2 Other EIA or Large-scale Projects

A number of other large-scale projects (excluding wind farms) which have been subject to the EIA process and/or were identified within 10km of the Site and/or within the hydrological cumulative area as outlined in Table 6-25 above. These included the following:

- Quarry of 13.0Ha. which will be subject to removal of overburden, extraction of rock down to 1mOD and processing of rock using mobile plant over a 25 yr period. (MCC 20/288)
- Anaerobic digestion facility to produce renewable biomethane, CO₂ (which will be captured), and a bio-based fertiliser from organic material (MCC 2460419)
- Proposed deepening of an existing limestone quarry. (MCC 2560055)
- The development is 8.4 hectares and comprises of; removal of vegetation and overburden, extraction of rock by blasting and rock breaking means, landscaping and restoration of site, all associated ancillary facilities/works, 25 year permission. (MCC 20/77)
- Quarry. (ABP-SU0132)
- The removal of the existing fish screen (including automated debris rake) and supporting structure from the Cong Canal and the installation of a new fish screen(including automated debris rake) and supporting structure in the Cong Canal. (GCC 2561923)
- To retain and complete an extension to the rear and side of an existing dwelling house, and also seek permission for the construction of a new wastewater treatment system to replace existing defunct system. (GCC 2460440)
- Construction of 60 apartments with all associated site works. (ACP- 315133)
- Claremorris Closed Landfill Remediation Project. (ACP-313681)

⁴¹ <https://www.eplanning.ie/MayoCC/AppFileRefDetails/2360568/0>

- Continued use of existing communications structure with associated equipment. ESB's existing Dalton Substation. (ACP-247527)
- 10-year permission for construction of an energy storage facility, includes electrical substation building and electrical compound, electrical transformer/inverter station modules. (ACP-302850)
- Development at a quarry consisting of erection of a portal frame building 8.76 metres high for aggregate storage and stores. (ACP-246645)
- Further development of a quarry (10.58 Hectares) (ACP-QD0009)
- The development will consist of the deepening of 19 ha. of the existing permitted quarry extraction area (Plan File Ref. No. 20/77: ABP-308748-20 & Plan File Ref. No. PL16.SU0132: QD16.QD0009). The applicant is seeking a 25-year permission. This planning application is accompanied by an Environmental Impact Assessment Report. (ACP- 322336)
- Removal of vegetation and overburden, extraction of rock by blasting and rock breaking means, landscaping and restoration of site, all associated ancillary facilities/works (25 year permission) (ACP-308748)

A full list of projects considered is included in Appendix 2-3. Given the lack of significant residual effects predicted as a result of the Proposed Project, and given the nature and locations of the above listed projects relative to the Proposed Project, no potential for significant cumulative effect in combination with these projects is predicted.

6.6.1.3 Existing Habitats and Land Uses

The potential for the Proposed Project to result in a cumulative loss or deterioration of habitats, or impact on the KER species identified, was considered in relation to the existing land uses in the area.

The Proposed Project is located primarily on improved agricultural grassland (GA1), agricultural wet grassland (GS4) and cutover bog (PB4) with small areas of conifer plantation (WD4) habitats. The Proposed Project will result in the loss of some conifer plantation which has the potential to provide habitat for some protected species. However, the loss of this habitat within the Site will be minimal in the context of this habitat in the wider landscape. The loss of this habitat associated with other developments in the wider area will also be minimal and cumulative loss of this habitat type in the wider landscape is not considered significant. Furthermore, forestry re-planting is ongoing within the wider landscape and an offsite replanting plan will be implemented to replace areas lost within the Site. The Proposed Project is also located within improved agricultural grasslands and agricultural wet grasslands, which generally provides low value habitats for faunal species. Loss of cutover bog is restricted to areas that are generally highly drained and species-poor, and that continue to be subject to turbary activity contributing to their degraded state. The loss of linear habitats including treelines and hedgerow, as well as scrub habitats will be mitigated through the replanting measures described in the BMEP. The Proposed Project will not contribute to any overall loss of high value habitat, as it has been deliberately designed to be located on habitats of low value.

Additionally, there is peat cutting within and adjacent to Site which is ongoing. However, the area of active peat cutting is small relative to the total area within the Site and the majority of the peat within these areas has already been extracted. As these turf cutting areas are abandoned, they will either be turned into pastoral farmland or scrub over. Their ecological value is likely to remain neutral or slightly improve based on the land use. Owing to the scale and nature of these areas, significant cumulative impacts are not anticipated.

On this basis, there is no pathway through which the Proposed Project could act in combination with existing land uses to give rise to adverse effects on biodiversity, flora or fauna.

6.6.2 Cumulative Impacts and Compliance with Development Plans

The following development plans have been reviewed and taken into consideration as part of this assessment:

- Mayo County Development Plan 2022-2028
- Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032
- Ireland's 4th National Biodiversity Action Plan 2023-2030

The review focused on policies and objectives that relate to designated sites for nature conservation, biodiversity and protected species. Policies and objectives relating to the conservation of Annex I habitats were also reviewed. An overview of the search results with regard to plans is provided in the table below. The potential for cumulative impact of the Proposed Project in-combination with the Plans is also considered in Table 6-27 below.

Table 6-27 Development Plan Review

Plans	Key Policies/Issues/Objectives Directly Related To Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy, and potential to result in cumulative effects
Mayo County Development Plan 2022-2028	It is the policy of the council to: <u>Natural Environment Policy 1:</u> To support the protection, conservation and enhancement of the natural heritage and biodiversity of County Mayo, 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 and Wild Fowl Sanctuaries (and other designated sites including any future designations). <u>Natural Environment Policy 2:</u> To protect and enhance the county's natural heritage and biodiversity by supporting the implementation of the National Biodiversity Action Plan 2017-2021, the National Pollination Plan 2015-2020 and County Mayo Biodiversity Plan 2015- 2020 and any future editions, in partnership with relevant stakeholders, subject to available resources. <u>Natural Environment Policy 4:</u> To conserve and enhance the county's biodiversity and ecological connectivity, identified areas of local biodiversity importance (Local Biodiversity Areas) in the towns and villages in Mayo.	The Mayo County Development Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to biodiversity, protected species and designated sites. A comprehensive AA Screening and NIS has been submitted along with this application in which impacts with regard to European Sites is assessed. In line with the County Development Plan, the BMEP associated with the Proposed Project sets out measures to enhance biodiversity within the Site. As a result, suitable habitat for the population of marsh fritillary within the Site is proposed, in addition to native broadleaved woodland planting and a net gain in linear

	<u>Natural Environment Policy 7:</u> To encourage the effective management of native and semi-natural woodlands, groups of trees and individual trees in the discharge of development management functions. <u>Natural Environment Policy 9:</u> To enhance the county’s natural heritage and biodiversity through supporting the protection and restoration of peatlands in County Mayo, where appropriate, in order to transition towards a low-carbon and circular economy. <u>Natural Environment Policy 10:</u> To recognise the role of peatlands as carbon sinks to combat climate change and ensure that peatland areas, including those designated or proposed for designation (pNHA, NHA or SAC), are conserved for their ecological, climate regulation, archaeological, cultural and educational significance. <u>Natural Environment Policy 12:</u> To seek to protect and expand the green infrastructure network within the county, where possible, and to encourage green infrastructure to be spatially connected to facilitate the extension or establishment of ecological corridors. It is an objective of the Council to: <u>Natural Environment Objective 6:</u> To protect surface waters, aquatic and wetland habitats and freshwater and water-dependent species through the implementation of all appropriate and relevant Directives and transposed legislation and seek to protect and conserve the quality, character and features of inland waterways by controlling developments close to navigable and non-navigable waterways. <u>Natural Environment Objective 7:</u> To seek the protection of the riparian zones of watercourses throughout the county, recognising the benefits they provide in relation to flood risk management, their protection of the ecological integrity of watercourse systems and the role they play in the enhancement of the county’s natural heritage and biodiversity <u>Natural Environment Objective 8:</u> To maintain, protect and where possible enhance the natural heritage and biodiversity of bogs, fens and turloughs, where appropriate, in County Mayo. <u>Natural Environment Objective 11:</u> To ensure that the impact of development within or adjacent to national designated sites, Natural Heritage Areas, Ramsar Sites and Nature Reserves likely to result in significant adverse effects on the designated site is assessed by requiring the submission of an Ecological Impact Assessment report (EcIA), Environmental Report (ER), an Environmental Impact Assessment Report (EIAR), if deemed necessary,	habitats. Detailed mitigations and enhancement proposals are in place to protect bats, their roosts and commuting corridors in line with the Development Plan. There will be no loss of Annex I peatland habitats as a result of the Proposed Project. While there will be some loss of cutover bog, as outlined in Table 6-14 above, these areas are highly drained, species-poor and subject to continued degradation due to turbary activities. Additionally, there will be no loss of species-rich cutover bog and the footprint of the Proposed Project within cutover bog habitats is small in relation to the overall cover of this habitat within the Site and wider surroundings. On review of the Mayo County Development Plan, no potential for cumulative effect when considered in-combination with the Proposed Project was identified.
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	and/ or a Natura Impact Assessment (NIS), if deemed necessary, prepared by a suitably qualified professional, which should accompany planning applications. <u>Natural Environment Objective 14:</u> To protect and enhance the ecological network throughout the county to improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive. <u>Natural Environment Objective 21:</u> To identify green and blue infrastructure and sustainable design that supports biodiversity and natural systems to adapt to climate change, contribute to climate adaptation in the built and natural environment and provide co benefits. <u>Natural Environment Objective 24:</u> To protect and enhance the county’s floodplains and wetlands as ‘green infrastructure’ which provides space for storage and conveyance of floodwater, enabling flood risk to be more effectively managed and reducing the need to provide flood defences in the future, subject to normal planning and environmental criteria.	
	<u>Natural Environment Objective 4:</u> To protect and enhance biodiversity and ecological connectivity in County Mayo, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, stonewalls, geological and geo-morphological systems, other landscape features and associated wildlife, where these form part of the ecological network. <u>Natural Environment Objective 9:</u> Recognise the importance, in terms of their natural heritage and biodiversity, of woodlands, tree lines, hedgerows, stonewalls, watercourses and associated riparian vegetation and the role they play in supporting bat populations and where possible developments will be encouraged to retain such features <u>Natural Environment Objective 13:</u> To ensure the protection of trees or groups of trees protected under Tree Preservation Orders, as well as recognise the value and encourage the retention and management of other trees and woodlands, which make a valuable contribution to the character of the landscape, ecological corridors, green infrastructure, a settlement or its setting.	As part of the BMPEP (see Appendix 6-4), any hedgerows and scrub to be lost to facilitate the Proposed Project will be replaced by replanting of additional linear hedgerow and treeline habitat within the Site as well as non-linear areas of native trees/scrub such that there will be a net gain in linear habitats and native broadleaved woodland habitat within the Site.
	<u>Natural Environment Policy 8:</u> To support measures for the prevention and/or eradication of invasive species as appropriate within the county. <u>Natural Environment Objective 16:</u> To ensure that where the presence of invasive species is identified at the site of any proposed development or where the proposed activity has an elevated risk of resulting in the presence of these species, details of how these species will be appropriately managed and controlled will be required.	Japanese knotweed (<i>Reynoutria japonica</i>) was identified within the Site, and is present within the proposed construction footprint. As such, a site-specific ISMP has been prepared which allows for the treatment of Japanese knotweed both within and adjacent to the construction

		footprint in order to mitigate the potential for spread of this species as a result of the Proposed Project. Additionally, Japanese knotweed is proposed for treatment within other areas of the Site, subject to licence and necessary consents being in place.
	<u>Natural Environment Policy 19:</u> To protect existing groundwater sources and aquifers in the county and to manage development in a manner consistent with the protection of these resources. <u>Natural Environment Policy 20:</u> To meet our targets to achieve ‘good status’ in all water bodies in compliance with the Water Framework Directive and to cooperate with the implementation of the National River Basin Management Plan 2018-2021, and subsequent plans. <u>Natural Environment Policy 21:</u> To manage, protect and enhance surface water and ground water quality to meet the requirements of the Water Framework Directive. <u>Natural Environment Objective 6:</u> To protect surface waters, aquatic and wetland habitats and freshwater and water-dependent species through the implementation of all appropriate and relevant Directives and transposed legislation and seek to protect and conserve the quality, character and features of inland waterways by controlling developments close to navigable and non-navigable waterways. <u>Natural Environment Policy 37:</u> To ensure that the Water Framework Directive, the River Basin Management Plan and any subsequent Water Management Plans are fully considered throughout the planning process. <u>Natural Environment Policy 39:</u> To manage in a sustainable manner, the existing groundwater sources and aquifers in the county and manage development in a manner consistent with the sustainable management of these resources, in conformity with the EU Environmental Objectives (Groundwater) Regulations 2010 and the second cycle National River Basin Management Plan 2018-2021, and any subsequent plans and the Groundwater Protection Scheme.	As discussed in this EIAR chapter, potential for impacts on local groundwater and surface water has been identified. Appropriate mitigation measures have been applied to prevent impacts via groundwater and surface water pathways, as described in Section 6.5 of this report and in Chapter 9 Water of this EIAR.

Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032	<u>Regional Policy Objective 5.4:</u> Encourage the prioritisation of Site-Specific Conservation Objectives (SSCO) for all sites of Conservation Value, designated in EU Directive (i.e. SACs, SPAs) to integrate with the development objectives of this Strategy. <u>Regional Policy Objective 5.5:</u> Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and natural heritage area. Conserve and protect European Sites and their integrity. <u>Regional Policy Objective 5.7:</u> Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate <u>Regional Policy Objective 5.22:</u> To protect and conserve our designated peatlands and bogs for reasons of biodiversity, ecosystem services, carbon sinks, areas of habitat importance, amenity and landscape value.	The Strategy was reviewed, with particular reference to Policies and Objectives that relate to biodiversity. The Proposed Project is in compliance with the objectives of the Strategy and there will be no net loss to biodiversity as a result of the Proposed Project. On review of the Strategy, no potential for cumulative effect when considered in-combination with the Proposed Project was identified.
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Ireland's 4th National Biodiversity Action Plan 2023-2030	Objective 1: Adopt a Whole-of Government, Whole of-Society Approach to Biodiversity. Proposed actions include capacity and resource reviews across Government; determining responsibilities for the expanding biodiversity agenda providing support for communities, citizen scientists and business; and mechanisms for the governance and review of this National Biodiversity Action Plan. Objective 2: Meet Urgent Conservation and Restoration Needs. Supporting actions will build on existing conservation measures. Efforts to tackle Invasive Alien Species will be elevated. The protected area network will be expanded to include the Marine Protected Areas. The ambition of the EU Biodiversity Strategy will be considered as part of an evolving work programme across Government. Objective 3: Secure Nature's Contribution to People. Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature's importance to our culture and heritage and recognising how biodiversity supports our society and our economy. Objective 4: Enhance the Evidence Base for Action on Biodiversity. This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts. Objective 5: Strengthen Ireland's Contribution to International Biodiversity Initiatives. Collaboration with other countries and across the island of Ireland will play a key role in the realisation of this Objective. Ireland will strengthen its contribution to international biodiversity initiatives and international governance processes, such as the United Nations Convention on Biological Diversity.	The Proposed Project will not contravene the objectives of the NBAP. On review of the NBAP, no potential for cumulative effect when considered in-combination with the Proposed Project was identified.
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6.6.3 Conclusion of Assessment of Cumulative Effects

The residual construction, operational and decommissioning effects of the Proposed Project are considered cumulatively with other plans and projects as described in Sections 6.6.1 and within the following section. Particular focus has been placed on those plans and projects that are in closest proximity to the Proposed Project and those that could potentially result in impacts on water quality, fauna and habitats.

Following the detailed surveys undertaken and impact assessment provided in Section 6.5, it is concluded that there will be no significant residual effects on biodiversity as a result of the Proposed Project. The other permitted, proposed, and/or existing wind farms in the area were considered (among other projects) but the Proposed Project has been deliberately designed to minimise the effects on biodiversity by avoiding annex I habitat and areas of high value for fauna. The Proposed Project also includes a BMEP, which proposes enhancement measures for habitats and fauna within the Site.

The Proposed Project will not result in any significant residual effects on biodiversity and will not contribute to any cumulative effect when considered in combination with other plans and projects.

In the review of the projects and plans that was undertaken, no connection that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Proposed Project.

6.7

Conclusion

Following consideration of the residual effects (post-mitigation) it is concluded that the Proposed Project will not result in any significant effects on any of the identified KERs. No significant effects on receptors of International, National, County Importance or Local Importance (Higher Value) were identified.

The potential for effects on the European Sites is fully described in the NIS that accompanies this application. The NIS concludes that, in view of best scientific knowledge and on the basis of objective information, the Proposed Project either individually or in combination with other plans or projects, will not adversely affect the integrity of any European Sites. Similarly, with the prescribed mitigations in place, there is no potential for impact on any nationally designated site.

The Proposed Project will be constructed and operated in accordance with the design, best practice and mitigation that is described within this application, and as such there will be no significant individual or cumulative effects on biodiversity, flora or fauna at the international, national, county, or local scales or on any of the identified KERs.

6.8

EIA Classification Summary

Please see Table 6-28 below for a summary of all identified impacts for the Proposed Project relating to biodiversity.

Table 6-28 Impact Assessment Classification Summary

Topic	Pre-Mitigation Effect	Mitigation Section Reference	Residual Effect	Significance
Construction Phase				
European Sites	Effects on European Sites are addressed in the NIS. The NIS finds that it can be objectively concluded that the Proposed Project, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.			
Nationally Designated Sites	Short-term, negative, significant at the local scale.	Section 6.5.5.2 Section 6.5.2.1.1	No significant residual effect at any geographic scale.	Not Significant
Aquatic Habitats and Associated Aquatic Species	Direct Disturbance and Mortality Short-term, negative, significant at the local scale. Habitat Degradation – Water Quality Deterioration Short-term, negative, significant at the local scale.	Section 6.5.2.1.1	No significant residual effect at any geographic scale.	Not Significant
Raised Bog	Direct habitat loss No significant effect.	Section 6.5.2.1.2	No significant residual effect at any geographic scale.	Not Significant

	Habitat Degradation – Drainage Effects Short term, negative, not significant at any geographic scale. Habitat Degradation – Dust Deposition Short-term, negative, significant at the local scale.			
Cutover Bog Associated Habitats	Direct habitat loss Short-term, negative, significant at the local scale. Habitat Degradation – Drainage Effects Short term, negative, not significant at any geographic scale. Habitat Degradation – Dust Deposition Short-term, negative, significant at the local scale.	Section 6.5.2.1.3	No significant residual effect at any geographic scale.	Not Significant
Annex I <i>Molinia</i> meadows	Direct Habitat Loss Short-term, negative, significant at the local scale. Habitat Degradation – Drainage Effects Short term, negative, not significant at any geographic scale. Habitat Degradation – Dust Deposition Short-term, negative, significant at the local scale.	Section 6.5.2.1.4	Long-term, positive at the local scale.	Not Significant
Scrub	Permanent, negative, significant at the local geographic scale.	Section 6.5.2.1.5	Long-term, positive at the local scale.	Not Significant

Hedgerows and Treelines	Permanent, negative, significant at the local geographic scale.	Section 6.5.2.1.6	Long-term, positive at the local scale.	Not Significant
Invasive Species	Long-term, negative, significant at the local scale.	Section 6.5.2.1.7	Long-term, positive at the local scale.	Not Significant
Badger	Direct Habitat Loss/Fragmentation Long-term, negative, not significant at any geographic scale. Disturbance/Mortality Short-term, negative, significant at the local scale.	Section 6.5.2.2.1	No significant residual effect at any geographic scale.	Not Significant
Otter	Direct Habitat Loss/Fragmentation, Disturbance and Mortality No significant effects. Habitat Degradation – Impacts on Water Quality Short-term, negative, significant at the local scale.	Section 6.5.2.2.2	No significant residual effect at any geographic scale.	Not Significant
Bats	Loss of, or Damage to, Roosts No significant effects. Loss or Damage to Commuting and Foraging Habitats Long-term, negative, significant at the local scale. Displacement of Individuals or Populations Short-term, negative, not significant at any geographic scale. Disturbance	Section 6.5.2.2.3	No significant residual effect at any geographic scale.	Not Significant

	Short-term, negative, not significant at any geographic scale.			
Smooth Newt	Direct Habitat Loss, Disturbance and Mortality Permanent, negative, significant at the local scale. Habitat Degradation – Impacts on Water Quality Short-term, negative, significant at the local scale.	Section 6.5.2.2.4	No significant residual effect at any geographic scale.	Not Significant
Marsh Fritillary	Disturbance/Mortality Permanent, negative, significant at the county scale. Direct Habitat Loss Long-term, negative, significant at the local scale. Habitat Degradation – Dust Deposition Short-term, negative, significant at the local scale.	Section 6.5.2.2.5	No significant residual effect at any geographic scale.	Not Significant
Operational Phase				
European Sites	Effects on European Sites are addressed in the NIS. The NIS finds that it can be objectively concluded that the Proposed Project, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.			
Nationally Designated Sites	Long-term, negative, not significant at any geographic scale.	Section 6.5.5.2	No significant residual effect at any geographic scale.	Not Significant
Aquatic Habitats and Related Species	Long-term, negative, not significant at any geographic scale.	Section 6.5.3.1.1	No significant residual effect at any geographic scale.	Not Significant
Bats	Long-term, negative, significant at a local scale.	Section 6.5.3.2.1	No significant residual effect at any geographic scale.	Not Significant
Decommissioning Phase				

Biodiversity	The potential impacts associated with decommissioning of the Proposed Project will be similar to those associated with construction but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works.	Section 6.5.4 Section 6.5.2	No significant residual effect at any geographic scale.	Not Significant
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